Federal Boulevard
Alameda Avenue to 6th Avenue

Environmental Assessment

Prepared for

U.S. Department of Transportation
Federal Highway Administration

Colorado Department of Transportation

City and County of Denver

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Federal Boulevard- Alameda to 6th Avenue Environmental Assessment

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by the
U.S. Department of Transportation
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and the
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Environmental Assessment Availability
Copies of the Environmental Assessment are available in hard copy format for public review at the following locations and/or by request from CDOT Region 6:

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LIST OF ACRONYMS AND ABBREVIATIONS

AADT	Average Annual Daily Traffic
AAI	All Appropriate Inquiry
AASHTO	American Association of State Highway and Transportation Officials
ABM	Asbestos Building Materials
ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
APE	Area of Potential Effect
ASTM	American Society of Testing and Materials
ATP	Anti-Tampering Program
bgs	Below Ground Surface
BLM	State Bureau of Land Management
BMPs	Best Management Practices
CAA	Clean Air Act
CAP	Corrective Action Plan
CCD	City and County of Denver
CDOT	Colorado Department of Transportation
CDPHE	Colorado Department of Public Health and Environment
CDPS	Colorado Discharge Permit System
CERCLA	Comprehensive Environmental Response Compensation and Liability Act
CFR	Code of Federal Regulation
CO	Carbon Monoxide
CWA	Clean Water Act
dBA	Decibels
DOT	U.S. Department of Transportation
DPL	Denver Public Library
DRCOG	Denver Regional Council of Governments
EA	Environmental Assessment
EAC	Early Action Compact
EDB	Extended Detention Basin
EIS	Environmental Impact Statement
EO	Executive Order
ESA	Environmental Site Assessment
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIRM	Flood Insurance Rate Map
HCM	*Highway Capacity Manual, 2000 Edition*
HDGV and HDDV	Heavy-Duty Trucks
HUD	Department of Housing and Urban Development
IGA	Intergovernmental Agreement
I/M	Inspection/Maintenance

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

LBP	Lead-based Paint
LDGT	Light-Duty Trucks
LDGVs	Light-Duty Gas Vehicles
LED	Light Emitting Diode
Leq	Equivalent Sound Level
Leq(h)	Hourly Equivalent Sound Level
LEV	Low Emission Vehicle
Lmax	Maximum Sound Level
LOS	Level of Service
LRT	Light-Rail
LUST	Leaking Underground Storage Tank
MCL	Maximum Contaminant Level
MDCIA	Minimizing Directly Connected Impervious Areas
MDEDC	Metro Denver Economic Development Commission
MPH	Miles Per Hour
MS4	Municipal Separate Storm Sewer System
MSAT	Mobile Source Air Toxics
MW	Monitoring Well
NAAQS	National Ambient Air Quality Standards
NAC	Noise Abatement Criteria
NEPA	National Environmental Policy Act
NFA	No Further Action
NO_2	Nitrogen Dioxide
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service
NRHP	National Register of Historic Places
OAHP	Office of Archaeology and Historic Preservation
OED	Office of Economic Development Resources
OPS	Colorado Department of Labor and Employment – Division of Oil and Public Safety
OSHA	Occupational Safety and Health Administration
PA	Preliminary Alternative
Pb	Lead
PD	Policy Directive
PID	Photo-Ionization Detector
PM	Particulate Matter
ppm	Parts Per Million
PRGs	Preliminary Remediation Goals
RCRA	Resource Conservation Recovery Act
RECs	Recognized Environmental Conditions
ROW	Right-of-Way

LIST OF ACRONYMS AND ABBREVIATIONS (continued)

RTD	Regional Transportation District
RTP	Regional Transportation Plan
SBA	Small Business Administration
SHPO	State Historic Preservation Office
SI	Site Investigation
SIP	State Implementation Plan
SO_2	Sulfur Dioxide
SWMP	Stormwater Management Plan
TIP	Transportation Improvement Program
TMDL	Total Maximum Daily Load
TNM	Transportation Noise Model
TOD	Transit-Oriented Development
TSCA	Toxic Substances Control Act
TSS	Total Suspended Solids
UDFCD	Urban Drainage and Flood Control District
$\mu g/m^3$	Micrograms per Cubic Meter
µg/L	Micrograms Per Liter
UNCC	Utility Notification Center of Colorado
USDA	U.S. Department of Agriculture
USEPA	United States Environmental Protection Agency
USFWS	United States Fish and Wildlife Service
UST	Underground Storage Tank
VMT	Vehicle Miles Traveled
VOCs	Volatile Organic Compounds
WQCV	Water Quality Capture Volume

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EXECUTIVE SUMMARY

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT) and the City and County of Denver (CCD), is proposing to add a third northbound lane and a raised median, along with other improvements, to Federal Boulevard between Alameda Avenue and the 6th Avenue eastbound on-ramp. This area of Federal Boulevard is an urban section of State Highway 88, which is why CDOT is involved in the project. The purpose of the proposed Federal Boulevard project is threefold: to improve the safety and efficiency of Federal Boulevard; to accommodate the transportation needs of area residents and existing businesses and; to provide multi-modal travel options and connections in the general vicinity. Figure ES-1 shows the proximity of the study area within west Denver. A map of the study area is shown in Figure ES-2.

This stretch of Federal Boulevard currently has three times the number of accidents compared to similar roadways in Colorado. Based on a study of accidents from 2001-2003, a total of 556 accidents within the proposed project limits was reported. The majority of the accidents were rear-end collisions, followed by sideswipe and broadside collisions. These types of accidents and others are attributed to unsafe conditions caused by: a continuous painted two-way-left-turn-lane, narrow lane widths that vary from nine to ten feet, numerous access points along Federal Boulevard, and fixed objects such as lightpoles that are close to the roadway. During the three-year accident period, two pedestrian fatalities were reported.

Currently, 43,000 vehicles per day use Federal Boulevard between Alameda Avenue and 6th Avenue. By 2030, 60,000 vehicles per day will use the roadway (projected).

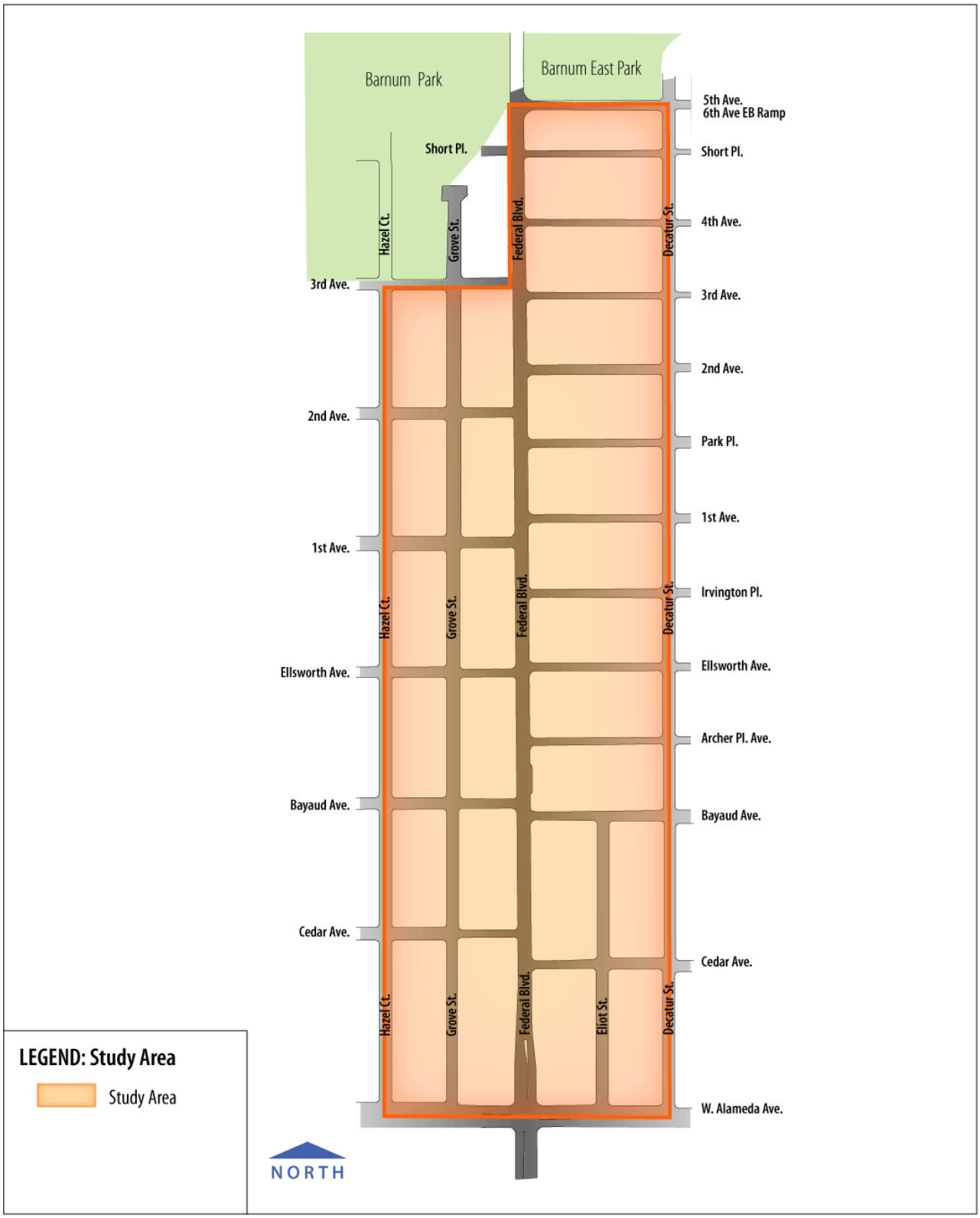
In the course of this environmental analysis, alternatives were developed and screened using a three-level screening process. This process included: Level 1 - Fatal Flaw Analysis; Level 2 - Purpose and Need Analysis; and Level 3 - Refinement of Alternatives. A “fatal flaw” is an aspect(s) of an alternative that is unacceptable to the project. Based on the results of the Level 3 screening, Alternative 3 Curved (Alternative 3 C) was selected as the Build Alternative to be evaluated in this Environmental Assessment (EA) – along with the No Action Alternative.

The Build Alternative involves widening Federal Boulevard to increase capacity and improve safety conditions for both vehicles and pedestrians. The alignment contains eight slight curves that are designed to minimize or avoid building impacts, including one building that is eligible for the National Register of Historic Places. Major elements of the Build Alternative alignment include:

- Addition of a third northbound lane.
- Widening of existing lanes to 11 feet.
- Construction of a 16-foot raised median.
- Widening of a pedestrian zone to 8 feet (5-foot sidewalk plus 3-foot buffer zone). The pedestrian zone would be widened to 13.5 feet in areas where no additional direct or indirect impacts to existing buildings would occur and as funding allows.
- Potential installation of a stoplight and realignment of Bayaud Avenue.
- Sidewalks and curb ramps brought up to the Americans with Disabilities Act (ADA) standards.
- Stormwater drainage improvements to meet Municipal Separate Storm Sewer System (MS4) permit requirements as regulated by the Colorado Department of Public Health and Environment (CDPHE).

Regional Map

Federal Boulevard Environmental Assessment — Figure ES-1



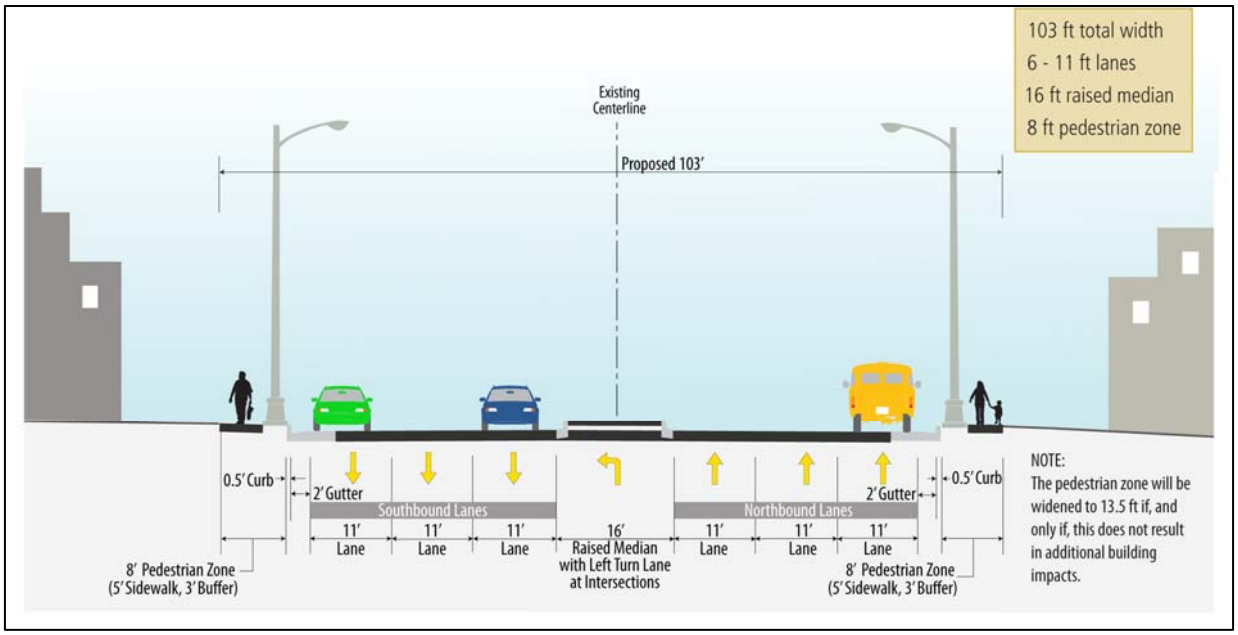
Study Area Map

Federal Boulevard Environmental Assessment

Figure ES-2

The proposed improvements would extend from Alameda Avenue to 5th Avenue, which is approximately 0.84 mile, and would widen the existing roadway, including the pedestrian zone, from approximately 68 feet to 103 feet. The cross section for Alternative 3 Curved is shown in Figure ES-3.

Figure ES-3
Alternative 3 Curved



Land Use

The proposed transportation improvements would not change the designation of Federal Boulevard as a commercial corridor as designated in *Blueprint Denver,* which was adopted by the CCD in 2002 and serves as an integrated land use and transportation plan. However, the transportation investment will set the stage for how the corridor will function over time. A portion of the businesses along Federal Boulevard will be relocated, and redevelopment of these parcels is likely to happen over time. Planning efforts for redevelopment are not part of this project and would be initiated at the local level by the CCD.

Social Characteristics

Two neighborhoods are located within the study area, Barnum and Valverde. Both neighborhoods are experiencing population growth, which is expected to continue in the future. The Federal Boulevard corridor and surrounding neighborhoods are diverse, ethnically rich, and include both low income and minority populations. The area has a number of businesses, schools, and churches that serve the community.

According to the U.S. Census, the percent of persons in poverty at the Citywide level is 14.3 percent *(U.S. Census Bureau, Housing and Household Economic Statistics Division)*. Of the census block groups that are adjacent to Federal Boulevard along the study area, between 13 percent and 28 percent of the population is in poverty.

The average household income for the four neighborhoods bordering the study area is below the CCD average of $55,128. Over 37 percent pay more than one-third of their income on housing. Between 20 and 25 percent of the housing units in the study area are overcrowded, meaning there is more than one person per room.

Approximately half of the businesses that would be impacted by the Build Alternative are known to be minority owned. This information was collected through interviews with local business owners and/or occupants. A more detailed discussion of property acquisitions, business relocations, and mitigation is discussed in the Right-of-Way section below.

Economic

The property acquisitions and displacement of businesses would impact the local economy. Approximately 41 percent of the businesses in the project area would be affected by this project. The full property acquisitions would potentially cause the city, county, and state to lose the ability to collect property taxes totaling $123,495 per year. Affected businesses that collect sales tax would be displaced. Unless such businesses relocate within the CCD, the CCD would lose the ability to collect $84,570 in annual sales taxes from these businesses, if they were to cease operation entirely or relocate outside of the CCD. Future sale and redevelopment of the remainder of these properties, however, would likely offset the losses in property and sales tax. However, after final design and construction, some of the parcels or portions of some parcels may not be needed for right-of-way. The portion of the parcels acquired but not needed for right-of-way could be declared surplus and returned to private ownership. Parcels returned to private ownership would be reassessed for property taxation purposes.

Where appropriate and feasible, the following mitigation measure will be employed to minimize or avoid construction and permanent impacts on economic conditions in the area:

- CDOT will work with each displaced business to determine a suitable relocation site. The CCD will offer resources to assist displaced businesses.
- Ideally, any new location for displaced businesses will remain in the CCD such that sales taxes will continue to be collected by the CCD; however, it is not guaranteed that the businesses will remain in the CCD. See Section 3.2.7 for additional mitigation measures.

Right-of-Way

The Build Alternative would require acquisition of approximately 4.9 acres of property. Of the 75 property acquisitions affected, 54 would be partial acquisitions and 21 would be full acquisitions. Several of these properties are owned by the same people. In addition, six outdoor advertising signs would also be acquired.

Forty-three businesses and two residential occupants would be displaced as a result of the property acquisitions. Many properties have multiple businesses located within them. Also, there would be one personal property relocation (e.g. a shed).

For any person(s) whose real property interests may be impacted by this project or any businesses that may be displaced, the acquisition of those property interests and business displacements would comply fully with the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended*, *(Uniform Act).*

It is not yet known whether potential displacements are dependent on their present location for continued viability. If a displaced business is identified with such a dependency, the CCD would work closely with such businesses to identify a suitable site for their relocation. Relocation needs for businesses within the community will vary by business type.

Transportation

Under the Build Alternative, a third northbound lane is proposed along with a raised median. The third northbound lane would increase the capacity of the roadway and would therefore generally decrease congestion at intersections compared to the No Action Alternative. The raised median would have openings at many of the intersections, although new travel patterns may develop since driveways would not have median openings. In addition, due to the construction of a raised median, several accident types such as approach turn, broadside, pedestrian, head-on and sideswipe opposite accidents would likely decrease.

Noise

Under the Build Alternative, traffic noise levels would increase from 0 to 2 decibels (dBA) relative to existing conditions. Thirty-four homes and thirteen apartment units would be affected by noise levels that meet or exceed the noise abatement criteria (NAC) of 66 dBA. However, no severe noise impacts are predicted. A severe noise impact is defined as occurring when a receiver, such as a house, is either exposed to absolute exterior noise levels of 75 dBA or greater, or a projected increase of 30 dBA or more over existing noise levels (CDOT, 2002).

Based on the modeling of residential sites, outdoor noise levels at the commercial buildings bordering Federal Boulevard are expected to range between 60 and 70 dBA equivalent sound level (Leq), depending on the distance from the roadway. None of the commercial sites are expected to meet or exceed the noise abatement criteria for commercial activities of 71 dBA.

Mitigation was considered for areas along Federal Boulevard that meet or exceed the CDOT NAC. However, construction of a noise barrier would not be feasible to reduce noise levels due to numerous driveways, cross streets, and sidewalks along Federal Boulevard. As a result, mitigation for the impacted residences is not recommended.

Water Resources

Impacts to Water Resources for the Build Alternative will be beneficial. Currently, storm run-off enters the storm drain system without the benefit of treatment. Because the proposed alternative will disturb more than once acre, the project is required by the Colorado Department of Transportation (CDOT) Municipal Separate Storm Sewer System (MS4) and the National Pollutant Discharges Elimination System (NPDES) to provide water quality features. Under the Build Alternative, water quality extended detention basins (EDB) have been proposed along Federal Boulevard to provide water quality treatment from runoff exiting the site. During the design phase additional alternatives, such as tree lawns or a regional water quality facility, will be investigated further.

Impacts during construction will be minimized through the use of a Stormwater Management Plan (SWMP). The SWMP is designed to prevent negative impacts to water quality through the use of Best Management Practices (BMPs) such as inlet protection and silt fencing. Therefore,

impacts from the build alternative will be positive due to the placement of EDBs, and will be minimal due to construction.

Hazardous Materials

During a site investigation and records search, it was determined that soil and groundwater contamination is likely, due to the presence of several underground storage tanks (UST) and leaking underground storage tanks (LUSTs) within the study area. Three properties have LUSTs and it is likely petroleum contaminated soil would be encountered at one or more sites. Mitigation for any hazardous materials encountered during construction will be as follows: CDOT Standard Specification, Section 250 will be used to address issues related to transporting, handling, monitoring, and disposal of any hazardous or solid waste materials encountered during construction including contaminated soils, lead-based paint, contaminated groundwater, and other toxic substances.

If deemed necessary, a materials management plan will be prepared regarding the removal and disposal of contaminated soils and/or groundwater. A Health and Safety Plan will also be developed to protect workers during construction.

Other Resources

The following resources either had minor or no impacts:

- Air Quality
- Vegetation and Wildlife
- Farmlands
- Noxious Weeds
- Threatened and/or Endangered Species
- Historic and Archaeological Resources
- Paleontology
- Section 6(f)
- Visual Quality/Aesthetics
- Parks and Recreation Resources
- Wetlands
- Floodplains
- Utilities
- Geology

Detailed assessments of the existing environment, environmental impacts, a cumulative impact assessment, and proposed mitigation of the impacts are described in Chapter 3 of this EA.

Construction and Cost

Construction of the Build Alternative would commence mid-year in 2009. The current estimated cost of the Build Alternative is between $29,000,000 and $32,400,000 (2006 dollars). The cost

of the No Action Alternative is estimated at $3 million every seven years for general maintenance (resurfacing, sidewalk repairs, etc.)

Public Involvement

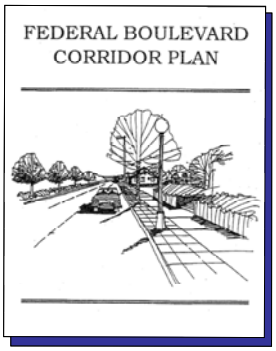
Public meetings, workshops, one-on-one meetings with local businesses were held throughout the scoping and alternatives development and screening processes. Small group meetings were also held with affected property owners and businesses to inform them of the right-of-way acquisition process under the *Uniform Relocation Assistance and Real Property Acquisition Policies Act* (Uniform Act).

This EA will be circulated for a 30-day public comment period. A public hearing will be held on December 4, 2007, from 5:00 p.m. to 7:00 p.m., to present the environmental investigation findings, the proposed mitigation measures, and to solicit public comments. Following the comment period, comments will be addressed and a decision document will be prepared.

This EA provides decision-makers and the community with information on the potential impacts of the No Action and Build Alternatives. The environmental study process has included detailed technical analyses and agency and community involvement.

1.0 PURPOSE AND NEED

1.1 Background



Improvement to Federal Boulevard, between Alameda Avenue and 6th Avenue, in the City and County of Denver (CCD), Colorado, has been a topic of discussion for over 10 years. In 1995, the CCD published the *Federal Boulevard Corridor Plan*. The plan stated three goals; enhance the image of Federal Boulevard; improve safety and operating efficiency for pedestrians and vehicles; and keep land acquisition at a minimum in order to achieve the previous goals. It also recommended the addition of a third northbound lane for the south segment of Federal Boulevard (Colfax Avenue to Jewell Avenue), which includes the study area for this project. The proposed action for this project builds on a number of the goals developed in the *Federal Boulevard Corridor Plan*. Since the publication of the plan, traffic volumes in the corridor already have exceeded the expected volumes forecast for 2010.

Federal Boulevard is a principal urban arterial in Denver that provides access to a number of major roadways, including 6th Avenue and Interstates 25, 70, and 76. Federal Boulevard spans 20 miles between West 120th Avenue and West Bowles Avenue.

The project study area extends south of the eastbound on-ramp for the 6th Avenue freeway on the north to Alameda Avenue on the south. East-west boundaries include Decatur Street on the east and Hazel Court on the west. At the south end, Federal Boulevard ties into Alameda Avenue, which is a major east-west arterial. At the north end, Federal Boulevard intersects with 6th Avenue, which is a major east-west freeway, which provides access to major destinations such as downtown Denver and Interstate 25 to the east and the mountains to the west. The study area boundaries meet the criteria for logical project termini and independent utility as required by the Federal Highway Administration (FHWA).

Figure 1-1 shows the location of the study area within Denver. A map of the study area is shown in Figure 1-2. Alameda Avenue is also known as West Alameda Avenue and 6th Avenue is also known as U.S. 6. For the purposes of this document, they will be referred to as Alameda Avenue and 6th Avenue, respectively.

The lead agency for the Federal Boulevard Environmental Assessment (EA) is the FHWA. This EA has been prepared in cooperation with the Colorado Department of Transportation (CDOT) and the CCD. FHWA is required to prepare National Environmental Policy Act (NEPA) studies, such as this one, if federal funds or other federal actions are anticipated for a project.

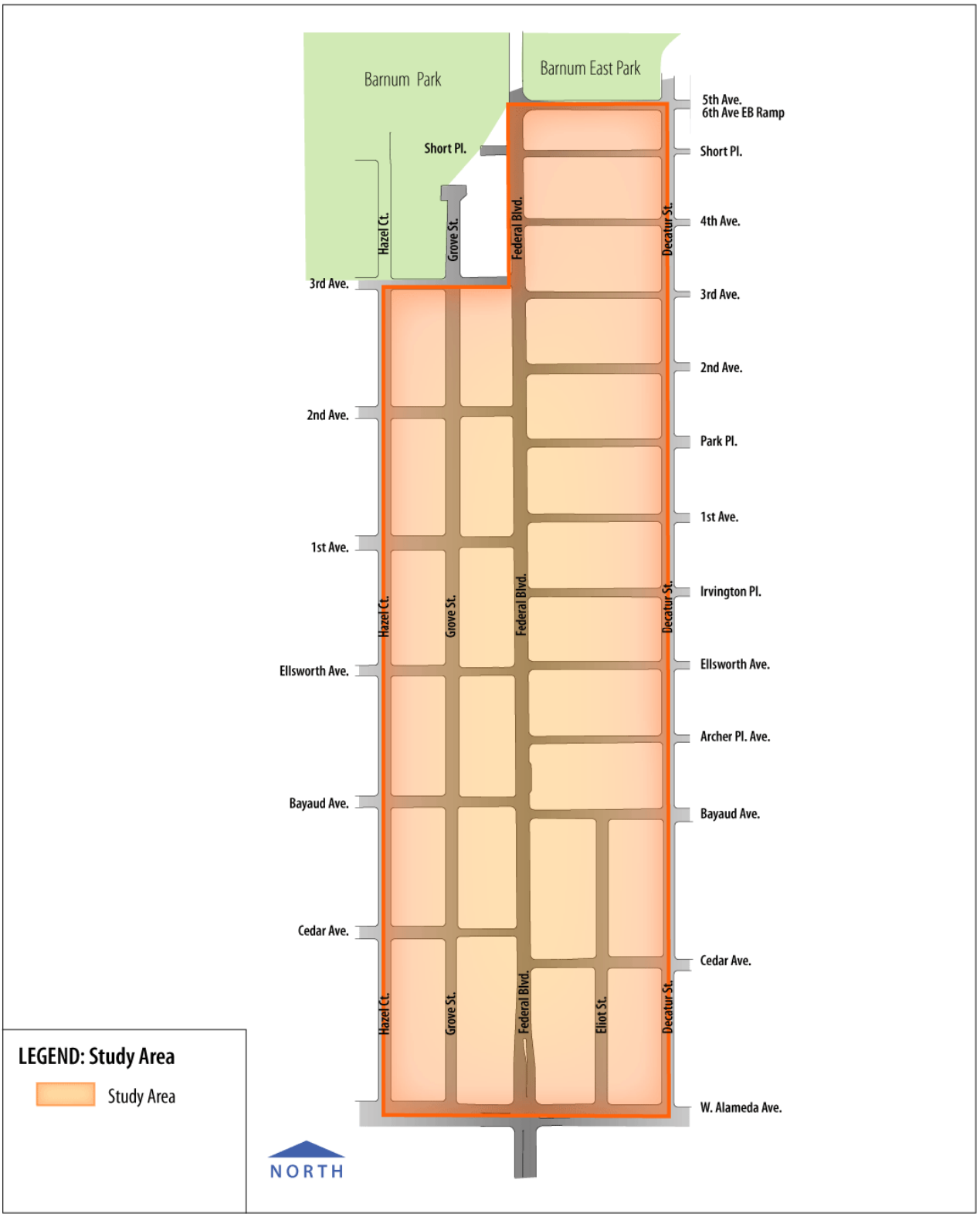
Existing Conditions

Within the study area, Federal Boulevard is a five-lane road with two northbound lanes and three southbound lanes and has a posted speed limit of thirty-five (35)

NORTH

Regional Map

Federal Boulevard Environmental Assessment — Figure 1-1



Study Area Map

Federal Boulevard Environmental Assessment

Figure 1-2

miles per hour. The lane widths vary from nine to ten feet and there is a painted two-way center turn lane in the roadway that varies from nine and a half feet to twelve feet wide. Sidewalks in the study area range in width and are less than five feet in some areas. These sidewalks do not meet the Americans with Disabilities Act (ADA) standards. In addition, there are numerous accesses along Federal Boulevard in the study area and several offset intersections. Offset intersections are those where the cross street does not continue straight across Federal Boulevard, but jogs to the north or south before continuing east or west. Further discussion of existing conditions can be found in the Multi-Modal Connectivity section of this chapter.

1.2 Proposed Action

The proposed action is to add a third northbound lane along Federal Boulevard between Alameda Avenue and 6th Avenue to reduce congestion and improve safety and capacity. The proposed design calls for six 11-foot lanes, a 16-foot wide raised median, and 8-foot wide pedestrian zones. The pedestrian zones would consist of a 5-foot sidewalk and 3-foot buffer, on both sides of the street to improve pedestrian safety and mobility. The pedestrian zone may be widened to 13.5 feet (8-foot sidewalk and 5.5-foot buffer) if no additional building impacts would result. U-turns would be allowed at designated intersections. In addition, based on the results of a signal warrant study to be completed at a later date, Bayaud Avenue will ideally be realigned and a stoplight will be installed at the intersection.

1.3 Purpose and Need for the Action

Project Purpose

The purpose of the proposed Federal Boulevard project is threefold: to improve the safety and efficiency of Federal Boulevard; to accommodate the transportation needs of area residents and existing businesses and; to provide multi-modal travel options and connections along Federal Boulevard between Alameda Avenue and 6th Avenue.

In addition, during discussions with the local community as part of the public involvement process, it became apparent that applying context-sensitive solutions in order to minimize property acquisitions and business impacts was an important element of the project.

Need for the Action

Improvements to Federal Boulevard are needed to correct existing and future safety problems such as the high number of accidents, congestion, which includes delays at intersections and poor traffic flow, roadway deficiencies such as narrow lane widths and the two-way center turn lane, and to improve the connectivity of vehicular, bus, pedestrian, and bicycle trips. Transportation needs typically fall into categories provided in technical guidance by the FHWA. For Federal Boulevard, these categories include:

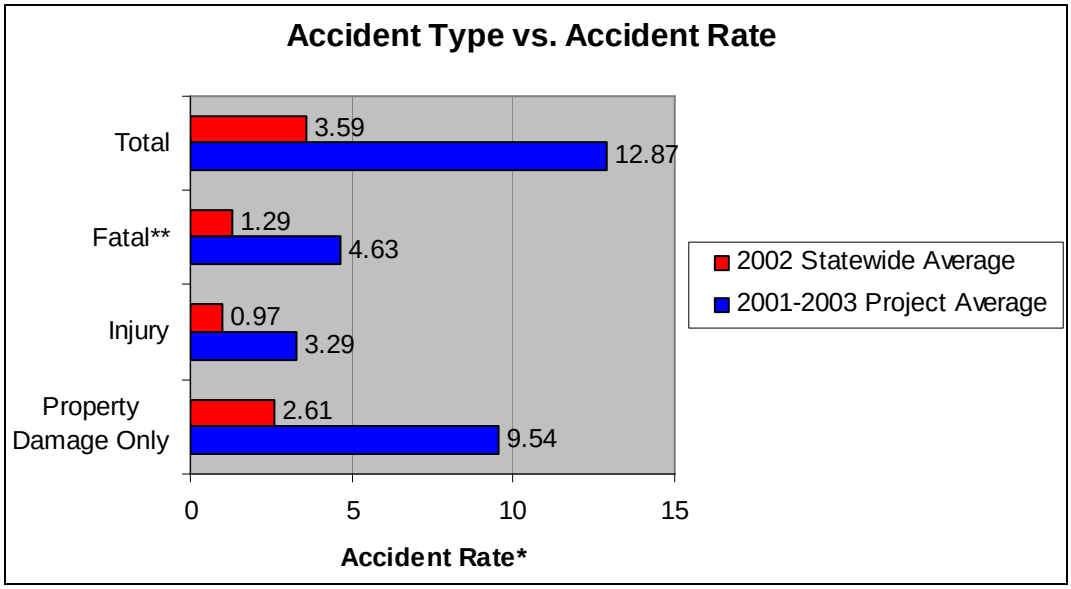
- Safety
- Capacity
- Roadway deficiencies
- Multi-modal connectivity

In order to preserve the viability of the business community in the study area that supports a number of minority-owned businesses, it is also important to minimize impacts to these businesses.

Safety

The accident history in the study area from January 1, 2001 to December 31, 2003, was evaluated in order to locate accident clusters and identify accident causes (Safety Assessment Report, 2006). Figure 1-3 shows that the accident rates in the study area are over three times as high as those found on similar roadways in Colorado. These statistics helped to identify the major problem areas in terms of safety and accidents in the study area.

Figure 1-3
Accident Rates on Federal Boulevard
2001-2003



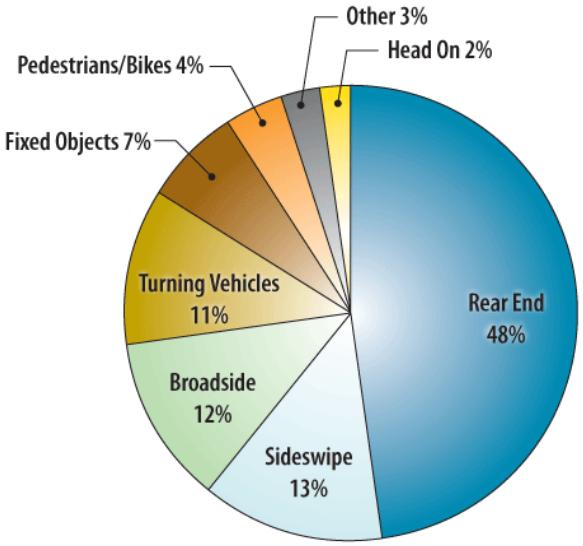
* The accident rates are per million vehicle- miles of travel (VMT).
** Fatal rates are per 100 million VMT
Source: Safety Assessment Report, PB, 2006.

Accidents generally occurred at either signalized intersections or mid-block intersections. The highest number of accidents occurred at the intersection of Alameda Avenue and Federal Boulevard, with 144 reported accidents, followed by the stretch of Federal Boulevard from Archer Place to Cedar Avenue with 62 accidents. There were two fatalities during the three-year period, both of which were pedestrian fatalities.

Accident rates in the study area are over three times higher than accident rates on similar roads in Colorado.

During the three years that were analyzed, there were a total of 556 reported accidents within the proposed project limits. The majority of the accidents were rear-end collisions, followed by sideswipe and broadside collisions. Figure 1-4 shows the total accident breakdown for the study area.

Figure 1-4
Total Accident Breakdown: 2001 - 2003



Source: Safety Assessment Report, PB, 2006

Rear-end Accidents

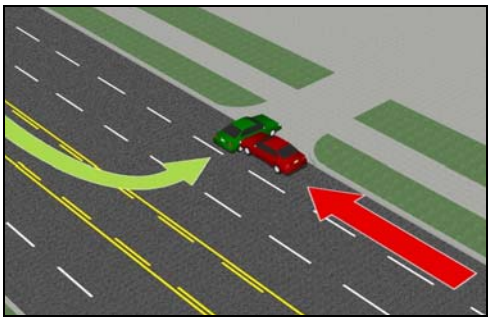
Rear-end accidents were the most common type of accident along the corridor, accounting for 48 percent of total accidents for the three-year period. Of these accidents, the majority occurred in the northbound lanes of traffic. One reason for this is northbound traffic does not have the maneuverability that the southbound traffic has to potentially avoid accidents, since it has only two lanes as compared to three for the southbound traffic.

Because there are numerous bus stops along the corridor (six stops in each direction), traffic becomes congested behind the buses and increases the likelihood of rear-end collisions. The lack of a third northbound lane adds to the congestion of the corridor.

The high number of access points along Federal Boulevard may also be contributing to the rear-end collisions. This is because vehicles slow down, sometimes abruptly, to make right-turns into adjacent streets or businesses, causing vehicles behind them to slow down and possibly cause an accident.

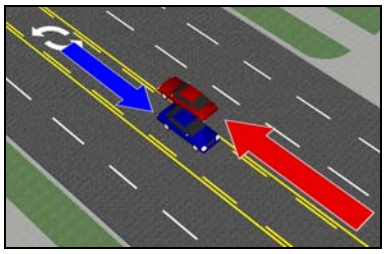
Turning and Broadside Accidents

Approach turns are left turns made across opposite lanes of traffic. As with rear-end collisions, the number of northbound accidents for approach turns was higher than the number of southbound accidents. Since vehicles are allowed to turn mid-block rather than only at stoplights, the number of accidents increases because motorists can turn whenever they choose.



Approach Turn Accident

Broadside accidents account for the highest number of accidents for westbound traffic, followed by northbound traffic. Westbound traffic is defined as traffic from the east crossing Federal Boulevard to the west. These types of accidents may be due to the high number of non-signalized intersections and lack of adequate gaps due to traffic congestion and sun glare, especially for the westbound traffic in the afternoon.



Sideswipe Accident, Opposite Direction

Narrow sidewalks force pedestrians to walk very close to the roadway

Pole obstructs the required five-foot clearance required by ADA. Curb ramp in poor condition

Pedestrian crossing mid-block

Cracks in sidewalks are common and curb ramp in poor condition

Sideswipe and Head-on Accidents

There are two different types of sideswipe accidents: sideswipes occurring in lanes of the same direction and sideswipes occurring in lanes of the opposite direction. Sideswipe accidents that occur in the same direction are most likely caused by narrow lane widths. The lanes in the study area vary from nine to ten feet, including the two-way center turn lane. According to the *American Association of State Highway and Transportation Officials (AASHTO) A Policy on Geometric Design of Highways and Streets (2004),* the acceptable minimum lane width is 11 feet for urban areas such as the study area.

Sideswipe accidents and some of the head-on collisions that occur with vehicles moving in opposite directions are likely due to the two-way center turn lane.

Pedestrian Accidents

Pedestrian accidents that occur along the study area may be attributed to several factors: discontinuity of sidewalks, absence of pedestrian refuges and crosswalks, multiple curb cuts/access points, curb ramps in poor condition, and long stretches of road without signalized intersections and crosswalks. The sidewalks in the study area are in poor condition and in various places parallel the roadway with no safety zone between the sidewalk and roadway. The majority of sidewalks are less than five feet and do not comply with the ADA standards.

A long stretch of roadway exists without pedestrian crossings between the signalized intersections. The half-mile stretch of road between Alameda Avenue and 1st Avenue is one example of this. This long stretch of road without signalized crosswalks discourages pedestrians from crossing at signalized intersections thus increasing the probability of accidents between pedestrians and vehicles.

Of the two pedestrian fatalities, one occurred at Alameda Avenue, caused by driver carelessness and the other fatality occurred while a pedestrian was crossing mid-block and was struck by an alcohol-impaired driver. Young children, mothers with strollers, and handicapped pedestrians have been observed crossing mid-block, creating a dangerous condition for motorists and pedestrians.

Bicycle Accidents

Within the three-year period of data collection, five accidents involving bicyclists and vehicles occurred in the study area.

Bicyclists do not have a dedicated on-street bike lane, so many use the existing sidewalks for north/south travel. This leads to pedestrian and bicycle conflicts due to the narrow width of the sidewalks.

Fixed Object Accidents

Accidents with fixed objects, such as light or utility poles, comprised seven percent of the total accidents in the study area. Of this, accidents involving light/utility poles and curbs occurred most often. Narrow lane widths may cause drivers to move closer to the curb to avoid vehicles in the next lane. This may be one of the causes of both the utility pole and curb accidents. *The AASHTO Roadside Design Guide (2002)* recommends 18-inches minimum of clear space between the back of curb and a fixed object. Within the study area, some utility poles are less than one foot from the curb of the road. The CCD prefers having at least three to four feet between the curb and sidewalk for pedestrian and vehicular safety.

Light/utility poles adjacent to roadway

Refer to the *Safety Assessment Report, State Highway 88 (Federal Boulevard)* (*July 2006*) for further information on safety conditions and recommendations in the study area.

Access Management

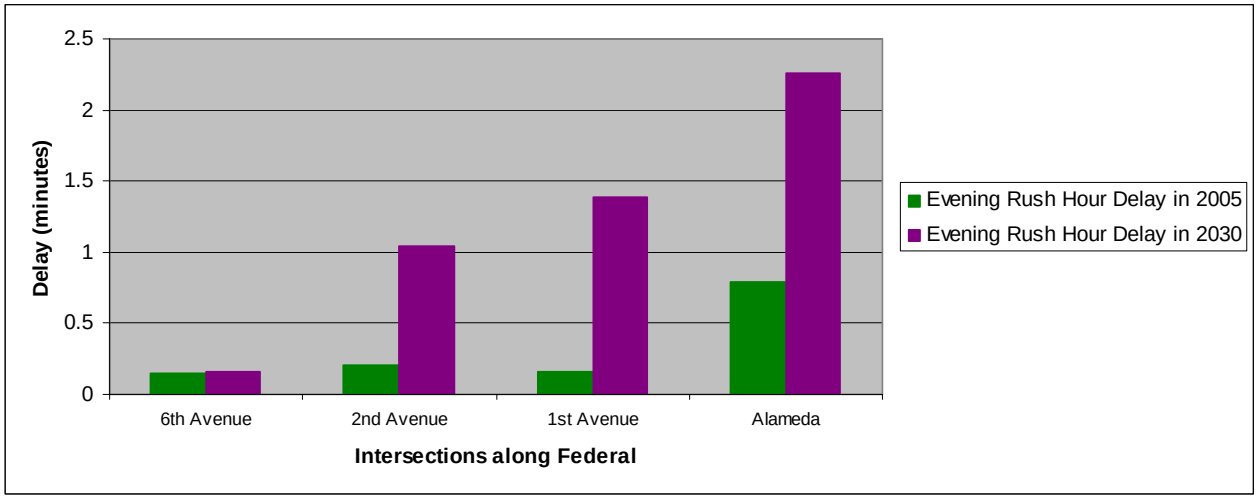
Safety concerns are also attributed to the high number of points of access along Federal Boulevard. These accesses include side streets and numerous driveways to various businesses, residences and parking lots along the corridor. The high number of accesses contributes to inefficient traffic flow and reduced roadway capacity as well as a higher number of rear-ends collisions caused by vehicles slowing down to turn into adjacent businesses along the corridor.

Capacity

Currently, 43,000 vehicles per day use Federal Boulevard between Alameda Avenue and 6th Avenue. By 2030, 60,000 vehicles per day are projected to use the roadway. Assuming the existing roadway configuration, Figure 1-5 shows the anticipated delays in 2030 at signalized intersections and Table 1-1 shows the existing and future average daily traffic for the study area.

The Level of Service (LOS) of a roadway is measured as the amount of delay an average driver experiences at an intersection and is rated from A to F. LOS A represents free-flow movement of traffic and minimal delays to motorists and LOS F generally indicates severely congested conditions with excessive delays to motorists. The delay threshold for LOS A is 0.0 – 10.0 seconds and the delay threshold for LOS F is greater than 80.0 seconds. For more information on LOS and intersection delay, see Section 3.5.2. Along the corridor, the LOS for each intersection in the study area

Figure 1-5
Expected Delay at Signalized Intersections in 2030



Source: Safety Assessment Report, PB, 2006

Table 1-1
Federal Boulevard Existing and Future Average Daily Traffic

Location	Average Daily Traffic Volumes					
	Southbound		Northbound		Total	
	2005 (Existing)	2030 (No Action)[1]	2005 (Existing)	2030 (No Action)[1]	2005 (Existing)	2030 (No Action)[1]
South of 6th Avenue	20,785	29,310	22,170	31,480	42,955	60,790
North of Alameda Avenue	17,900	23,810	19,420	26,220	37,320	50,030

[1] This information is based on demand for use of Federal Boulevard.

Sources: Existing 2005 traffic counts conducted by All Traffic Data, 2005. 2030 future forecasts developed by DRCOG and PB, 2005.

was calculated. Based on the analyses for the existing roadway configuration, the LOS for all intersections worsens in 2030 with the exception of 2nd Avenue (south), Ellsworth Avenue, and Bayaud Avenue (north), which stay the same. Based on the LOS analyses, Federal Boulevard in many areas is currently at capacity. With an increase in traffic volume in the future, this corridor will be over capacity with high travel delays.

Roadway Deficiencies

The lane widths along the corridor vary from nine to ten feet, which is less than AASHTO and CDOT standards (which recommend a minimum of eleven feet) and can contribute to accidents. The current median along the corridor is a painted median that serves as a two-way center turn lane that varies from nine and a half feet to twelve feet wide. A left-turn movement at non-signalized points along the corridor may contribute to an increase in the number of accidents because northbound vehicles turn across three lanes of southbound traffic. This left-turn

movement across three lanes of traffic is not recommended by highway industry guidelines. Also, vehicles turning eastbound or westbound may be in conflict due to sharing the same center turning lane.

There are a number of offset intersections along Federal Boulevard. Offset intersections can create confusion and cause additional turning conflicts by drivers unfamiliar with the area, since the drivers may assume that these roads are continuous across Federal Boulevard. There is a lack of adequate signage to indicate where the roadways are not continuous.

Multi-Modal Connectivity

Multi-modal connectivity is the ability to improve connections with different modes of transportation within a corridor. For this project, modal connectivity is focused on the interaction between the following four modes of transportation:

- Auto
- Public Transportation
- Pedestrian
- Bicycle

Auto

Currently, some of the features of this corridor that affect auto travel and the ability to connect with other modes of transportation include:

- There are three southbound lanes, but only two northbound lanes. The lanes vary from nine to twelve feet wide.
- There are numerous points of access (driveways) directly on Federal Boulevard along the corridor.
- There are many offset T-intersections at cross streets along Federal Boulevard. A T-intersection is one in which a road connects to another road without crossing it. These cross streets have stop signs at their intersections with Federal Boulevard.
- There are three signalized intersections at: Alameda Avenue; 1st Avenue (South); and 2nd Avenue (North).

Traffic volume counts for the study area were collected over a 24-hour period in August 2005. Counts were taken at two locations: just north of Alameda Avenue and just south of 6th Avenue. Based on those traffic counts, traffic volumes in 2030 were calculated over the same 24-hour period. The analysis shows that traffic volumes would increase approximately 30 percent by 2030, which would increase congestion and travel delays. This congestion will negatively affect the ability for auto drivers to connect with other modes of transportation in an efficient manner.

Public Transportation

Federal Boulevard, within RTD's bus system, is a heavily used transit corridor and has been designated as an enhanced transit corridor by *Blueprint Denver* as well as a pedestrian route by the CCD *Pedestrian Master Plan.* Figure 1-6 shows the locations of the bus stops along Federal Boulevard in the study area.

There are three routes that provide bus service along Federal Boulevard within the study area, as described below.

Federal Boulevard is a heavily used transit corridor

Bus Routes

ROUTE #30: South Federal Boulevard

This route is the primary corridor route. It provides all day service between the Wadsworth and Hampden park-n-Ride and Downtown Denver. Route 30 ranks second in terms of boardings per hour (59.4 boardings) and is among RTD's 35 mainline routes that provide access to downtown. It has an RTD on-time performance measurement of 78 percent, which is below the industry standard of 90 percent. On-time is defined as a bus arriving no more than one minute early or five minutes late. This low on-time performance is due, in part, to congestion along Federal Boulevard. At the two existing bus pull-out locations, buses often have a hard time merging back into traffic.

ROUTE #30L: South Federal Boulevard Limited

This route provides both AM and PM peak period service between the Wadsworth and Hampden park-n-Ride and Downtown Denver. This route ranks 17th in terms of boardings per hour (26 boardings) and is among RTD's 35 mainline routes that provides access to downtown. It has an RTD on-time performance measurement of 86 percent, which is below the industry standard of 90 percent.

ROUTE #36L: Fort Logan Limited

This route provides both AM and PM peak period service between the Littleton Station and downtown Denver. It has an RTD on-time performance measurement of 78 percent, which is below the industry standard of 90 percent.

Bus Stops

The associated bus stops for the southbound buses are all curb side stops. Of the six southbound bus stops, three are located immediately south of signalized intersections and three are located mid-block or at non-signalized intersections.

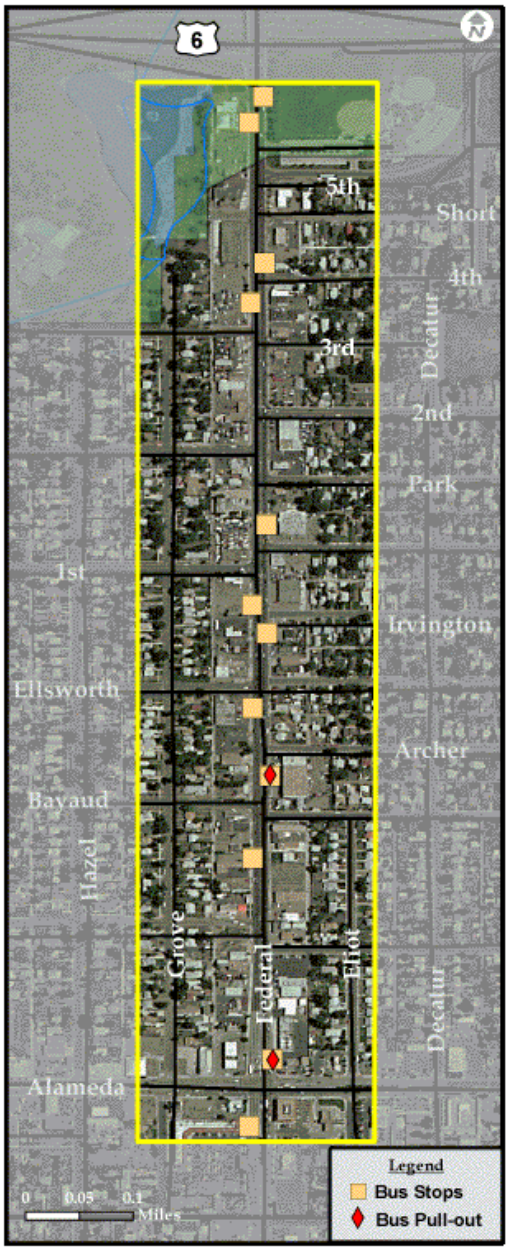
There are also six northbound bus stops. One is located immediately south of a signalized intersection, two are located immediately north of signalized intersections, and three are located mid-block or at unsignalized intersections. Northbound bus stops are primarily curb side stops with the exception of two bus pullouts at:

- Just north of the Federal Boulevard and Alameda Avenue intersection, and
- Between Bayaud Avenue and Archer Avenue.

The bus pullouts are located in front of businesses, in right-of-way owned by CDOT.

Many of the bus stops are located mid-block, which creates a safety issue with pedestrians crossing the street mid-block to access a bus stop. Existing bus stops and pullouts are shown in Figure 1-6.

Figure 1-6
Bus Stops in Study Area



Future Light-Rail Transit

As part of its FasTracks program, RTD is planning to open a new light rail transit (LRT) line, the West Corridor, in 2013. The LRT will cross Federal Boulevard near Holden Place, which is approximately 0.8 mile north of the study area. In order to accommodate the new LRT connection, there may be changes to bus routes in the study area. This may improve travelers' connections to not only the LRT system, but to other bus routes as well.

Pedestrians

Existing sidewalks along Federal Boulevard are located on both sides of the roadway and range from three to five and a half feet. The CCD has several plans that address Federal Boulevard; the *Pedestrian Master Plan* identifies pedestrian routes along Federal Boulevard, *Blueprint Denver* identifies Federal Boulevard as an "Enhanced Transit Corridor", and the *Game Plan* identifies Federal Boulevard as a "Green Street". These two streets are considered important connection streets for pedestrians and transit riders.

In the study area, there are numerous existing curb cuts, curb ramps, and sidewalks that do not meet ADA or local/state standards. This deficiency can make it difficult for people to access the bus stops or local businesses. Although some ramps are in adequate condition, the pavement adjacent to the ramp is in poor condition, thus making it unsuitable for wheelchair access. Additionally, the multiple curb cuts/access points also add to the pedestrian conflict points. There are signalized crosswalks provided at Alameda Avenue, 1st Avenue, and 2nd Avenue.

In addition, there are several community facilities such as houses of worship, schools, a library, and a recreation center located in or near the study area that attract pedestrians. These facilities can cause pedestrians to travel along or cross Federal Boulevard in order to gain access to them. These facilities are described in detail in Section 3.2.2.

Bicycle

There is one CCD on-street bicycle route that uses part of the study corridor. A long term goal of the 1993 *Bicycle Master Plan* is to extend the off-street path to include a grade separated crossing of 6th Avenue and an extension through north Weir Gulch to the Platte River Greenway. The bike routes within the study area are shown in Figure 3-4 along with community facilities.

Due to a lack of signage, it may not be clear to bicyclists where the bike route crosses Federal Boulevard. This can result in bicyclists riding in traffic along Federal Boulevard, which due to narrow lane widths and the high volume of traffic, is not safe for them.

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2.0 ALTERNATIVES CONSIDERED

This chapter describes the development, evaluation, and screening of alternatives for improving Federal Boulevard within the study area. Also described is the No Action Alternative, which was carried through the screening process and detailed environmental evaluation in the EA. Public involvement and outreach conducted during the alternatives development and screening process is also summarized in this chapter.

2.1 Description of Alternatives Development and Screening Process

The alternatives development and screening processes were initiated following scoping meetings beginning in October 2005. Conceptual engineering was completed to a level of design necessary to evaluate each alternative's ability to respond to screening criteria based on the project's goals and objectives. To reinforce the purpose and need, the criteria focused on safety, capacity, roadway deficiencies, and multi-modal connectivity. In addition, minimizing community impacts became an important criterion due to CCD's *Federal Boulevard Corridor Plan*, which recognized the need to minimize impacts to businesses, many of which are minority-owned. This consideration included applying context sensitive solutions, which are solutions to project issues that take into account the specific needs of the community.

2.1.1 Project Goals

Four primary and two secondary goals were developed by the project study team to guide the alternatives development and screening process. The following goals were developed based on the project purpose and need categories, which are shown next to the appropriate goal:

Primary Goals

- Reduce the number of accidents along Federal Boulevard (Safety)
- Reduce delay at intersections and improve traffic flow (Capacity)
- Apply context sensitive solutions to roadway deficiencies while meeting applicable standards (Roadway Deficiencies)
- Improve multi-modal connectivity (Multi-modal Connectivity)

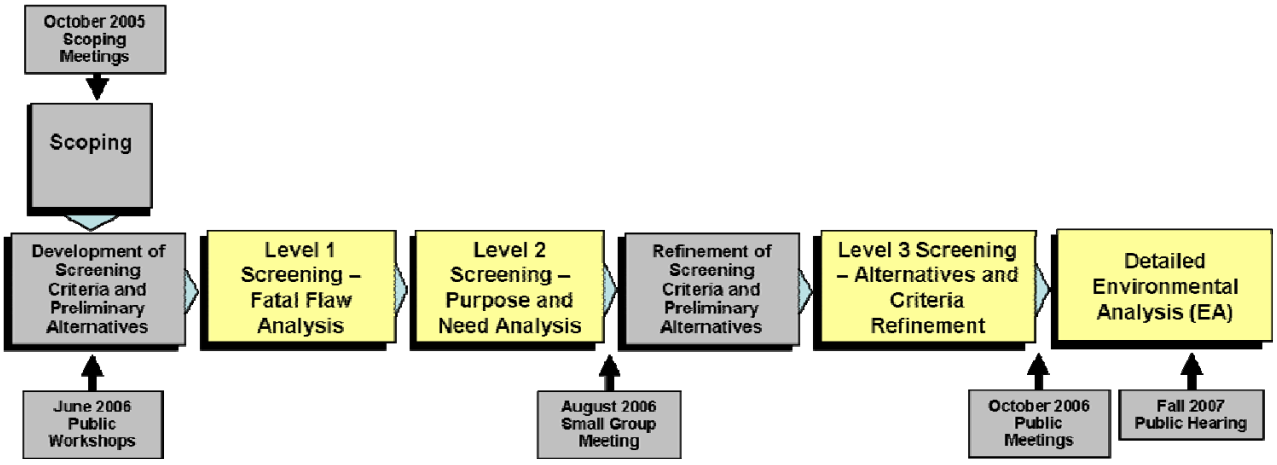
Secondary Goals

- Accommodate desired community features to establish a sense of place within the corridor
- Create a transportation system that is consistent with adopted plans, rules and regulations of the CCD, particularly *Blueprint Denver*, the *Pedestrian Master Plan* and the *Bicycle Master Plan Update.*

2.1.2 Three-Level Evaluation, Screening, and Selection Process

As shown in Table 2-1, a three-level process was used to evaluate alternatives and select the alternative that would undergo detailed environmental analysis. The screening process was comprised of the following levels: Level 1 - Fatal Flaw Analysis, Level 2 - Purpose and Need Analysis, and Level 3 - Alternatives and Criteria Refinement. Based on the evaluation at each screening level and public comments received, alternatives that passed each screening level advanced to the next level.

Figure 2-1
Alternatives Screening Process and
Public Involvement in Screening Process



2.1.3 Public Involvement during the Screening Process

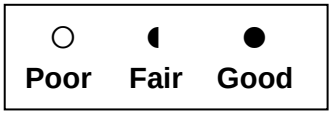
The local community (businesses and residents) participated in the development of screening criteria, the development of preliminary alternatives, and the screening of alternatives as part of the June 2006 Public Workshop, August 2006 Small Group Meeting, and October 2006 Open House. Other opportunities for public involvement included community meetings, workshops, and one-on-one visits with local businesses. Since many of the property owners, business tenants, and residents were Spanish-speaking, bilingual translation and interpreter services were provided to ensure good information exchange.

The Level 1 and Level 2 screening criteria and the initial preliminary alternatives were developed based on agency input (i.e., FHWA, CDOT, and CCD) and feedback received from the October 2005 Scoping Meetings and June 2006 Public Workshops. The agencies also sought public input about the initial findings of the Level 1 and Level 2 screening processes from a representative group of business owners and residents in August 2006. The comments received from this meeting were used to develop Level 3 screening criteria and to help determine the alternatives to evaluate in Level 3. The results of the Level 3 screening were presented at the October 2006 public meetings.

Figure 2-1 shows the public involvement throughout the screening process levels, which are shown in yellow.

2.2 Three-Level Screening Process

Screening criteria and a rating system were developed for each screening level. Ratings were represented by either an open circle, a half circle, or a filled-in circle to indicate the relative achievement of the criterion. The open circle was considered a "poor" score, a half circle a "fair" score, and a filled-in circle a "good" score, as shown below.



2.2.1 Level 1: Fatal Flaw Analysis

Level 1 screening included two criteria that were considered "fatal flaws". "Fatal flaw" normally indicates that an alternative is either technically or logistically infeasible. The fatal flaw criteria were: 1) community impacts, specifically, a high number of potential direct building impacts and 2) capacity, specifically, no improvement to intersection capacity. A high number of direct building impacts was considered a fatal flaw because building impacts are one measure of the potential for loss of business in the study area. Capacity was considered in the fatal flaw analysis because it is a key element of the purpose and need. If any of the preliminary alternatives had one or both of these fatal flaws, it was not advanced to Level 2 screening. See Table 2-1 for a list of the criteria evaluated in Level 1. See Table 2-2 for a description of these criteria.

Table 2-1
Alternatives Screening Levels and Criteria

Criterion	Screening Levels		
	Level 1	Level 2	Level 3
Potential Direct Building Impacts	✓	✓	
Intersection Capacity	✓	✓	✓
Lane Width		✓	✓
Vehicular Safety (Median Type and Width)		✓	✓
Pedestrian Safety (Median Type and Width)		✓	✓
Pedestrian Safety (Sidewalk + Buffer Zone)		✓	✓
Potential For Illegal Mid-block Turning Movements			✓
Corridor Travel Time (Minutes Saved)		✓	✓
Sidewalk Width		✓	✓
Approximate Parking Spaces Impacted			✓
Feasibility of U-turns			✓
Avoids Historic Structure			✓
Potential Property Owners Affected			✓
Potential Businesses and Residences Affected			✓

Source: PB, 2006.

Table 2-2
Screening Criteria Descriptions

Criterion	Description
Potential Direct Building Impacts	Total number of potential direct building impacts.
Intersection Capacity	Capacity analysis measures the average amount of delay a vehicle experiences to clear an intersection. This metric is an average of all signalized intersections in the AM peak hour, which represents the worst condition for northbound vehicles.
Lane Width	Design guidelines indicate that the recommended lane width be at least 11 feet, although 12 feet would be desirable.
Vehicular Safety (Median Type and Width)	A raised median would prohibit left-turns, decrease approach turn accidents and reduce sideswipe accidents for opposite traveling vehicles.
Pedestrian Safety (Median Type and Width)	A raised median provides refuge for pedestrians when crossing the road. The narrower raised median does not provide refuge at intersections due to a left turn lane.
Pedestrian Safety (Sidewalk + Buffer Zone)	A wider separation (either landscaped or hardscaped) between vehicles and pedestrians increases pedestrian safety.
Potential For Illegal Mid-block Turning Movements	Capacity analyses measure the average amount of delay a vehicle experiences to clear an intersection. The total shown is an average of all signalized intersections in the AM peak hour, which represents the worst condition for northbound vehicles.
Corridor Travel Time (Minutes Saved)	The time savings to travel through the corridor is the difference between travel time in 2030 for a PA compared to No Action.
Sidewalk Width	Five feet is the minimum required by the ADA.
Approximate Parking Spaces Impacted	The total number of parking spaces impacted will not be known until later in the design process.
Feasibility of U-turns	Based on the roadway width required to make a u-turn.
Avoids Historic Structure	There is a building in the study area that is eligible for the National Registry of Historic Places that must be avoided if there is a suitable way to do so.
Potential Property Owners Affected	Total number of potential property owners that will be affected.
Potential Businesses and Residences Affected	Total number of potential business and residences owners that will be affected.

Source: PB, 2006.

2.2.2 Level 2: Purpose and Need Analysis

Level 2 screening assessed the preliminary alternatives against the purpose and need criteria of safety, capacity, roadway deficiencies and multi-modal connectivity. During Level 2 screening, the alternatives that scored the lowest overall were not carried into Level 3 screening. See Table 2-1 for a list of the criteria evaluated in Level 2.

2.2.3 Level 3: Refinement of Alternatives

Level 3 screening refined the Level 2 criteria based on public feedback received from the August 2006 Small Group Meeting. Criteria added were: approximate parking spaces impacted, feasibility of U-turns, and avoidance of an eligible historic structure. "Potential Direct Building Impacts" from Level 1 and Level 2 was changed to "Potential Property Owners Affected" and "Potential Businesses and Residences Affected" in order to better characterize the business and social impacts to the corridor. See Table 2-1 for a list of the criteria evaluated in Level 3.

2.2.4 Detailed Environmental Analysis

The No Action Alternative and the Build Alternative carried forward in this EA underwent a detailed environmental analysis and are discussed in Chapter 3 of this EA.

2.3 Description of the Alternatives Considered in the Screening Process

The following sections describe the preliminary alternatives considered, including design modifications made during the development process.

2.3.1 Preliminary Alternatives

The preliminary alternatives (PA) evaluated are represented by typical cross sections (Figure 2-2 through Figure 2-8) reflecting proposed roadway and sidewalk improvements along Federal Boulevard. The term "typical" means that the dimensions shown would be representative of any cross section along the corridor through the study area but could vary slightly. Each PA described below depicts the proposed improvements on the cross-section drawing.

The "pedestrian zone" located on both sides of Federal Boulevard is included in each alternative and consists of a sidewalk plus a buffer zone area. The buffer zone is located between the road and sidewalk and would be used for utility poles, light poles, etc.

No Action Alternative

The No Action Alternative is the "do nothing" alternative. The roadway would remain the same, with three southbound and two northbound lanes, ranging from nine to twelve feet wide. The continuous two-way left turn lane would also remain, along with the narrow sidewalks and curb ramps that do not meet ADA or CDOT standards. However, normal maintenance of the roadway would be performed. The cross section for the No Action Alternative is in Section 2.4.1, Figure 2-11.

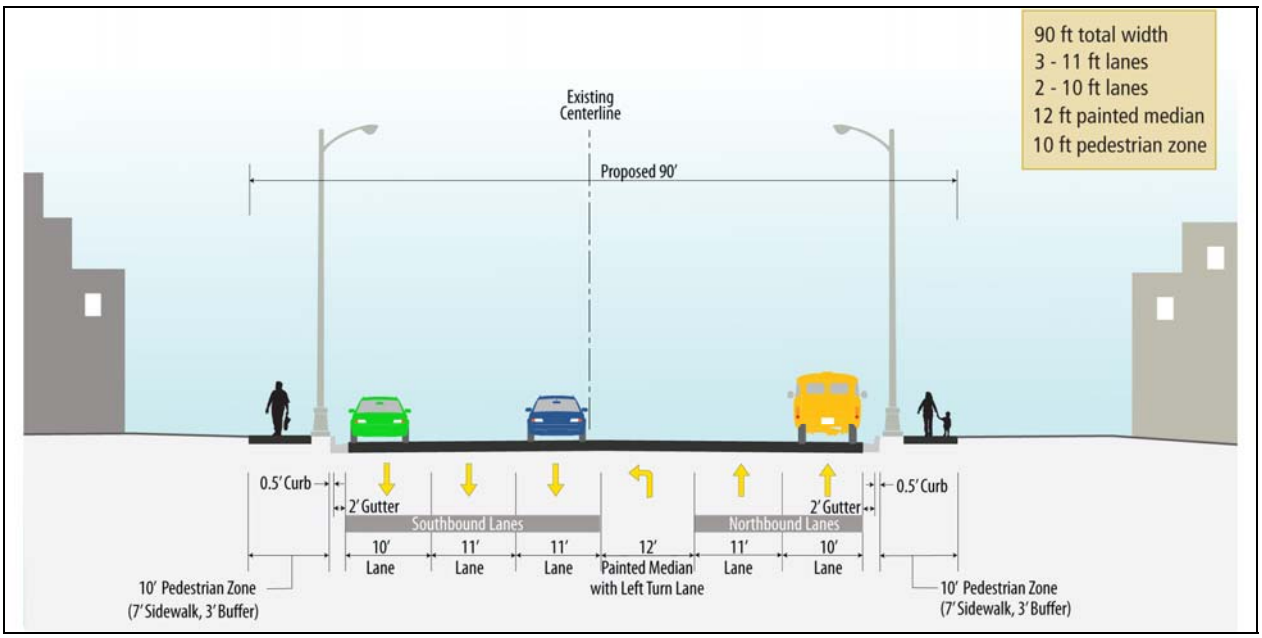
Preliminary Alternative 1 – Traffic Management

PA 1 is the Traffic Management Alternative. In this alternative, the existing lane configuration, which consists of three southbound lanes and two northbound lanes, would not change. PA 1 includes the following traffic management improvements:

- Retiming of signals for better progression through the corridor.
- Re-aligning of the intersection of Bayaud Avenue and Federal Boulevard and the installation of an additional traffic signal.
- Widening existing sidewalks and buffer zones to 10 feet (7-foot sidewalk and 3-foot buffer zone).
- Widening existing lanes to 11 feet, which is the minimum width that would meet standards.

All preliminary alternatives included the retiming of signals and realignment and installation of a traffic signal at Bayaud Avenue. The cross section for PA 1 can be seen in Figure 2-2.

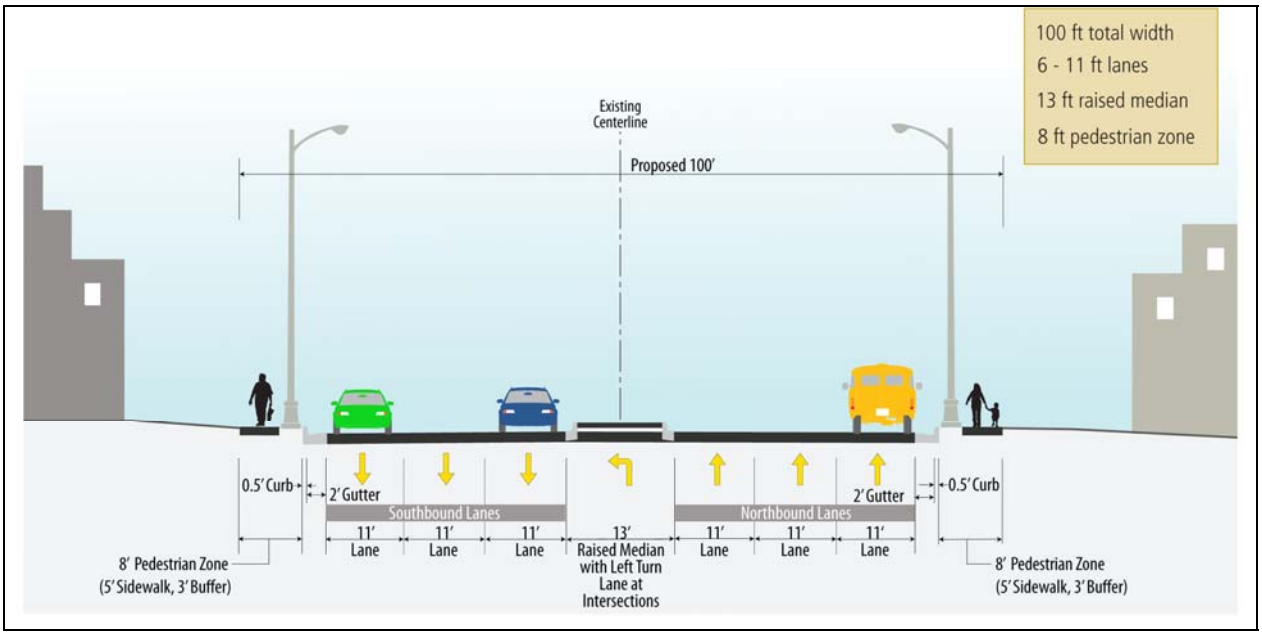
Figure 2-2
Preliminary Alternative 1 – Traffic Management



Preliminary Alternative 2 – Minimum Width with Raised Median

PA 2 was developed to provide a third northbound lane, a 13-foot wide raised median, and 11-foot wide lanes, while keeping the total roadway width at 100 feet. This alternative improved safety with a raised median, while minimizing building impacts. The pedestrian zone in PA 2 is eight feet. The pedestrian zone consists of a five-foot sidewalk, the minimum acceptable by the ADA, and a three-foot buffer zone, the minimum acceptable by CDOT and CCD. The cross section for PA 2 can be seen in Figure 2-3.

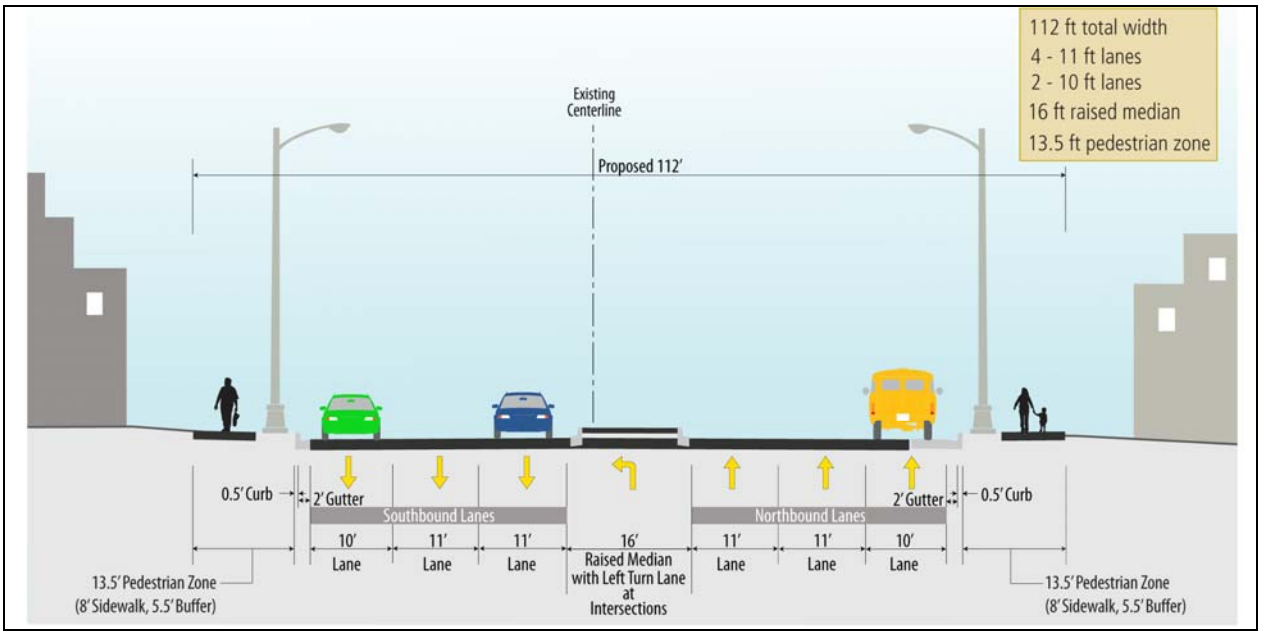
Figure 2-3
Preliminary Alternative 2 – Minimum Width Raised Median



Preliminary Alternative 3 – Ideal Pedestrian Zone

PA 3 was developed to add a third northbound lane, a raised 16-foot wide median, 10-foot and 11-foot wide lanes, and a 13.5-foot wide pedestrian zone on both sides of Federal Boulevard. A wider median would provide refuge for pedestrians while crossing the street and a wider pedestrian zone would provide a buffer between pedestrians and traffic. The total width of the cross section would be 112 feet. The cross section for PA 3 can be seen in Figure 2-4.

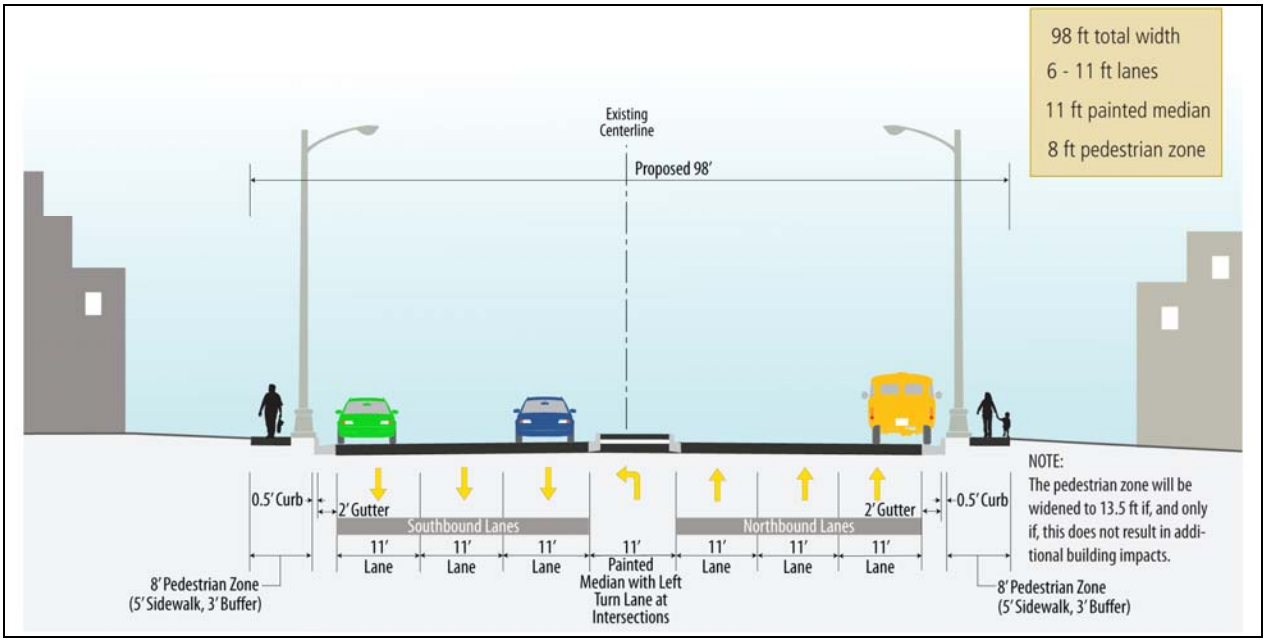
Figure 2-4
Preliminary Alternative 3 – Ideal Pedestrian Zone



Preliminary Alternative 4 – Minimum Width with Painted Median

PA 4 is the narrowest typical section of the preliminary alternatives evaluated that provides a third northbound lane. The total width of PA 4 would be 98 feet. PA 4 has an 11-foot painted median. The painted median would be striped by double yellow lines from the inside northbound and southbound lanes. Left turns across the painted median would be prohibited due to increase safety. The eight-foot pedestrian zone would consist of a five-foot sidewalk, the minimum acceptable by the ADA, and a three-foot buffer zone, the minimum acceptable by CDOT and CCD. The cross section for PA 4 can be seen in Figure 2-5.

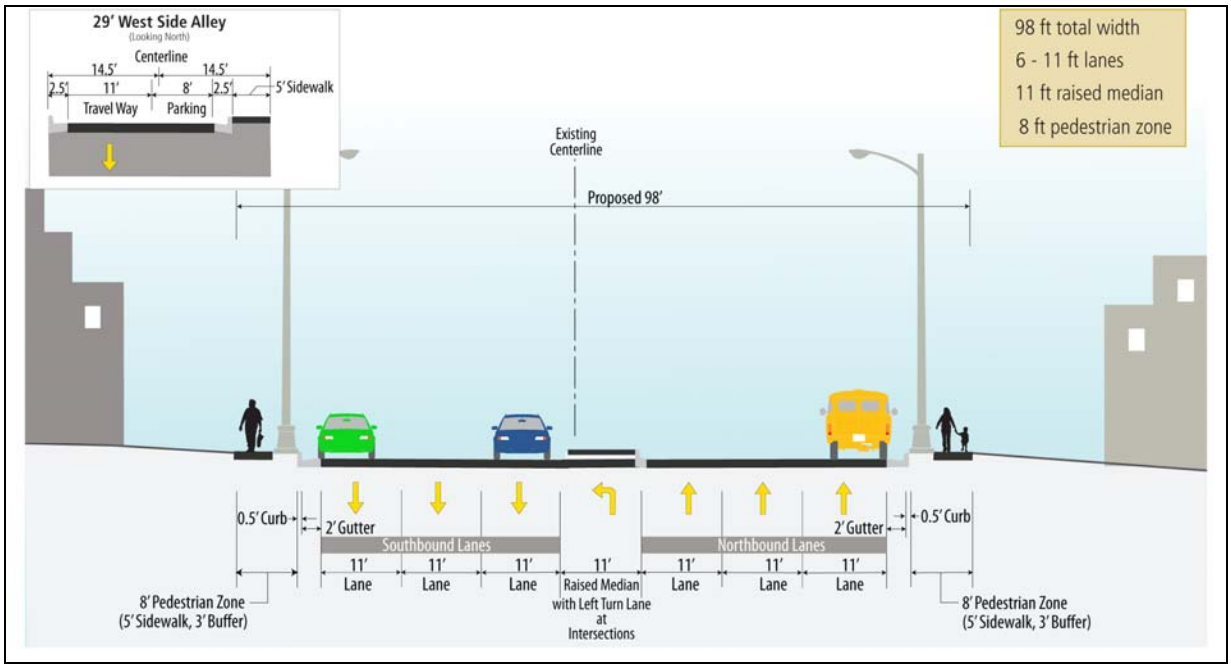
Figure 2-5
Preliminary Alternative 4 – Minimum Width with Painted Median



Preliminary Alternative 5 – West-Side Alley Conversion

PA 5 was developed to provide a third northbound lane while minimizing the number of accesses along Federal Boulevard. To accomplish this, a circulator system was developed using the west side alley parallel to Federal Boulevard. The alley would become a one-way street and would include a sidewalk and parking. It was expected that the number of existing accesses off of the west side of Federal Boulevard could be reduced substantially. Customers of businesses along the east side of Federal Boulevard would enter the business parking lots from the alley. The typical section of Federal Boulevard uses an 11-foot raised median in order to minimize building impacts along the corridor. The total width along Federal Boulevard would be 98 feet. The westside alley width would be 29 feet and the sidewalk would be 5 feet. The cross section for PA 5 can be seen in Figure 2-6.

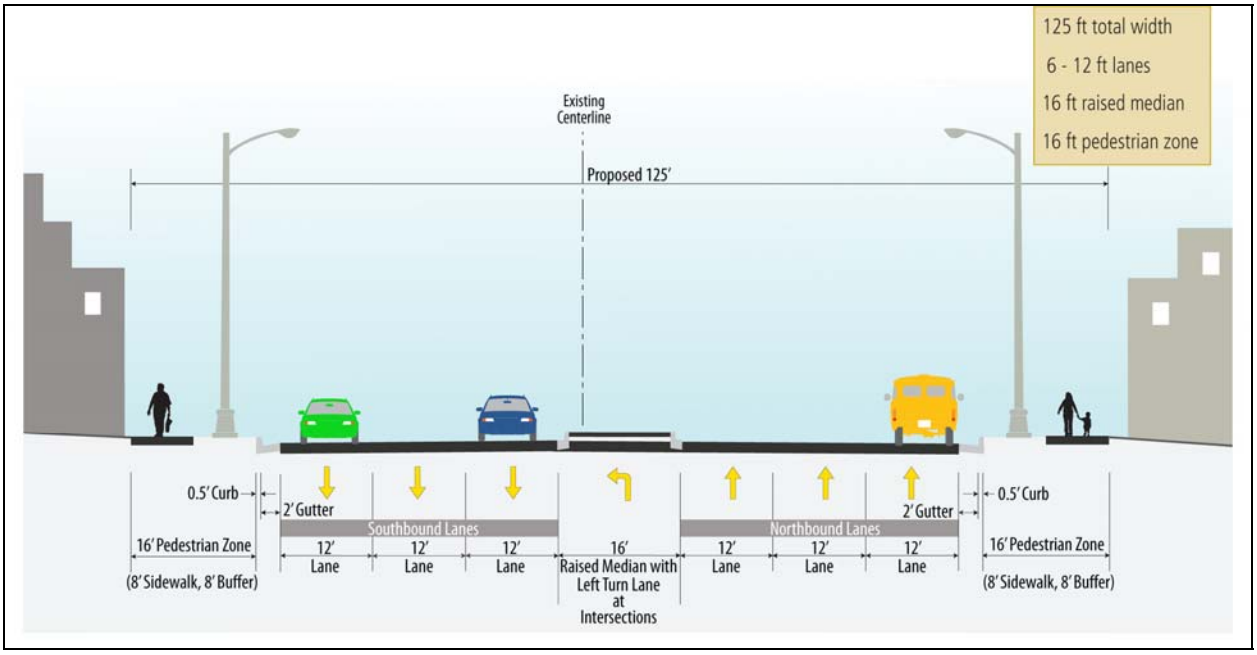
Figure 2-6
Preliminary Alternative 5 – West-Side Alley Conversion



Preliminary Alternative 6 – Ideal Based on Design Standards

AASHTO provides design standards for roadways and streets. The current standards are found in the *Geometric Design of Highways and Streets* (2004). Based on these standards, the desirable lane width for this roadway type would be 12 feet wide. The minimal allowable lane width is 11 feet; anything less than 11 feet would require a design exception. A 16-foot raised median and 16-foot pedestrian zone are also recommended widths. In order to accommodate all of these desirable features, the total cross section width would be 125 feet, the widest of all the PAs evaluated. The cross section for PA 6 can be seen in Figure 2-7.

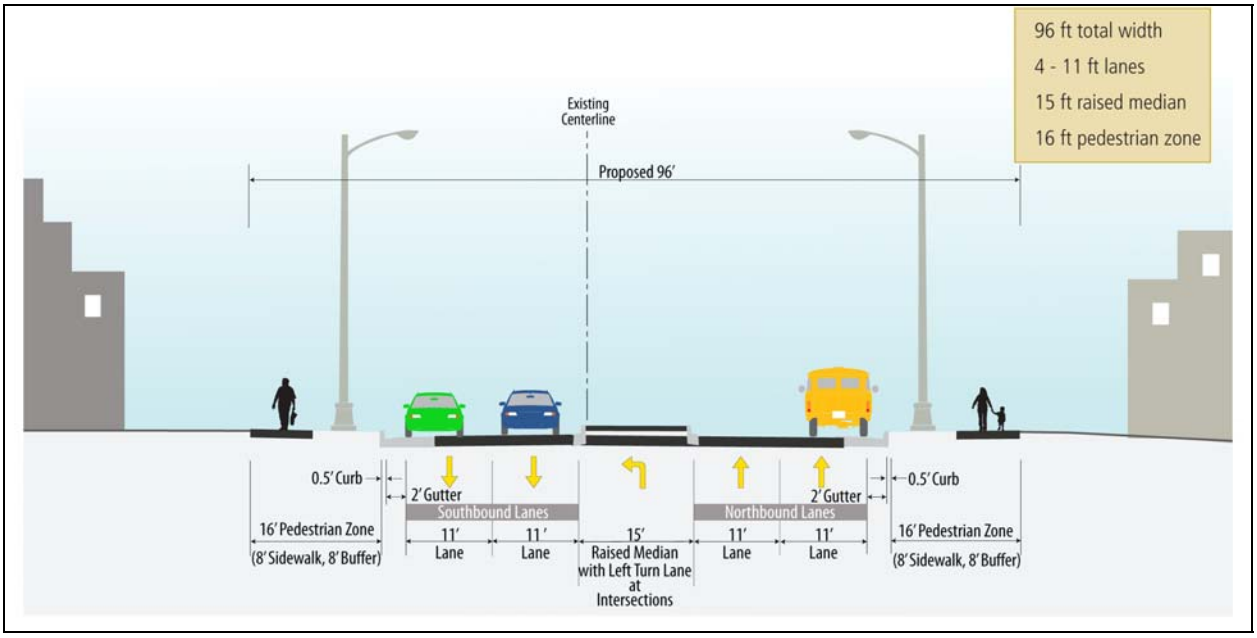
Figure 2-7
Preliminary Alternative 6 – Ideal Based on Design Standards



Preliminary Alternative 7 – 4-Lane Section

In some situations, reducing the number of lanes and providing better geometrics can improve traffic operations. PA 7 was developed in order to test this possibility. Rather than adding a third northbound lane, the third southbound lane was removed and other aspects of the Federal Boulevard typical section were brought closer to or up to desirable geometric standards as described in PA 6. Specifically, lane widths would be maintained at 11 feet each, but the median and pedestrian zones would be widened to 15 feet and 16 feet, respectively. The total cross section width would be 96 feet, the narrowest of all the PAs evaluated. The cross section for PA 7 can be seen in Figure 2-8.

Figure 2-8
Preliminary Alternative 7 – 4-Lane Section



2.3.2 Screening Process Results

The following section summarizes the results of the three-level screening process. Figure 2-9 graphically depicts the screening process and the alternatives that moved forward or were eliminated at each screening level. The No Action Alternative was carried forward in this EA as required by NEPA and served as a baseline for comparing impacts of the Build Alternative.

2.3.3 Level 1: Fatal Flaw Analysis Results

Level 1 screening evaluated the seven preliminary alternatives previously described. An alternative that received an "open" circle (poor rating) during Level 1 screening did not advance to Level 2 screening. PAs 5 and 6 were eliminated from further consideration based on the high number of building impacts that would occur. Although the width of PA 5 was only 96 feet, the widening of the alley would impact residential and business properties that are adjacent to the existing alley. Based on the evaluation of intersection capacity, PA 7 was also eliminated from further consideration because the total traffic delay significantly increased over the existing delay (No Action Alternative). Table 2-3 shows the results from Level 1.

Table 2-3
Level 1 Screening Results

Preliminary Alternative	Fatal Flaw	
	Total Delay (seconds)	Direct Building Impacts
No-Action	188 ◖	0 ●
PA 1	183 ◖	10 ◖
PA 2	126 ●	12 ◖
PA 3	126 ●	14 ◖
PA 4	126 ●	11 ◖
PA 5	126 ●	57 ○
PA 6	121 ●	48 ○
PA 7	222 ○	14 ◖

Source: PB, 2006
[1] Any build alternative receiving "O" as a score for Level 1 was eliminated from further consideration.
[2] This figure does not include partial acquisitions or full acquisitions due to loss of parking.
[3] Shaded alternatives were eliminated from further consideration.

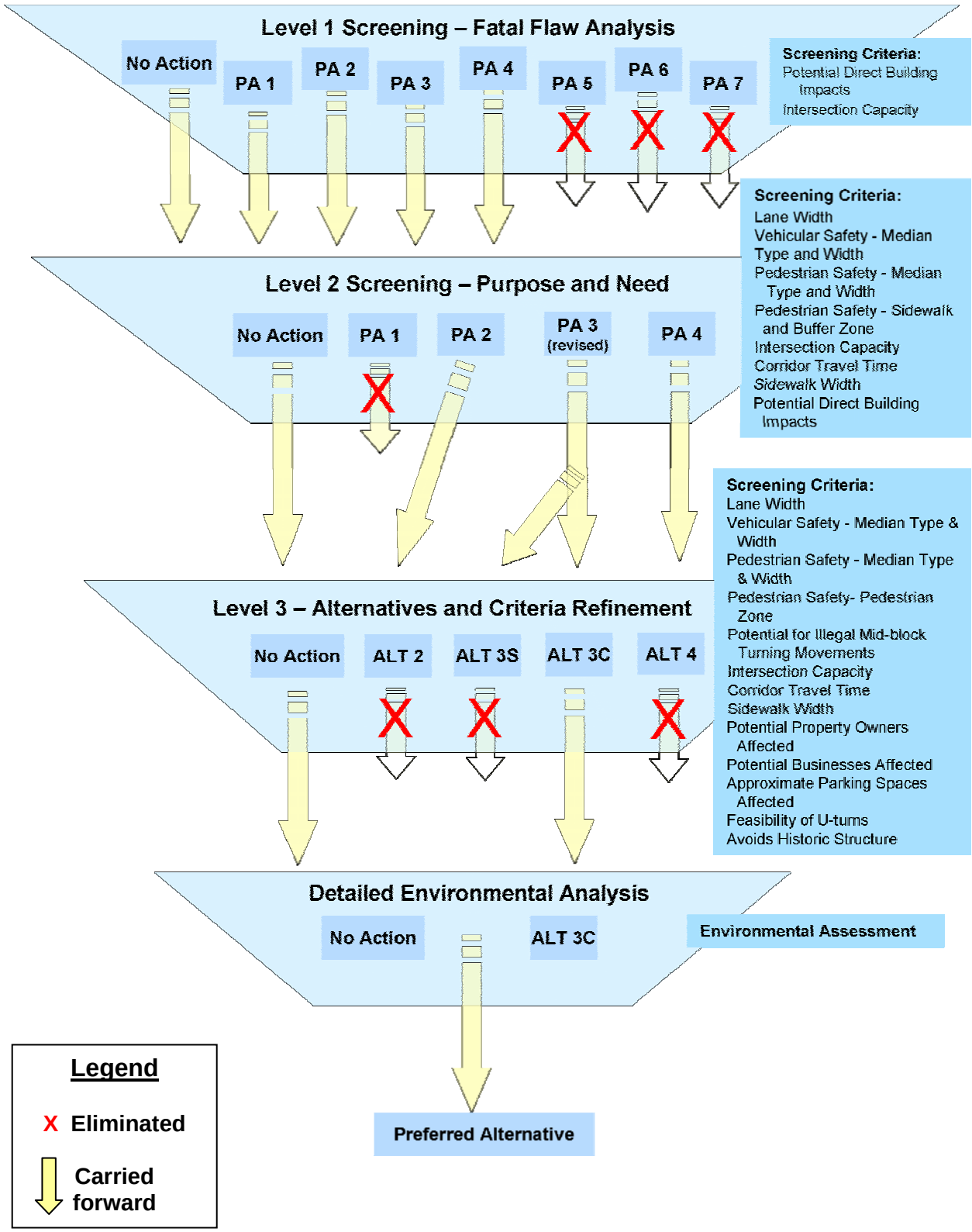
2.3.4 Level 2: Purpose and Need Analysis Results

PAs 1, 2, 3, and 4 and the No Action Alternative were carried forward to Level 2 screening. A preliminary evaluation of these alternatives was presented to a group of residents and business owners on August 24, 2006, at the August Small Group Meeting. The purpose of this meeting was to determine if these alternatives addressed the issues raised by the public at the June 2006 workshops.

Based on the feedback received at the small group meeting and consideration by the study team, the following revisions were made to the preliminary alternatives:

- PA 3 was reduced from an initial total width of 112 feet to 103 feet by reducing the pedestrian zone on both sides of Federal Boulevard from 13.5 feet to 8 feet. This change was based on comments from the public that a 13.5-foot wide pedestrian zone would result in a larger number of property impacts than necessary. However, it was agreed that the pedestrian zone would be widened to

Figure 2-9
Screening Results

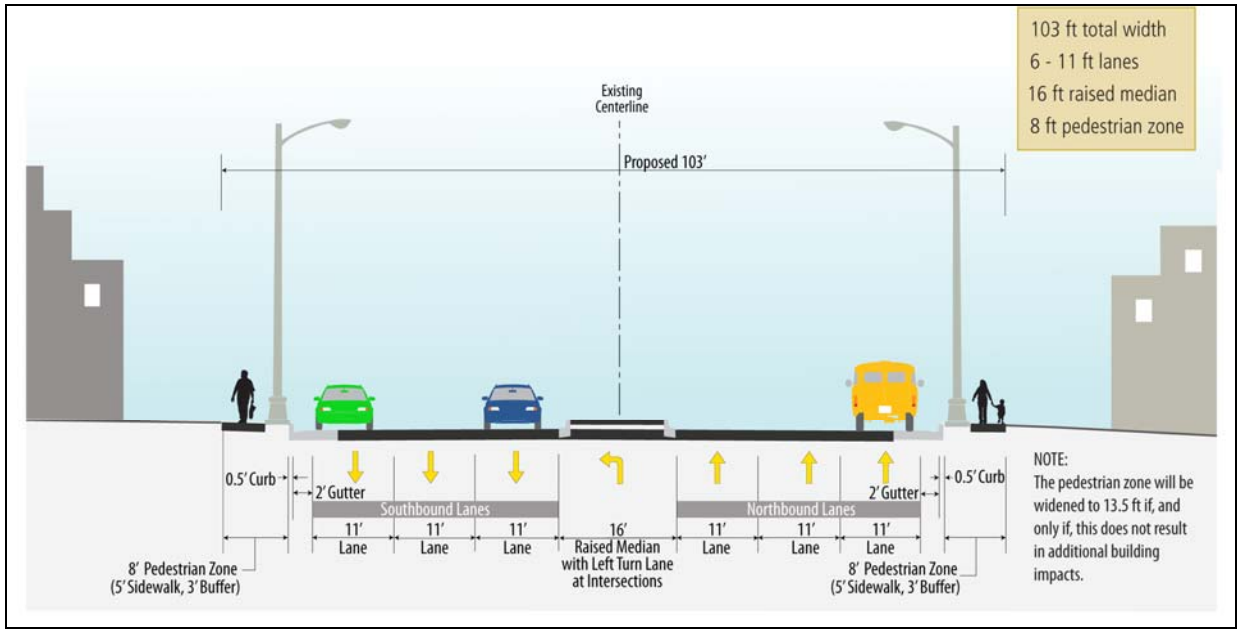


13.5 feet wherever it would not result in additional building impacts. This pedestrian zone differs from the recommendations in *Blueprint Denver* and the *Pedestrian Master Plan*, which call for a 16-foot pedestrian zone. Based on this change, PA 3 is referred to as PA 3 (revised).

- The rating used for the width of the pedestrian zone was also changed. Originally, a 13.5-foot pedestrian zone was rated as "best" (filled-in circle). However, the project team considered the public's input and felt that an 8-foot pedestrian zone was still safe and met CDOT, AASHTO, and ADA standards. A decision by the study team was made to change the rating so that an 8-foot pedestrian zone was rated "best" (filled-in circle).

In addition, in order to have consistent lane widths that meet CDOT and AASHTO standards, the two 10-foot lanes considered in the initial PA 3 were widened to 11 feet. The revised PA 3 is shown in Figure 2-10.

Figure 2-10
Preliminary Alternative 3 (Revised)



Under Level 2 screening, PA 1 received the lowest overall rating and was eliminated from further consideration because it would result in minimal improvements to safety and capacity and would not meet the purpose and need for the project. PAs 2 and 3 (revised) received the best overall rating. PA 4 received a marginal score due to the vehicular and pedestrian safety concerns of a painted median but was retained due to concerns expressed by business owners about potential loss of business due to raised medians and restricted access. Table 2-4 shows the results of the Level 2 Screening.

Table 2-4
Level 2 Screening Results

Level 2 – Purpose and Need Analysis		Preliminary Alternative				
Category	**Criterion**	**No-Action**	**PA 1 Traffic Mgmt.[1]**	**PA 2 Min. Width Raised Median**	**PA 3 (Revised) Ideal Pedestrian Zone[2]**	**PA 4 Min. Width Painted Median[2]**
		Rating	Rating	Rating	Rating	Rating
Safety and Roadway Deficiencies	Lane Width ● ≥ 11' ○ < 11'	○	●	●	●	●
	Vehicular Safety – Median Type and Width ● ≥16' raised ◖ < 16' raised ○ Painted	○	○	◖	●	○
	Pedestrian Safety – Median Type and Width ● ≥16' raised ◖ < 16' raised ○ Painted	○	○	◖	●	○
	Pedestrian Safety – Sidewalk and Buffer Zone ● ≥ 8' ○ < 8'	○	●	●	●	●
Capacity	Intersection Capacity – Total Delay (in seconds) ● 100-150 ◖ 150-200 ○ > 200	◖	◖	●	●	●
	Corridor Travel Time - Minutes Saved ● > 0.5 minutes ○ No time savings /Increase	○	○	●	●	●
Multi-Modal Connectivity	Sidewalk Width ● ≥ 5' ○ < 5'	○	●	●	●	●
Community Impacts	Direct Building Impacts[3] ● < 10 ◖ 10-20 ○ >20	●	◖	◖	◖	◖

Source: PB, 2006

1 The shaded alternative was eliminated from further consideration.

2 The pedestrian zone for all PAs would be constructed to 13.5 ft if no additional impacts to properties would result.

3 This figure does not include partial acquisitions or full acquisitions due to loss of parking or to existing property non-conformance. Building impacts based on best available information at the time.

2.3.5 Level 3: Alternatives and Criteria Refinement Results

At Level 3 screening, all of the remaining alternatives were renamed "Alternatives" in place of "Preliminary Alternatives". Alternatives 2, 3 (revised), and 4 were evaluated during this level of screening.

During the Level 3 screening of Alternative 3 (revised), a variation of this alternative was developed. This variation called "Alternative 3 Curved" incorporated eight slight curves into the road. The addition of these curves was the only difference from Alternative 3 (revised), which was renamed "Alternative 3 Straight". These curves were added to avoid a building located at 314 Federal Boulevard, which is eligible for the National Register of Historic Places (NRHP). These curves were also added to further decrease the number of acquisitions and impacts to other properties. Table 2-5 shows the results of Level 3 screening.

Based on the Level 3 screening, Alternatives 2, 3 Straight, and 4 were eliminated. The alternatives were eliminated based on the high number of property, business, and residential impacts, impact to the eligible historic building, and the infeasibility of allowing U-turns. In addition, Alternative 4 received low scores on vehicular and pedestrian safety and had a high potential for illegal mid-block left turns.

2.4 Alternatives Carried Forward

This section describes the alternatives evaluated in detail within this EA: the No Action Alternative and Alternative 3 Curved.

2.4.1 No Action Alternative

If the proposed project does not occur, no major roadway improvements would be made to Federal Boulevard within the study area other than routine maintenance, which would be handled by CCD under an Intergovernmental Agreement with CDOT. The No Action Alternative serves as the baseline against which the Build Alternative is compared. No additional expenditure of funds over routine maintenance costs is assumed. The No Action Alternative as it relates to the purpose and need categories is discussed below and is depicted in **Figure 2-11**.

Safety

In the No Action Alternative, the three southbound and two northbound lanes would remain, along with the painted two-way center turn lane. The same number of accesses would remain as well as the existing sidewalks and curb ramps, with the potential for minor maintenance to those elements. However, neither the roadway or sidewalks would be widened, which would still provide unsafe conditions for motorists, pedestrians and bicyclists. Sidewalks, curb ramps, and driveway curb cuts would not be brought up to ADA standards. With the increase in traffic that would occur by the year 2030, safety conditions would worsen in the study area due to a higher volume of vehicles, which would lead to a higher probability of accidents.

Table 2-5
Level 3 Screening Results

Level 3 – Alternatives and Criteria Refinement						
		Preliminary Alternative				
Category	**Criterion**	**No-Action**	**PA 2 Min. Width Raised Median[1,2]**	**PA 3 - Straight Ideal Pedestrian Zone[1,2]**	**PA 3 - Curved Ideal Pedestrian Zone[2]**	**PA 4 Min. Width Painted Median[1,2]**
		Rating	Rating	Rating	Rating	Rating
Safety and Roadway Deficiencies	Lane Width ● ≥ 11' ○ < 11'	○	●	●	●	●
	Vehicular Safety – Median Type and Width ● ≥16' raised ◖ < 16' raised ○ Painted	○	◖	●	●	○
	Pedestrian Safety – Median Type and Width ● ≥16' raised ◖ < 16' raised ○ Painted	○	◖	●	●	○
	Pedestrian Safety – Sidewalk and Amenity Zone ● ≥ 8' ○ < 8'	○	●	●	●	●
	Potential for Illegal Mid-block Turning Movements ● Low ○ High	○	●	●	●	○
Capacity	Intersection Capacity – Total Delay (in seconds) ● 100-150 ◖ 150-200 ○ > 200	◖	●	●	●	●
	Corridor Travel Time - Minutes Saved ● > 0.5 minutes savings ○ No time /Increase	○	●	●	●	●
Multi-Modal Connectivity	Sidewalk Width ● ≥ 5' ○ < 5'	○	●	●	●	●
Community Impacts	Potential Property Owners Affected ● < 10 ◖ 10-20 ○ >20	●	◖	◖	●	◖
	Potential Businesses and Residences Affected[3] ● < 10 ◖ 10-20 ○ >20	●	○	○	◖	○
	Approximate Parking Spaces Impacted ● 0-25 ◖ 26-60 ○ >60	●	◖	◖	○	◖
	Feasibility of U-Turns ● Feasible ○ Not Feasible	○	○	○	●	○
	Avoids Historic Structure ● Yes ○ No	●	○	○	●	○

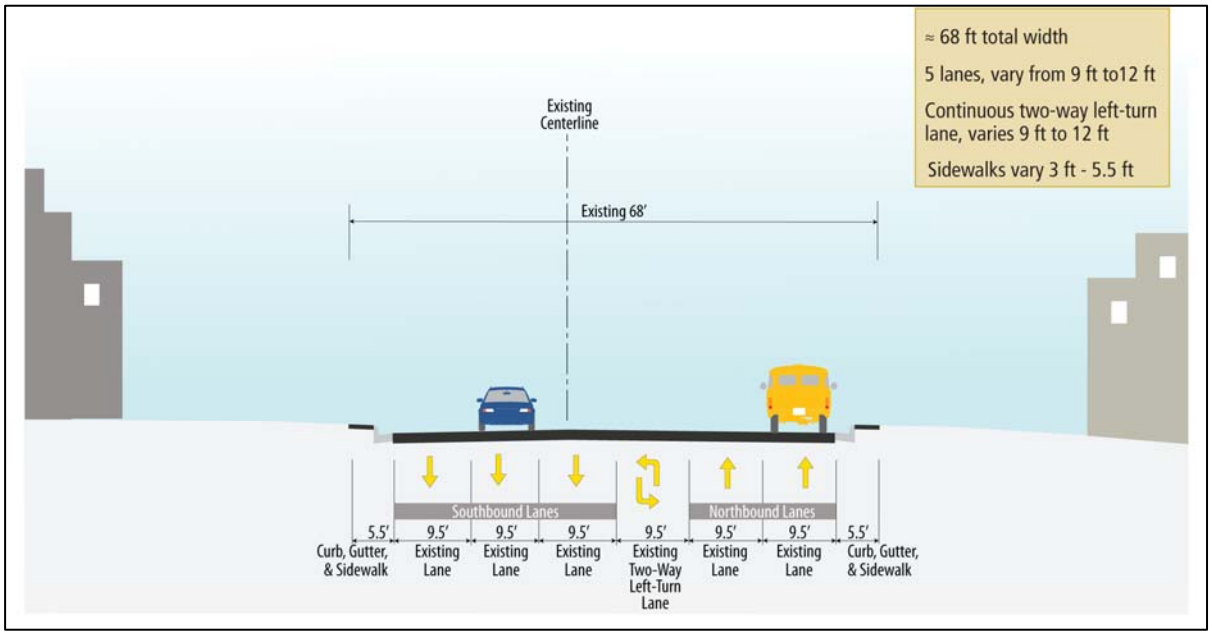
Source: PB, 2006

[1] Shaded alternatives were eliminated from further consideration.

[2] The pedestrian zone for all PAs would be constructed to 13.5 ft if no additional impacts to properties would result.

[3] This figure does not include partial acquisitions or full acquisitions due to loss of parking or to existing property non-conformance. Business impacts based on best available information at the time. Therefore, the actual number could be greater as a result of final design.

Figure 2-11
No Action Alternative



Capacity

Since the existing geometry of the roadway would remain the same, the capacity of the roadway would decrease over time due to an increase in vehicular traffic. Overall, the intersection capacities throughout the corridor would worsen by the year 2030 and in some cases, intersections would have drastic reductions in capacity. Further traffic analyses can be found in Section 3.5.2.

Roadway Deficiencies

The following roadway deficiencies that were discussed in Chapter 1 would remain under the No Action Alternative:

- Narrow lane widths
- Painted two-way center turn lane
- Offset intersections
- Numerous accesses along Federal Boulevard

Multi-Modal Connectivity

Following is a description of how the No Action Alternative would affect the four modes of transportation: auto, public transportation, pedestrian, and bicycle.

Auto

The conditions that negatively affect the ability for motorists to connect with other modes of transportation would remain under the No Action Alternative. No major improvements would be made to the roadway, namely:

- A third northbound lane would not be added.
- Existing lane widths would not comply with AASHTO and CDOT standards for the type of roadway.
- Numerous points of access (driveways) directly on Federal Boulevard along the corridor would remain.
- The many offset T-intersections at cross streets along Federal Boulevard would remain. A T-intersection is one in which a road connects to another road without crossing it. These cross streets have stop signs at their intersections with Federal Boulevard.

Public Transportation

Buses would still experience delays due to the high volume of autos on the roadway. The on-time performance of the bus routes in the corridor would be expected to worsen, due to congestion and only two northbound lanes.

In addition, bus stops would likely remain where they are now, including the mid-block stops. With an increase in traffic in the future, the likelihood of pedestrian accidents from crossing mid-block to access these bus stops would increase.

Pedestrian

Pedestrian amenities such as sidewalks and curb ramps would remain narrow and in poor condition. The sidewalks and curb ramps would not be upgraded to meet ADA and CDOT standards. The long distance between the stoplights at Alameda Avenue and 1st Avenue would remain. This would hinder pedestrians' ability to access other modes of transportation safely and effectively.

Bicycle

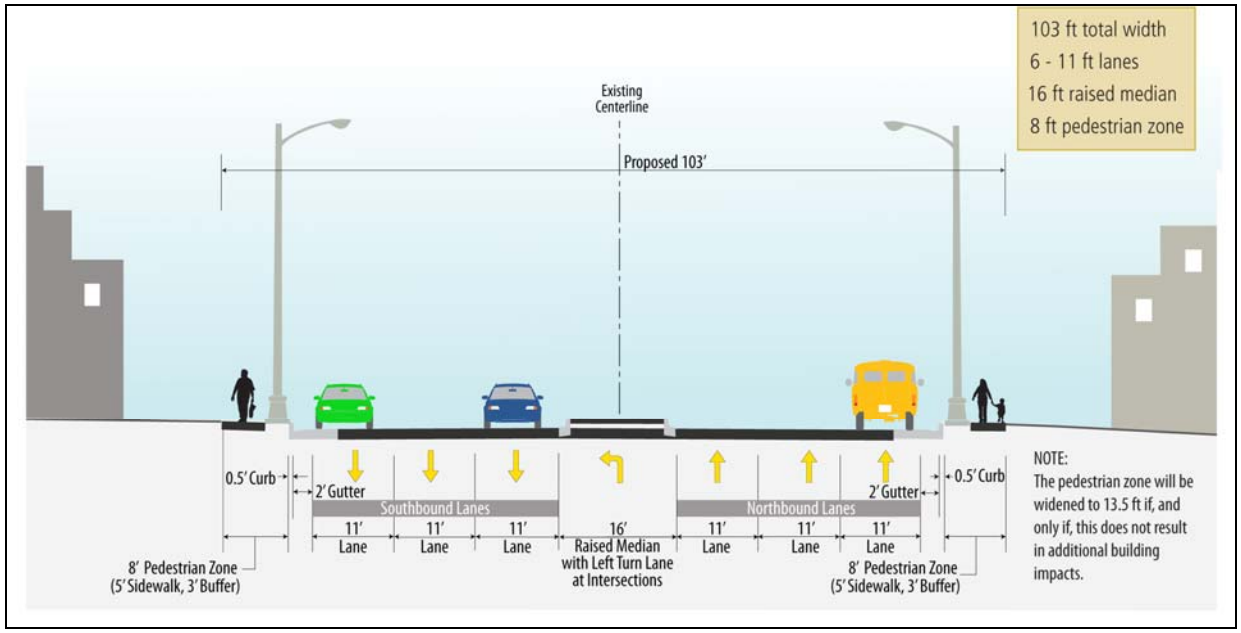
The bicycle route that bisects the study area, D-14, would remain the same. There would likely be no upgrading of route signage. This would continue to cause confusion among bicyclists about the location of the route and would not alert motorists of bicyclists' presence.

2.4.2 Build Alternative

Alternative 3 Curved was identified as the Build Alternative that best meets the project's purpose and need, the study goals, objectives and screening criteria for the project, and is most consistent with previous planning studies. The improvements would extend from Alameda Avenue to 5th Avenue, a distance of approximately 0.84 mile. Alternative 3 Curved includes eight slight curves in the roadway alignment, which would minimize impacts to building frontages and would avoid impacts to a

building on the east side of Federal Boulevard that is eligible for listing in the NRHP. The design speed for the study would be 40 miles per hour. The typical section for Alternative 3 Curved is shown in Figure 2-12. See Appendix A for plan drawings of Alternative 3 Curved. The major elements of the Build Alternative are described below.

Figure 2-12
Alternative 3 Curved – Build Alternative



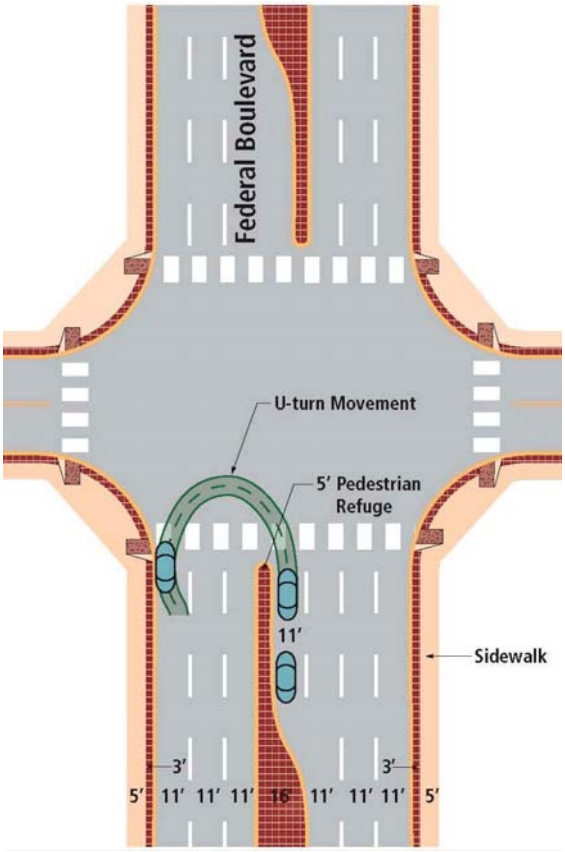
Safety Improvements

Raised Median - A 16-foot raised median would replace the continuous painted two-way center turn lane. Left-turns would be allowed at three existing signalized intersections: (1st Avenue (South), 2nd Avenue (North), and Bayaud Avenue) and at four unsignalized intersections (Cedar Avenue, Ellsworth Avenue (North), 3rd Avenue (North), and 3rd Avenue (South)). The raised median would prevent vehicles from making left-turns across three lanes of traffic, except at intersections with stoplights and at designated left-turn intersections. The median would serve as a barrier between opposing lanes of traffic, thus eliminating several accident types from occurring mid-block for vehicles on Federal Boulevard such as head-on collisions, approach turns and broadside accidents. A raised median would also serve as a buffer between the opposing through traffic and the left-turning vehicles in the storage lane.

The raised median is proposed to be 16 feet wide due to the following reasons:

- A 16-foot wide median would allow U-turns at designated intersections, as shown in the figure to the right. This width represents the minimum AASHTO width to allow U-turns for an average passenger vehicle with three lanes of traffic.
- A 16-foot median is consistent with the CDOT Highway Access Code's recommendation for median type that includes a 12-foot turn lane and 4-foot separator.
- A 16-foot median also provides a 5-foot pedestrian refuge. Pedestrians crossing Federal Boulevard at a crosswalk location who may not be able to walk across in one-cycle length may stop at this refuge.
- A 16-foot median also provides left-turn storage.

16- foot raised median allows U-turns



<u>Bicycle and Pedestrian Improvements</u>
Under Alternative 3 Curved, sidewalks would be widened to or maintained at five feet in both directions along Federal Boulevard. A three-foot hardscape buffer would be added between the sidewalk and roadway to protect pedestrians. This buffer is shown as a “buffer zone” on the Alternative 3 Curved cross-section. The sidewalk and buffer zone together would create an eight-foot wide pedestrian zone. The sidewalks, curb ramps, and driveway curb cuts would be improved to meet ADA standards. ADA standards require at least a five-foot sidewalk. Directional sidewalk ramps and appropriate signage would be installed, especially where pedestrian movement across Federal Boulevard is prohibited. Fixed objects would be relocated to a minimum of 1.5 feet from the back of curb as recommended by AASHTO, or 3-4 feet away from back of curb as preferred by CCD, or at some standard distance agreed to by CCD and CDOT. The pedestrian zone would be widened up to 13.5 feet if it does not result in additional building impacts.

The addition of a raised median would provide a pedestrian and bicyclist refuge at designated crosswalks. Several options for crosswalks will be examined during final design, including patterned or colored concrete or striping conforming to CDOT standards. Pedestrian crosswalks would be added at all signalized intersections. Many children currently cross Federal Boulevard to access schools. The addition of a raised median, crosswalks, and improved sidewalks would improve the safety conditions for these children.

To address bicycle safety, route signage would be added at the D-14 bike route that crosses at 1st Avenue and travels along Federal Boulevard to Irvington Place. This signage would alert motorists of bicycle activity in the area, and would provide clear direction to bicyclists crossing the corridor. During final design, the CCD may consider possible relocation of the bike route within the study corridor.

Access Management - Access Management involves providing access to property, reducing the number of traffic conflict points and improving the flow of traffic on the roadway. The following strategies may be considered during final design to manage access from side streets:

- Provide access to properties from side streets to remove access off of Federal Boulevard.
- Encourage property owners to share access with adjacent properties and/or provide cross access driveways for several adjoining businesses. This measure would require the implementation of shared-use agreements between adjoining landowners.
- Provide adequate internal circulation within the property.
- Provide adequate room for turning vehicles, including delivery trucks.
- Combine or remove access when a property owner has more than one access and bring the access up to standards.

Discussions with property owner(s) would occur prior to any proposed access modification. For additional information on access issues and recommendations, please see the *Access Control Study*, completed in May 2007, for this project.

Other Safety Improvements - The following safety improvements would be evaluated during final design of Alternative 3 Curved:

- Conduct a signal warrant analysis for Bayaud Avenue.
- Increase curb radii to current standards.
- Analyze and address drainage and skid resistance of the roadway surface.
- Install appropriate pavement markings, signing and delineation.
- Upgrade signing and mailbox support to current standards.
- Upgrade signage to current retro-reflectivity standards.
- Correct the roadway crown where appropriate.
- Improve lighting, including the location of streetlights.
- Since CCD maintains the signal systems, they will be consulted for signal system upgrades, such as signal heads being upgraded to Light Emitting Diode (LED).

Capacity Improvements

The Build Alternative would add one northbound lane (for a total of three northbound and three southbound lanes) to improve capacity along the roadway. All of the lanes

would be widened to 11 feet to meet minimum AASHTO and CDOT standards. The total width of the roadway cross-section (including the pedestrian zone) would be widened from 68 feet to 103 feet. In addition, compared to the No Action Alternative, which would have an average total intersection delay of 187.6 seconds, the Build Alternative would have an average total intersection delay of 126.4 seconds. This would result in an overall improvement of the capacity of the roadway for vehicles.

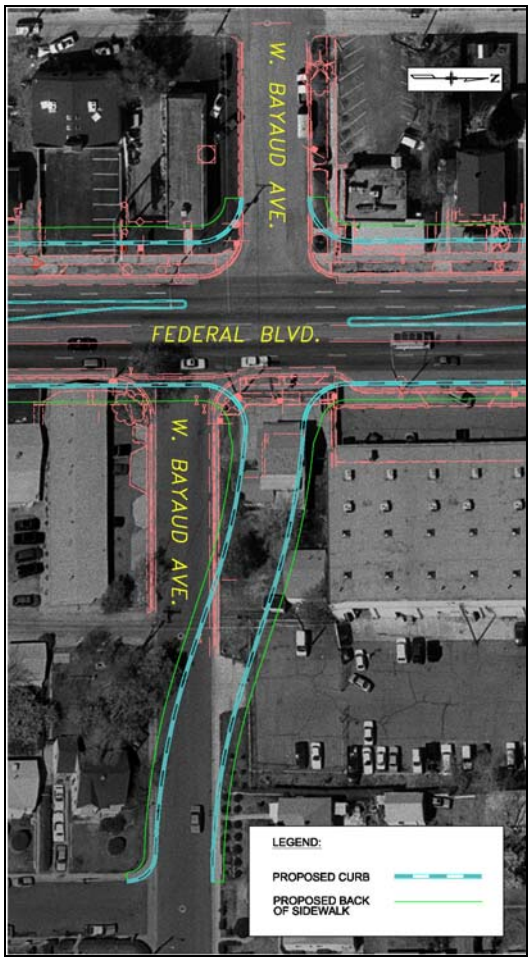
Roadway Deficiencies

The following improvements are proposed to correct geometric deficiencies:

- Roadway lane widths would be a standard 11 feet wide.
- Sidewalk would be continuous and provided on both sides of Federal Boulevard.
- Ramps, sidewalks, and driveway curb cuts would be upgraded to meet ADA requirements.
- The design speed for the roadway would be 40 miles per hour.

Bayaud Avenue Realignment - Bayaud Avenue is an east-west roadway that intersects at Federal Boulevard. It represents one of five intersecting roadways that are offset at Federal Boulevard. Ideally, Bayaud Avenue on the east side of Federal Boulevard would be shifted approximately 54 feet north to align with Bayaud Avenue west of Federal Boulevard. Various factors that will be evaluated during final design would determine the nature of changes proposed for this intersection. The proposed realignment detail of Bayaud Avenue is shown in blue in Figure 2-13.

Figure 2-13
Proposed Bayaud Realignment



If warranted, a traffic signal would also be added at the intersection to allow protected turning movements into and out of the neighborhoods east and west of Federal Boulevard. The addition of a stop light and turning lane at Bayaud Avenue would provide the only signalized turning movement between Alameda and 1st Avenue. Bayaud Avenue is the only intersection in the study area where a signal would be added if warranted. All other existing signals would remain at their current locations.

The realignment of Bayaud Avenue would improve vehicular and pedestrian

connectivity across Federal Boulevard. The CCD has recently installed interconnect cable to integrate the traffic signals along the Federal Boulevard corridor. The addition of a new signal would easily tie into this existing system.

If signalization is not warranted, several design options would be evaluated during final design, including the following:

- If the intersection is not realigned, traffic movements would be restricted by the center median. Specifically, through movements would not be allowed (right-in, right-out only).
- If the intersection is realigned, 3/4 turning movements would be allowed.

Multi-Modal Connectivity

Auto

With the addition of a third northbound lane, the capacity of the roadway would increase compared to the No Action Alternative. This would allow motorists to more easily connect with other modes of transportation, including buses and the future LRT station near Holden Place and Federal Boulevard. The proposed reduction in accesses and the realignment and potential addition of a traffic signal at Bayaud Avenue would also allow motorists safer and more efficient travel in the corridor.

Public Transportation

Buses would continue to stop at curbside. However, for northbound traffic, the added capacity of a third northbound lane would reduce traffic disruptions and delays due to buses stopping in traffic.

Bus stops are proposed at or near signalized intersections so that passengers can use nearby crosswalks. Because of this, two bus stops (one in each direction) are proposed to be eliminated. A few of the bus stops would be relocated, combined, or eliminated along the corridor. Where possible, bus stops would be located on the far-side of the intersection. This would improve passenger safety during boardings and deboardings, including walking to their destination. CCD's Transit Amenity Program would be followed to provide bus shelters at bus stop locations along the corridor.

Bus stop improvements would include the following:

- The southbound stop at 3rd Avenue and the northbound stop at 4th Avenue would both be moved further south, closer to 2nd Avenue.
- Stops would be eliminated from northbound and southbound at Ellsworth Avenue and Federal Boulevard.

RTD monitors transit use and if necessary, bus stops may be relocated or added, depending on need.

Pedestrian

The ability for pedestrians to safely and efficiently access bus stops or other modes of transportation would be improved. This is due to the widened sidewalks and curb ramps that would meet ADA and CDOT standards. Pedestrians would also have a refuge at intersections that would be provided by the raised median. However, the raised median would not be ramped and would therefore not be compliant with ADA standards. With the addition of the potential stoplight at Bayaud Avenue, pedestrians may have another signalized intersection at which to cross Federal Boulevard to access bus stops.

Bicycle

The addition of route signage for bike route D-14 would provide clear direction to bicyclists along the corridor. This would allow bicyclists to efficiently access other modes of transportation in or near the corridor.

Water Quality Improvements

In order to minimize water quality impacts due to construction and general storm events, Extended Detention Basins would be located at two locations along Federal Boulevard:

- The intersection of Federal Boulevard and 1st Avenue (northeast corner)
- The intersection of Federal Boulevard and 2nd Avenue (west of the intersection)

2.4.3 Construction Cost

The cost of the Build Alternative would range from approximately $29,000,000 to $32,000,000 depending on right-of-way acquisitions, construction materials, and pavement selection. Table 2-6 presents the range of the probable costs for the project. The costs vary depending on whether existing roadway materials are reused or if a new roadway is constructed, using either asphalt or concrete.

Table 2-6
Opinion of Probable Costs ($ 2006) for Build Alternative

Description	Material		
	Re-Use	Asphalt (New)	Concrete (New)
Design	$1,600,000	$1,600,000	$1,600,000
Construction (Assumes a 20 percent contingency)	9,200,000	11,300,000	12,600,000
Right-of-Way (Assumes a 15 percent contingency)	18,200,000	18,200,000	18,200,000
Total	$29,000,000	$31,100,000	$32,400,000

Source: CDOT, 2006.

The cost of the No Action Alternative is estimated at $3 million every seven years for general maintenance (rotomill pavement, reconstruction of ADA ramps, etc.)

2.4.4 Project Funding

The available funding sources for design, right-of-way, and construction would be a combination of city, state, and federal funds. The governmental entities that would be involved in funding the project are FHWA, CDOT and CCD. Currently, a total of $13.827 million has been identified to fund the project. This funding was allocated for the fiscal years 2003 through 2007. Partial funding is provided under the Denver Regional Council of Governments' Transportation Improvement Program, number 01-169 and the Statewide Transportation Improvement Program, number DR5073. In addition, CCD's Infrastructure Priorities Task Force has identified the portion of Federal Boulevard being studied in this EA as a potential project worthwhile of additional future funding. This would leave a shortfall of $18,573,000 in funds that would need to be identified and committed to complete the project. CDOT and CCD are actively pursuing additional funding sources.

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3.0 AFFECTED ENVIRONMENT, ENVIRONMENTAL CONSEQUENCES, AND MITIGATION MEASURES

This chapter summarizes the evaluation of existing conditions of the study area that includes the study of land use, socioeconomics, noise and vibration, air quality, biological resources, and hazardous materials, among others. Following the description of each resource, the potential impacts of the No Action Alternative and Build Alternative (Alternative 3 Curved) are described. Measures to avoid, minimize, or mitigate the impacts to environmental resources are then described.

Neighborhood History

Federal Boulevard through the study area serves as the boundary of two neighborhoods - Barnum to the west and Valverde to the east. Neighborhoods located north of the study area include Sun Valley (east of Federal Boulevard) and Villa Park (west of Federal Boulevard). The Westwood and Athmar Park neighborhoods are located southwest and southeast of the study area, respectively. These neighborhoods are shown in Figure 3-1.

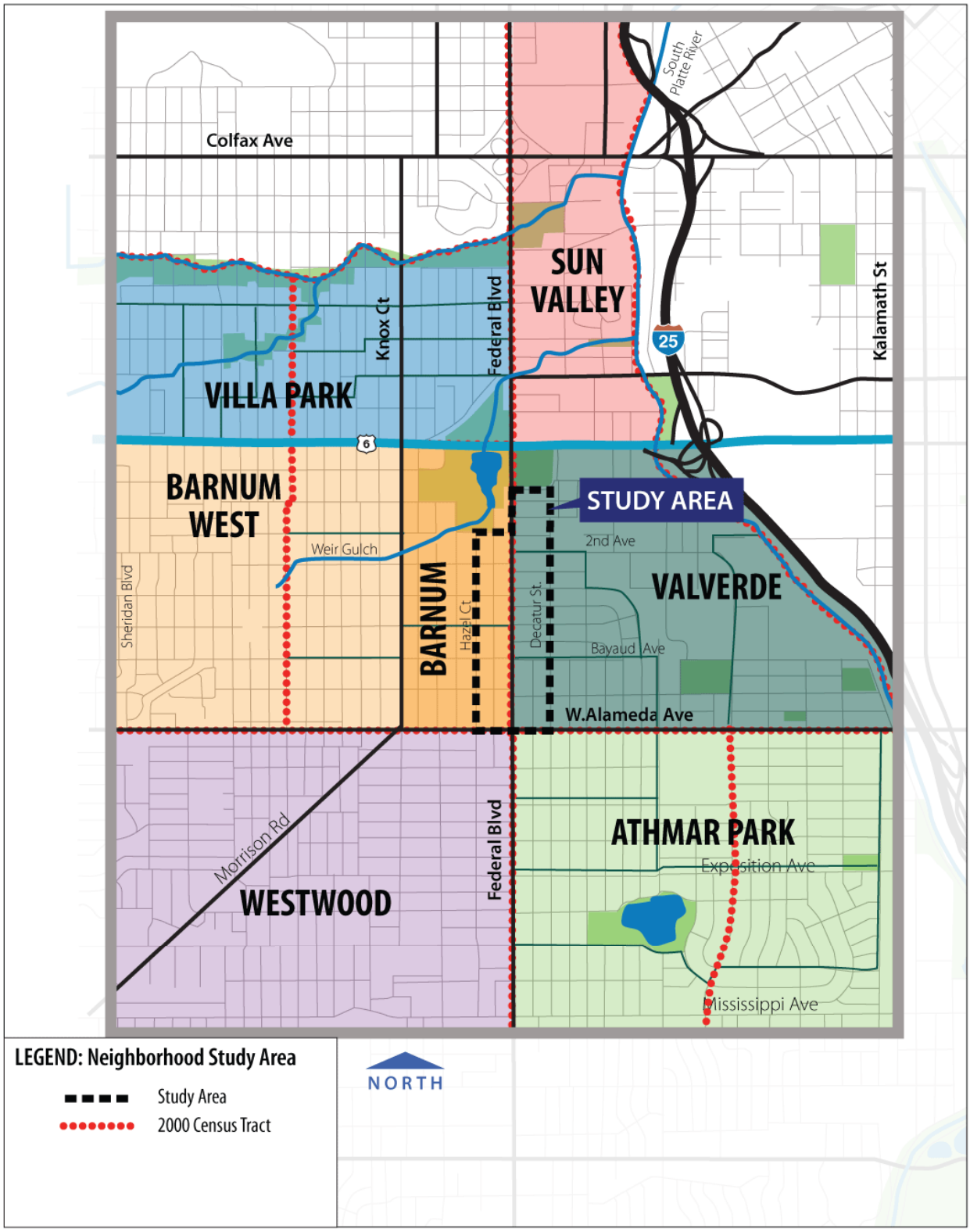
The neighborhoods adjacent to Federal Boulevard have a history dating back to the late 1800s. Barnum and Barnum West were annexed into the CCD in September 1896. Barnum and Barnum West are bounded by Sheridan Boulevard on the west, Federal Boulevard on the east, 6th Avenue to the north and Alameda Avenue to the south. The majority of the land uses are single-family residential, with a small percentage of multi-family residential. Less than 10 percent of the neighborhoods are zoned for business. The area is comprised of rolling terrain and is bisected diagonally by Wier Gulch.

Barnum, Barnum West and Villa Park generally make up the area known as “Old Barnum.” The Town of Valverde (from the South Platte River to Federal Boulevard) was adjacent to Old Barnum. Valverde was annexed into Denver in 1902. In the early years, small truck farms were prevalent in the Valverde area. A flood of the South Platte River in 1965 damaged or destroyed a number of buildings in the area. Many residents left instead of rebuilding. This led to a shift in land use over time with a growth in industrial uses. These uses benefited from close highway proximity and access -- many of these uses remain today.

3.1 Land Use

3.1.1 Existing Land Use and Zoning

Federal Boulevard is a commercial corridor zoned Business-4 (B-4) with primarily single-story retail and commercial uses. The B-4 zone district is a General Business District that is intended to provide for and encourage appropriate commercial uses adjacent to arterial streets, which often include transit routes. Uses include a wide variety of consumer and business services and retail establishments that serve other business activities, and local transit-dependent residents within the area as well as residents throughout the city. The majority of development fronts Federal Boulevard with parking either along the front or side of the business. Commercial uses include



Neighborhood Study Area

Federal Boulevard Environmental Assessment — Figure 3-1

auto repair shops and auto service stores such as glass and tire repair; gasoline stations; service-oriented stores such as salons; and small restaurants and convenience stores. Many single-family homes along Federal Boulevard have been converted to commercial use. A few single-family and multi-family units (apartments) are located along Federal Boulevard.

Auto repair business along Federal Boulevard

The residential areas adjacent to the B-4 zoning along Federal Boulevard are zoned Residential-1 (R-1) or Residential-2 (R-2). R-1 is defined as single-unit detached dwelling units with low-density. The typical densities in the R-1 district are 7.3 dwelling units/acre. R-2 is defined as multi-unit dwellings at low density. Typical densities in the R-2 district are 14.5 dwelling units/acre. Open Space-1 (O-1) allows for a variety of uses, including; recreational uses, parks, and other public and semi-public uses housed in buildings. O-1 as shown on Figure 3-2 encompasses Barnum Park.

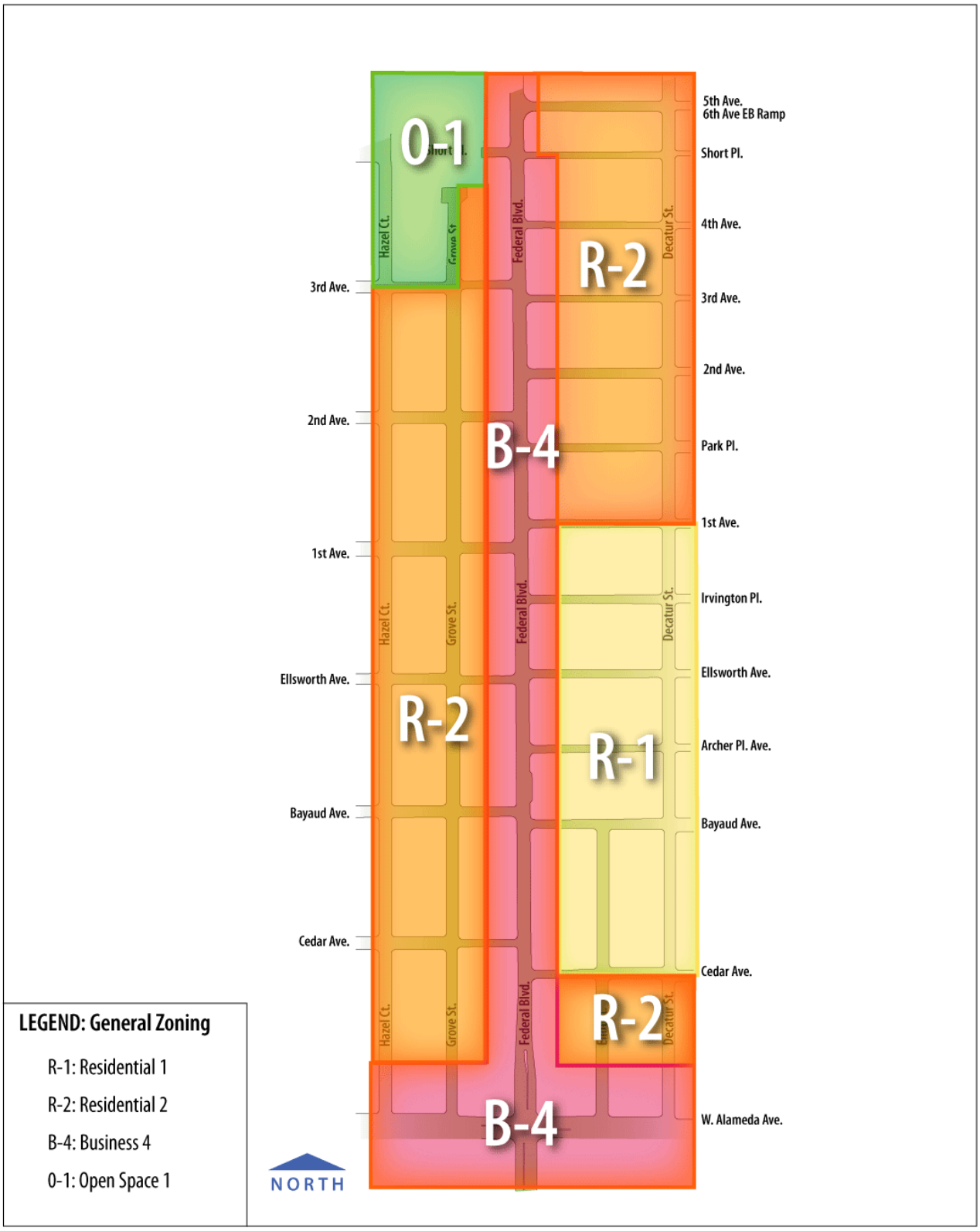
Light industrial and manufacturing operations are located in the eastern section of the Valverde neighborhood close to I-25. Although these industrial areas are located outside of the study area, they contribute to high levels of truck traffic in the neighborhoods. General zoning categories within the study area are shown in Figure 3-2.

3.1.2 Future Land Use

Blueprint Denver, an integrated land use and transportation plan, identifies Federal Boulevard as an "Enhanced Transit Corridor" and an "Area of Change". "Areas of Change", identified in Figure 3-3, includes the proposed West Corridor LRT crossing at Federal Boulevard and Holden Place. Within "Areas of Change", a high priority for the CCD is to provide housing opportunities for existing residents as the area redevelops. In addition, development is intended to increase economic activity to benefit existing residents and businesses.

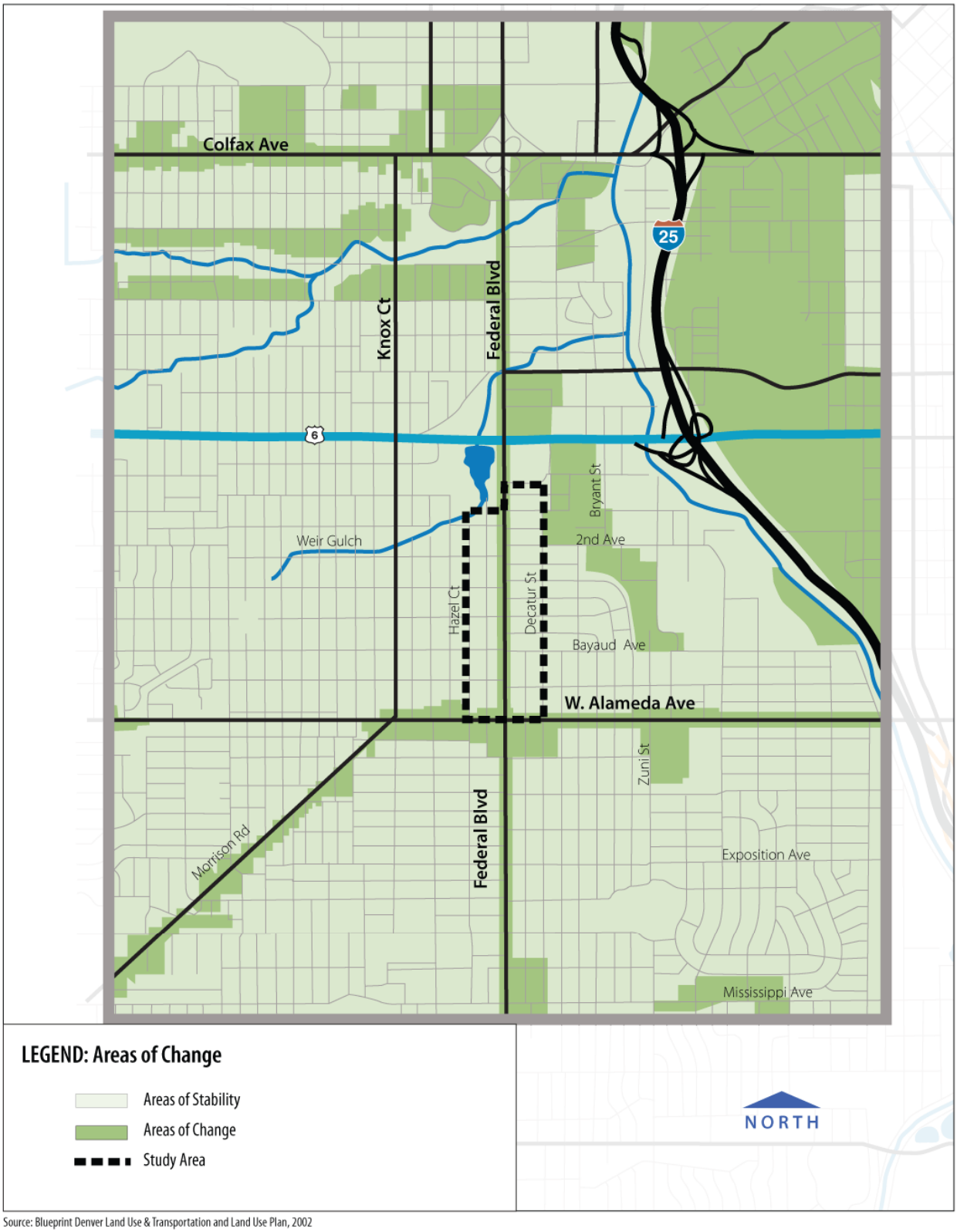
Single-family residential homes along Federal Boulevard

In the short term, three separate commercial developments are planned along Federal Boulevard between 6th Avenue and Alameda Avenue. They include a retail store, convenience store with a gas station, and a retail center. These projects would not alter the overall character and function of the corridor because they are small and separate from each other. Overall, changes in land use have been limited to individual businesses and changes in ownership. The area is not expected to shift in function as a commercial corridor in the future.



General Zoning Map

Federal Boulevard Environmental Assessment — Figure 3-2



Source: Blueprint Denver Land Use & Transportation and Land Use Plan, 2002

Blueprint Denver Areas of Change

Federal Boulevard Environmental Assessment — Figure 3-3

3.1.3 Consistency with Local Plans

This section lists several of CCD's planning efforts as well as the Denver Regional Council of Governments (DRCOG) Regional Transportation Plan, all of which have bearing on the study area, including:

- *Barnum/Barnum West Neighborhood Plan*, 1986
- *Valverde Neighborhood Plan*, 1991
- *Federal Boulevard Corridor Plan*, 1995, http://www.denvergov.org/Portals/78/documents/Federal%20Blvd%20Corridor%20Plan.pdf
- *Blueprint Denver*, 2002 http://www.denvergov.org/Portals/145/documents/Blueprint/Blueprint%20Denver/start_TOC.pdf
- *Game Plan*, 2003 http://www.denvergov.org/Default.aspx?alias=www.denvergov.org/GamePlan
- *Pedestrian Master Plan*, 2004 http://www.denvergov.org/Transportation_Planning/PedestrianMasterPlanDocument/tabid/395502/Default.aspx
- *DRCOG Regional Transportation Plan*, 2005 http://www.drcog.org/index.cfm?page=RegionalTransportationPlan

Plan Summary

As described in Chapter 1, the purpose of this project is to improve the safety and efficiency of Federal Boulevard, to accommodate the transportation needs of residents and businesses, and provide multi-modal travel options. The plans described in this section identify current deficiencies in Federal Boulevard and goals to improve Federal Boulevard and the surrounding area. The transportation goals of this project are generally consistent with the transportation goals stated in the local plans but do not fully achieve all of the stated goals and recommendations.

3.1.4 Land Use Impacts

No Action Alternative

The No Action Alternative would not affect current land use since no additional right-of-way would be acquired. However, the No Action Alternative would not improve the existing safety or congestion within the roadway, or accommodate the transportation needs of the residents and businesses in the study area and does not meet the purpose and need of this project. The No Action Alternative is not consistent with locally adopted land use plans.

Build Alternative

The goal outlined in the *Federal Boulevard Corridor Plan* to restore boulevard conditions along Federal Boulevard would be supported by the addition of a center

raised median and the addition of a third northbound lane. Wider and continuous sidewalks and improved pedestrian connections across Federal Boulevard would improve the environment for pedestrians. Existing businesses would benefit from a safer vehicular and pedestrian environment, as well as an improved image of the corridor. Although landscaping along Federal Boulevard was envisioned in the *Federal Boulevard Corridor Plan*, landscaping is not planned under the Build Alternative.

Federal Boulevard would remain a commercial corridor as designated in *Blueprint Denver* and would retain its character as an ethnic corridor. The Build Alternative would require the relocation of some existing minority businesses, as described in Section 3.4. However, the proposed transportation investment would likely support viable business activity in the future.

The proposed transportation improvements would not contribute to unplanned growth since the study area is within an existing urban corridor. Planning efforts for redevelopment would be initiated at the local level and any changes to existing land uses would be implemented through local planning and zoning ordinances.

Businesses

The Build Alternative would improve the visual character of the study area in the short term. Over the long-term, property values may increase due to the transportation and pedestrian improvements proposed as part of this project. These improvements may encourage a greater diversity of business types and improve the overall stability of the corridor. Business owners and tenants may choose to improve the quality of building frontage and invest additional resources into their properties.

Residential Neighborhoods

The impacts of the Build Alternative on the Barnum and Valverde neighborhoods would be positive. The transportation improvements proposed as part of the project would improve the image and viability of the corridor, potentially benefiting surrounding neighborhoods. Many children living in the Valverde neighborhood currently cross Federal Boulevard to access schools in the Barnum neighborhood. The addition of a raised median, crosswalks, and improved sidewalks would improve the safety conditions for these residents.

3.1.5 Mitigation

No mitigation is required. Property and business owners impacted directly by the Build Alternative will be compensated as described in Section 3.4, Right-of-Way and Relocations.

3.2 Social Characteristics

3.2.1 Demographics

The 2005 population of the Barnum neighborhood was approximately 6,000 persons. The 2005 population of the Valverde neighborhood was approximately 4,000.

Combined, both neighborhoods have approximately 10,000 people. The CCD's population is expected to increase 18 percent between the years 2005 and 2030, from 584,000 persons to 721,000 persons (DRCOG, 2004). Similar trends for the Barnum and Valverde neighborhoods are anticipated in the future. Many neighborhoods in Denver experienced substantial growth during the 1990s, including low-income neighborhoods. Both neighborhoods in the study area grew over 30 percent between 1990 and 2000. Table 3-1 shows demographic statistics for the CCD, and the Barnum and Valverde neighborhoods.

Table 3-1
Study Area Demographics

Geography	Population (2005)	% Change 1990 - 2000	% Below Age 18	% Elderly (65+)	Total Disabilities
CCD	579,744	19%	25% (148,033)	10% (56,788)	33%
Barnum	6,002	35%	36% (2,185)	6% (336)	37%
Valverde	3,826	30%	38% (1,441)	6% (243)	32%

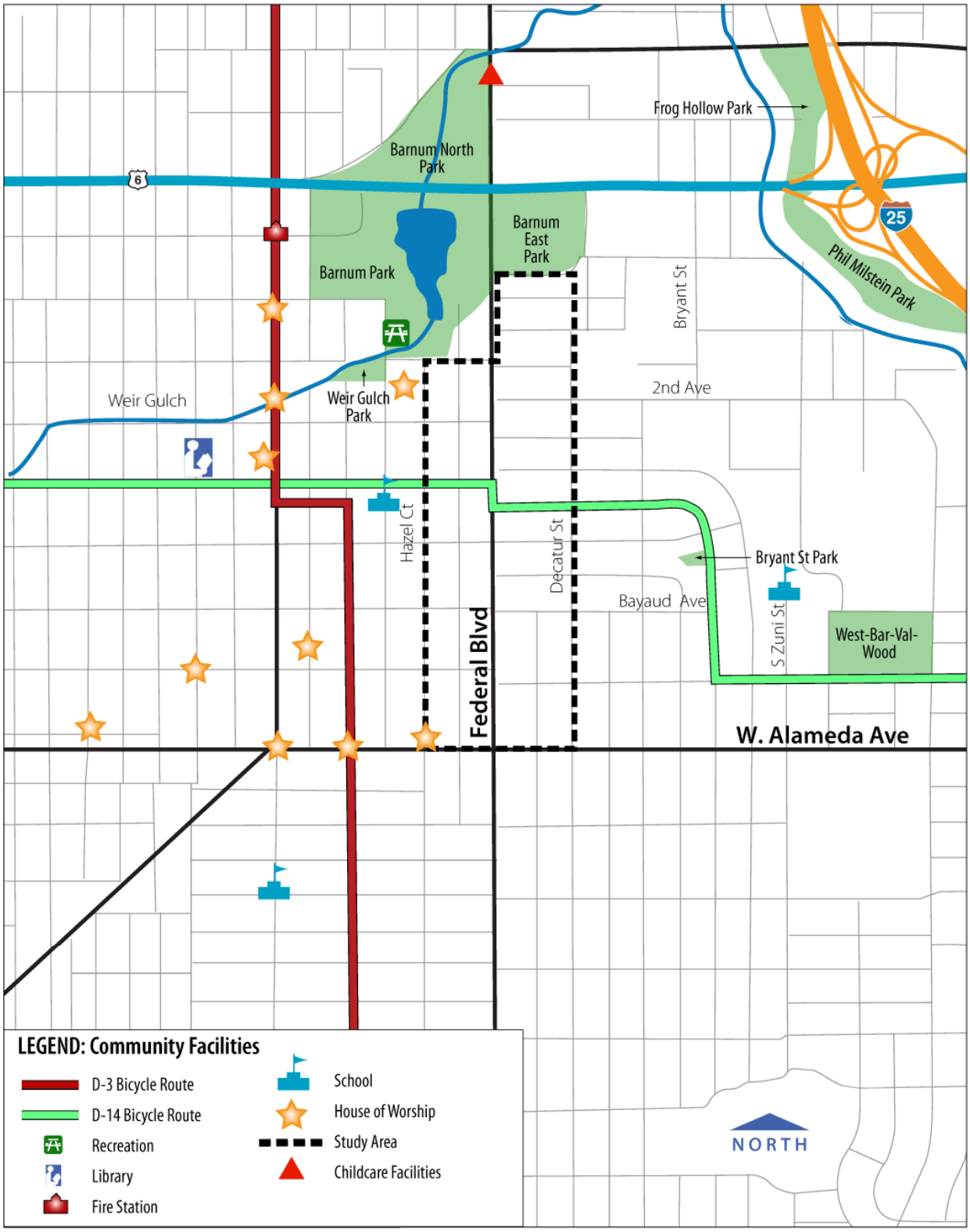
Source: Piton Foundation, 2006. Note: Data are in 2005 statistics except for Total Births, which is 2003 statistics.
*Percent disabled is from the U.S. Census Bureau 2000 block groups surrounding Federal Boulevard (Barnum: Tract 9.03, Block Groups 1 and 2; Valverde: Tract 10, Block Groups 2, 3 and 4.).

Table 3-1 shows that the study area is composed of a younger population, with over 36 percent under the age of 18. The elderly population represents a smaller percentage of the total, with less than 10 percent in both neighborhoods. Total disabilities tallied (sensory, physical, mental, self-care, go-outside-home and employment) are close to the CCD average of 33 percent.

Of the 72 neighborhoods in Denver, Valverde ranks 13th and Barnum ranks 27th for overall crime. The Sun Valley neighborhood, located northeast of the study area (north of 6th Avenue and east of Federal Boulevard) has the highest crime rate in the City (CCD, 2003). The highest number of reported crimes includes burglary, grand larceny and auto theft.

3.2.2 Community Facilities

Community facilities include schools, churches, health centers, hospitals, parks, libraries, post offices, and fire and police stations, among others. Community facilities provide services to residents of the surrounding community in the form of education, worship, recreation, and health and human services. These facilities help define the character of an area, and contribute to the cohesion of the area's residents and businesses by providing meeting places for residents and sources of employment for the community. There are a number of community facilities either within the study area boundaries or in close proximity to the study area. The community facilities are shown in Figure 3-4. Any facilities not shown in Figure 3-4 are located outside the mapping area.



Community Facilities

Federal Boulevard Environmental Assessment — Figure 3-4

Schools, Childcare Facilities, and Churches

Elementary schools in or near the study area include Barnum Elementary, Munroe Elementary, and Florence Crittendon, a Denver Public Schools Charter School in the Valverde neighborhood. Child care facilities include Ece Castro School at 845 Lowell (Villa Park), Kentucky Head Start at 852 Knox (Villa Park), KIPP Sunshine Peak Academy at 2880 W. Holden Place (Sun Valley) and Good Shepherd Lutheran Childcare at 770 Federal Boulevard. The primary high schools near the study area include North High School at 2960 N. Speer Boulevard and West High School at 951 Elati Street. Children that live east of Federal Boulevard currently walk across Federal Boulevard to reach schools to the west. This poses a safety concern for children crossing Federal Boulevard.

Churches provide a center of gathering and safety in neighborhoods. Two churches are located within four blocks of Federal Boulevard between Alameda Avenue and 6th Avenue.

Libraries

Ross-Barnum Branch Library is located in the Barnum West Neighborhood at 3570 W. 1st Avenue, just west of the study area.

Hospitals/Health Care

The closest health center is Denver Health-Westside Family Health Center, located at 1100 Federal Boulevard in Sun Valley.

Fire/Police

The Barnum Neighborhood is served by Fire Station 20, District 7, 501 Knox Court, Denver. The Valverde Neighborhood is served by Fire Station 20 and Station 23. Station 23 is located approximately one mile south of the study area, at West Kentucky Avenue and South Federal Boulevard, and is not shown in Figure 3-4. There are no police stations located within the immediate study area. The closest police station is located at 1311 W. 46th Avenue in Denver.

Recreation

Barnum Recreation Center - 360 Hooker Street

According to the CCD *Game Plan* (April 2003), Denver maintains 29 recreation centers with a total of 472,132 square feet of facility space. Most centers were built in the 1960s and ‘70s to serve immediate neighborhoods. Two recreation facilities serve the study area. The Barnum Recreation Center is located in Barnum Park at 360 Hooker Street, west of Federal Boulevard. Barnum Recreation Center was the first facility built by Denver Parks & Recreation in 1969, with a Senior Center added in 1972. The center has a gym, arts and crafts room, multipurpose room, and outdoor pool. The Rude Recreation Center, located north of the study

area at the intersection of Federal Boulevard and Holden Place. The old center was built in 1968 and demolished in 2001. The new center was re-opened in May 2003.

Barnum Lake, located north of Barnum Recreation Center

According to the *Game Plan*, both recreation centers fall below the 75 percent of national average for building square footage and lack one or two core amenities. Although the two recreation center service areas cover the entire length of the Federal Boulevard study area, arterial streets such as Federal Boulevard can sometimes impede east-west access to these sites. It is anticipated that additional growth will continue to add pressure to these facilities. Recommendations outlined in the *Game Plan* include long-range plans for specific sites and priorities for capital investments.

There are several parks near the study area that are described in Section 3.16.1 and shown on Figure 3-4.

3.2.3 Social Impacts

No Action Alternative

The No Action Alternative would not change population growth trends in the study area. Demand for community facilities, services and housing would continue to increase in response to projected population growth. The No Action Alternative would not improve access to and from community facilities in the study area.

With increased traffic projected in 2030, congestion would worsen in the study area. This increased congestion would increase the difficulty of pedestrians, bicyclists and emergency service vehicles to travel along Federal Boulevard and to cross Federal Boulevard. Neighborhood cohesion would not be improved since Federal Boulevard would continue to be auto-dominated and would serve as a barrier between neighborhoods.

Build Alternative

Safety for pedestrians, bicyclists, transit passengers and motorists would be improved for both north/south and east/west travel. Pedestrian, bicycle, and motorist connections across Federal Boulevard, to transit stops, adjoining neighborhoods and civic attractions (i.e., schools, libraries), would improve due to wider sidewalks, an additional traffic signal, and a raised median. These improvements would better connect the neighborhoods and community facilities between the Barnum and Valverde neighborhoods. Community facilities would not be directly affected by the Build Alternative.

3.2.4 Mitigation

No mitigation is required.

3.2.5 Environmental Justice

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, was signed by President Clinton on February 11, 1994. The purpose of the Order is to determine whether the construction and operation of projects with federal involvement would result in disproportionate impacts on minority and low-income populations. EO 12898, Title VI of the Civil Rights Act, DOT Order 5610.2 (Order to Address Environmental Justice in Minority Populations and Low-Income Populations), and FHWA Order 6640.23 (FHWA Action to Address Environmental Justice in Minority Populations and Low-Income Populations), address Environmental Justice at the state and federal levels.

The percentage of Hispanic populations in the study area is more than double the citywide average.

The purpose of the above regulations is to ensure that minority and low-income populations and minority-owned businesses do not receive "*disproportionately high and adverse effects*" as a result of federal actions. Adverse effects are all significant individual or cumulative health or environmental effects, including interrelated social and economic effects. If such effects are predominately borne by a minority or low-income population, or if those populations would suffer greater or more severe impacts than others, then the effects are considered disproportionate and adverse.

This EA has been carried out in accordance with the definitions and guidance cited above.

Minority Populations

The U.S. Census Bureau represents the most widely accepted data source for Environmental Justice analyses. For purposes of this analysis, Census Data (Year 2000) were used at the block level (most detailed level available) to determine race and ethnicity within the study area. Race categories include White, African-American, Asian, American Indian and Alaskan Native, Native Hawaiian or Other Pacific Islander. Hispanic is considered an ethnic designation since Hispanic populations may be of any race. As a result, the number of Hispanic persons is included in both the Hispanic data set and the race data set in the Census Bureau data. Therefore, it is necessary to separate the data so that the Hispanic persons are not counted in both the Hispanic and the race statistics. The total number of minorities in the study area and the CCD are shown in Table 3-2.

Table 3-2
Race and Ethnicity Statistics by Neighborhood

Geography	Race/Ethnicity (%)				
	White (Non-Latino)	African American	Native American	Asian/Pacific Islander	Hispanic or Latino
CCD	51.9	10.8	0.7	2.7	31.7
Barnum	20.7	0.6	0.8	0.6	75.8
Valverde	18.2	2.5	1.4	2.1	74.6

Source: U.S. Census Bureau, 2000
Note: Two additional categories in the Census statistics are "Some Other Race" and "Two or More Races"-percentages shown do not add up to 100 percent.

The statistics in Table 3-2 show that the percent of Hispanic or Latino populations in the study area neighborhoods is approximately 75 percent. This average is more than double the citywide average of 31.7 percent. Both the Barnum and Valverde neighborhoods have grown substantially in population. Statistics show that in 2004, 4,093 (39 percent) of all births to families in Denver were to foreign-born mothers. One out of three births (33 percent) was to a mother born in Latin America. Figure 3-5 shows the Hispanic population by Census block, with the citywide average of 31.7 percent as a threshold. The threshold is used for determining which areas have a higher proportion of Hispanic or Latino populations, and whether there is the potential for environmental justice impacts due to the project. Since Hispanic populations are the largest of the minority populations in the study area, these are the only percentages shown in Figure 3-5.

Low-Income Populations

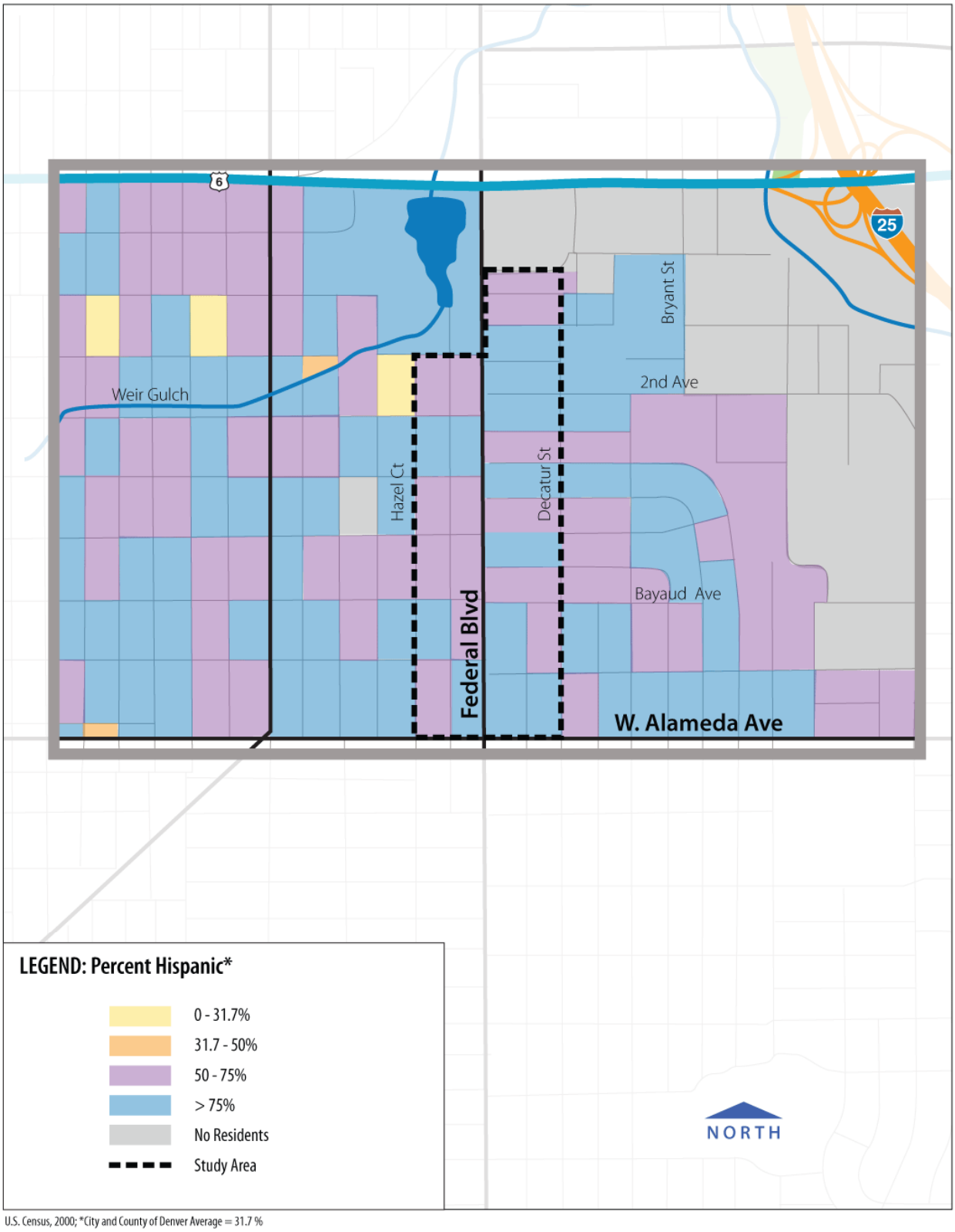
For confidentiality reasons, income statistics through the U.S. Census Bureau are only available at the block group level. The Department of Housing and Urban Development (HUD) statistics state that in the CCD, 30 percent of the median income for a family of four is $18,650. All populations with a median household income under this value are considered low-income. Census data calculates median household income in increments of $5,000. Of the five census block groups that encompass the study area, 122 households are below the income increment of $19,999. This number represents 6 percent of the total households in the Census block groups (1,911 total households). The block groups within the study area are shown in Figure 3-6. It is important to note that the block group boundaries extend beyond the study area boundary and may not represent exact income statistics.

Table 3-3 shows housing and income statistics by neighborhood. Statistics show that over 42 percent of study area residents spend more than one-third of their income on housing. The recommended standard to meet a family's needs is to spend one-third or less on housing. Between 20 and 25 percent of the housing units in the study area are overcrowded, meaning there is more than one person per room. Due to rising housing costs, many families share housing, putting further strain on living conditions. The rising cost of transportation makes it difficult to access employment and to meet basic needs. Corridors such as Federal Boulevard need to accommodate all modes of travel, to be assured access to jobs.

Table 3-3
Housing and Income Statistics by Neighborhood

Geography	Average Household Income	% in Poverty	% Renters Spending >30% Income on Housing	# Occupied Housing Units	% Housing Owner Occupied
CCD	$55,128	14%	39%	239,235	53%
Barnum	$41,184	13%	42%	1,811	68%
Valverde	$35,918	28%	46%	1,225	51%

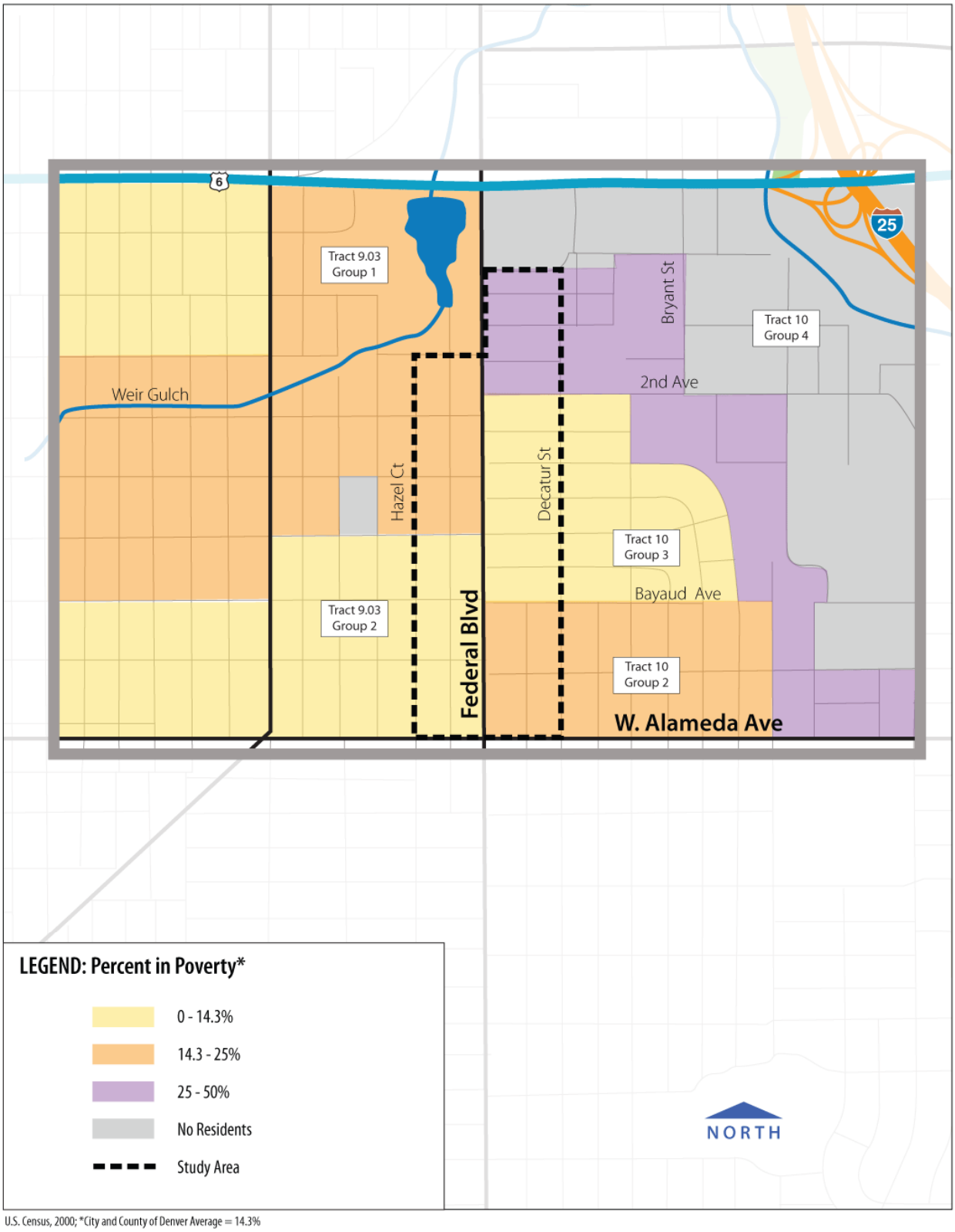
Source: U.S. Census Bureau, 2000
Note: Percentages rounded to whole numbers.



U.S. Census, 2000; *City and County of Denver Average = 31.7 %

Hispanic Population by Census Block

Federal Boulevard Environmental Assessment — Figure 3-5



U.S. Census, 2000; *City and County of Denver Average = 14.3%

Low-Income Population by Census Block Group

Federal Boulevard Environmental Assessment — Figure 3-6

Education

The educational makeup of a neighborhood is an indicator of stability and level of opportunity. The racial and ethnic makeup of the CCD, including the study area neighborhoods, is changing rapidly. Over 87 percent of students in Denver Public Schools in the Barnum and Valverde neighborhoods are of Hispanic or Latino origin. Over 30 percent are not proficient in the English language. In the CCD, 79 percent of residents have earned a high school diploma, whereas only 58 percent and 42 percent of Barnum and Valverde residents, respectively, have earned a high school diploma. These statistics show the diversity in demographics and pressure on the educational system in the area. Statistics by neighborhood and CCD are shown in Table 3-4.

Table 3-4
Education Statistics by Neighborhood

Geography	% White, Non-Latino Students	% DPS Latino Students	% Students not English proficient	Residents with High School Diploma
CCD	19.6	56.2	20.9	79%
Barnum	4.8	91.6	34.8	58%
Valverde	6.3	87.2	30.1	42%

Source: Piton Foundation, 2004.

Dependency on Transit

The study area population is more dependent on transit compared to the CCD as a whole. Of the five block groups in the study area, an average of 13 percent of residents take the bus to work each day. This compares to a citywide average of 8 percent. In Census block group 4 (Tract 10) which is located west of the South Platte River in Valverde, 34 percent of residents take the bus to work. This represents a large portion of the population that is dependent on transit. In addition, the citywide average of those employed who own a private vehicle is 83 percent, compared to only 70 percent in the study area. All of these statistics together show that the study area population relies heavily on transit. Since Federal Boulevard is the primary arterial and bus transit route through the area, it is likely that residents take the bus on Federal Boulevard for all or part of their route (Census 2000).

3.2.6 Environmental Justice Impacts

Impacts to minority and low-income populations were assessed in terms of potential property acquisitions or relocations, changes in access to employment areas, disruption of community cohesion or a community's economic vitality, and changes in low-income and minority neighborhoods due to changes in the physical environment such as noise levels, air pollution levels and the presence or introduction of hazardous materials. Specialized public outreach efforts for the minority and low-income populations in the study area are described in Section 4.3.

No Action Alternative

The No Action Alternative would result in increased traffic congestion and travel time delays on Federal Boulevard. This congestion would hinder access to housing, community facilities and the provision of emergency services to minority and low-income populations, as well as the overall community.

Build Alternative

The Build Alternative would require the relocation of 43 businesses out of a total of 104. At least 17 of the 43 are minority-owned businesses, which was determined through door-to-door interviews in 2006 with business owners and/or tenants.

The Build Alternative would require the relocation of two residential properties along Federal Boulevard. It is possible that these properties are rental properties. One residence is located above a vacant business and the other is connected to a barber shop. Information concerning the minority or low-income status of these residents is unknown.

Although impacts are anticipated due to the Build Alternative, the proposed improvements would have a number of benefits. Vehicular congestion on Federal Boulevard would be reduced through increased capacity along the roadway. Pedestrian mobility would be improved through wider and continuous sidewalks, buffer zones, and curb ramps. The sidewalks, curb ramps, and driveway curb cuts would be improved to meet ADA standards. A three-foot hardscaped buffer would be added between the sidewalk and roadway to protect pedestrians. The addition of a raised median would provide a pedestrian refuge at designated crosswalks, improving the safety of pedestrians. Bus stops would be relocated to improve accessibility and safety for boardings and deboardings. Finally, improvements to bus stop locations would improve the safety of transit users and would provide improved mobility and access to future West Corridor LRT line.

Because there are a high number of low income and minority populations within the study area, there would be disproportionately high and adverse effects on these populations. However, the Build Alternative would have the least impact to minority populations compared to the other alternatives considered. Specifically, Alternatives 2, 3, and 4, which all advanced through Level 3 Screening, would have had greater impacts to businesses and residences along the corridor compared to Alternative 3 Curved. In addition, the mitigation measures described below would offset the impacts to the minority and low-income populations within the study area.

3.2.7 Mitigation

All property acquisitions and relocations will adhere to federal and state guidelines regarding acquisition policies and relocation assistance, including the *Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 (Uniform Act)*, as amended, and applicable Colorado statutes. Numerous state and federal requirements create procedures designed to ensure that land owners are paid “just compensation” for acquisitions. Certain relocation benefits will be provided for all

eligible businesses and residents (owners and tenants) displaced by acquisition. Refer to Section 3.4, Right-of-Way and Relocations.

CCD will work with CDOT to develop a Construction and Business Outreach Plan designed to help individuals and businesses along Federal Boulevard prior to construction, help them maintain business operations during construction and work with those individuals and businesses that will be displaced. In addition, CCD and CDOT will actively pursue partnership opportunities with other organizations that may be able to provide additional assistance and resources to individuals and businesses impacted by the project.

CDOT and the CCD will identify programs and services to assist business and property owners impacted by the project. This assistance will focus on the following efforts and measures:

- CDOT and CCD will hold at least two business/construction outreach forums with affected property owners and businesses to determine the assistance needed and general resources available.
- Business Assistance Programs: Site selection assistance, technical and regulatory assistance, workforce development and financing assistance will be provided.
- CCD will recommend sources of financing for small businesses needing funding above and beyond their relocation benefits.
- Neighborhoods in the region with similar demographic profiles to the displaced businesses will be identified to determine whether these areas will be suitable for relocation.

3.3 Economics

3.3.1 Regional and Local Characteristics

The metro Denver region is centrally located within the U.S., which is beneficial for growth and economic development. The city is the transportation hub for a large portion of the western U.S. for consumer and industrial goods. Metro Denver has a diverse employment base: goods produced in the region include computer storage and peripherals, beverages, mining and farming machinery, rubber goods, fabricated metals, chemicals and allied stone and clay products, western clothing, transportation equipment, scientific instruments, feed, etc. Recent trends show that the U.S. population is shifting south and west, with higher population growth anticipated in areas such as metro Denver.

The costs for housing and health care in metro Denver are somewhat above the national average. The 2006 median price of an existing single-family home in the metro region was $249,700; this is 9 percent higher than the national median price of an existing single-family home (Metro Denver Economic Development Commission (MDEDC), 2006a).

There were 24,231 employers in the CCD, with 421,582 employees (average 17.4 employees per business). These employers paid total wages of $5,051,442,474

(average $208,470 per business). The CCD's annual average wage was $49,181 in 2006 (MDEDC, 2006b).

Metro Denver's unemployment rate of 4.7 percent is slightly lower than the national unemployment rate of 4.8 percent (MDEDC, 2006a). The state sales tax rate is 2.9 percent (MDEDC, 2006c). Combined state and local sales taxes in metro Denver range from 3.15 percent to 8.85 percent (MDEDC, 2006c). The 2006 property tax rate was 7.96 percent (MDEDC, 2006c).

Federal Boulevard is located within a Denver Enterprise Zone. Enterprise Zones were created by the State of Colorado to provide tax incentives to encourage investment in economically disadvantaged areas. State tax credits may be applied to employee training, health insurance, rehabilitation of vacant buildings, and other needs.

3.3.2 Study Area Characteristics

Even though over 100,000 new jobs were created in the CCD in the 1990s, a much larger percentage of growth occurred in the suburbs. By the year 2000, less than two in three Denver residents worked in the city limits. More than half of the employees in Denver earned less than $28,000 annually for a family of three. Three-quarters of Denver residents earned less than the "self-sufficiency" standard, or about $40,000 for a family of three. The self sufficiency standard is a localized measure of the income needed to meet the basic needs of a family without public or private assistance (Piton Foundation). These disadvantaged groups lack economic security for themselves and their families, which affects the social and economic well being of the entire community.

As shown in Table 3-5, the unemployment rate in the Barnum and Valverde neighborhoods is at least one percent above the CCD average. The average annual wage is lower in these neighborhoods. A high percentage of the employees in the area are unskilled laborers. These statistics show that the study area, in comparison to the larger CCD, is economically distressed.

Table 3-5
Economic Characteristics

Geography	Jobs*	Unemployment (2000)*	% Service Jobs	Average Annual Wage
CCD	421,582 (2006)	5.7%	36.1	$49,181
Barnum	540 (2001)	6.9%	26.8	$18,588
Valverde	6,668 (2001)	7.4%	20.8	$34,180

Source: U.S. Census Bureau, 2000.
*2006 data is from Metro Denver Economic Development Corporation. 2000 Data is from the 2000 Census; it was needed to complete the analysis at the neighborhood level.

The unemployment rate in the CCD has improved to 4.7 percent in 2006. Comparative 2006 unemployment rates for Barnum and Valverde are not available; however, it would be expected that these neighborhoods would remain economically distressed in comparison to the CCD.

Study Area Property Values

The CCD Assessor's Office evaluates residential property value trends by neighborhood in every odd-numbered year. The statistics show that of the 623 residential parcels in the Valverde neighborhood, the median home value decreased from $163,600 to $159,100, a difference of 1.46 percent, between 2003 and 2005. Similarly, the majority of residences in the Barnum neighborhood decreased in value by approximately 0.51 percent between 2003 and 2005.

Federal Boulevard Business Characteristics

The Federal Boulevard study area is characterized by commercial and mixed-use zoning. There are approximately 104 businesses along Federal Boulevard between Alameda Avenue and 6th Avenue. These 104 businesses employ an average of 5.3 employees per business, or an estimated total of 551 employees in the study area. The total wages paid by these businesses in 2005 was an estimated $3,135,288 (average $30,147 per business).

Door-to-door interviews with 36 businesses along Federal Boulevard (Alameda Avenue to 6th Avenue) were conducted in the Summer and Fall of 2006. The primary purpose of the door-to-door interviews was to gather information on vehicular access into the businesses. In addition, a series of questions was asked of each business to gather demographic information on the business, the employees, and the customers. The interviews were conducted with the business owner or manager on duty. At least two project team members, an English speaker and Spanish speaker, attended each interview. If the business owner was Spanish-speaking, the Spanish translator led the interview. The full questionnaire is attached in Appendix B (Public Involvement).

Through the door-to-door interviews, team members collected demographic information on 36 businesses, which employ approximately 250 people. The majority of the businesses (95 percent) employ persons of Hispanic ethnicity. The average length of time the businesses have been in operation is eight years. Most of the employees drive to work, although a small number walk from nearby neighborhoods or ride the bus. The customer base is regionwide; however retailers along the survey area are also frequented by residents of nearby neighborhoods. Most of the customers drive to the businesses. The statistics on business characteristics calculated from the results of the door-to-door interviews are shown in Table 3-6.

Table 3-6
Federal Boulevard (Alameda Avenue to 6th Avenue) Business Characteristics

	Business Statistics			Employee Characteristics			Customer Characteristics	
Type of Business	**# Businesses**	**Avg. Years in Business**	**% Own (vs. Lease)**	**# Employees**	**% Hispanic Employees***	**How do Employees get to work?****	**Where do customers come from?**	**How do customers access the business?**
Auto Sales or Repair	9	7	22%	27	100%	Walk or Drive	All over Denver	Bus Drive
Auto Accessories	4	4	50%	11	83%	Drive	Neighborhoods/ All over Denver	Drive
Restaurant	3	11	66%	12	100%	Drive	All over Denver	Drive
Retail	6	6	20%	30	100%	Drive	Aurora/ Neighborhoods/ All over Denver	Walk Drive
Hair Salon	4	5	50%	17	92%	Drive	All over Denver	Drive
Office	6	8	72%	33	87%	Bus or Drive	All over Denver	Drive
Adult/Liquor	4	12	50%	121	100%	Drive	All over Denver	Walk Bus Drive
TOTAL	**36**	**8**	**47%**	**251**	**95%**	**Drive**	**All over Denver**	**Drive**

Source: PB, Romero and Wilson: Door-to-door surveys conducted in 2006.

*Information on the percentage of Hispanic employees was conducted through a visual inspection during the door-to-door surveys. These numbers do not reflect an exact breakdown of the ethnicity of employees.
** These characteristics represent an estimate of the means of travel to work. Other modes (walking, biking, etc.) may have also been indicated in the survey.

3.3.3 Economic Impacts

No Build Alternative

Under the No Build Alternative, long-term impacts would include the following:

- The Barnum and Valverde neighborhoods would likely continue to exhibit economic distress such as unemployment rates remaining higher and annual average wages remaining lower than the CCD overall.
- Residential property values in the Barnum and Valverde neighborhoods would likely continue to decrease.
- Businesses in the Barnum and Valverde neighborhoods would likely continue to employ similar numbers of employees. If congestion in these neighborhoods worsens over time, employment could decrease because goods and customers would have increasing difficulty accessing business within the neighborhoods.

Build Alternative

The project would result in total and partial parcel acquisitions and business displacements. There would be 21 total parcel acquisitions and 43 business displacements. The greater number of businesses reflects the fact that several parcels have more than one business present.

Total Parcel Acquisitions	Business Displacements
21	43

The economic impact of acquiring these total parcels would be to convert them from private to public ownership unless remainder parcels could be surplused and sold to private entities. Parcels in public ownership are exempt from paying property taxes on the assessed value of the parcel. In 2006, the 21 parcels being considered for total acquisition were assessed a total of $123,495 in property taxes (City of Denver Assessor's Office 2006). The CCD and state would lose the ability to collect property taxes totaling $123,495 in total from these parcels in future years, assuming property tax rates did not decrease or increase and the parcels were not resold in the future. The disposition of these parcels in future years could be redeveloped to accommodate new businesses, which would increase the property and sales taxes gained by the CCD. It may be that after final design and construction, some of the parcels or portions of some parcels may not be needed for right-of-way. These remnant parcels could be replatted and the portion not needed for right-of-way could be declared surplus and returned to private ownership. Parcels returned to private ownership would be reassessed for property taxation purposes.

Property Taxes Lost Per Year
$123,495

Parcels subject to partial acquisition would retain any existing buildings, maintain their current function, and continue to pay property taxes. The amount of property taxes paid may change for properties subject to partial acquisition if they are reassessed by the City of Denver Assessor's Office. Because these reassessments would be on a case-by-case basis and would occur sometime after the completion of

the right-of-way acquisition, it is not possible to predict what the change in property tax paid would be for parcels subject to partial acquisition.

Sales Taxes Potentially* Lost Per Year
$84,570
*Note: Businesses could relocate and parcels could be redeveloped in the future to accommodate new businesses.

Forty-three businesses that collect sales tax would be displaced. This is 41 percent of businesses that collect sales tax in the study area. Acquisitions resulting in business displacements would cause the CCD to lose the ability to collect sales taxes from the displaced businesses if they were to cease operation entirely. In 2005, businesses in the study area generated $204,542 in sales tax revenues for the CCD (O'Connor, OED, 2006). The 43 businesses that collect sales tax and that would be displaced from the study area accounted for an estimated $84,570 in annual sales tax revenues. This is 41 percent of sales tax revenues in the study area. It is possible, however, that these businesses could relocate and continue to operate in an area other than the study area. Additionally, the properties on which these businesses operated could be resold in the future, and new businesses could open and replace some or all of the lost sales taxes.

Jobs Potentially* Lost	Wages Potentially* Lost
228	$1,296,321
*Note: Businesses could relocate and parcels could be redeveloped in the future to accommodate new businesses.	

Acquisitions resulting in commercial displacements would result in loss of jobs from the study area. The 43 businesses identified for displacement employ an estimated 228 employees (part-time and full-time), and paid an estimated $30,147 per business in wages in 2005 (O'Connor, OED, 2006). If these businesses were to cease operation entirely, an estimated 228 employees would lose their jobs and an estimated $1,296,321 in wages would be lost. However, these businesses could relocate and continue to operate in an area other than the study area. Additionally, the properties on which these businesses operated could be resold in the future, and new businesses could open and replace some of the lost jobs and wages.

Improved access, safety, and traffic flow (employees, customers and goods) would likely encourage businesses to move back into the study area, facilitating redevelopment.

Residential property values in the study area are decreasing, a trend similar to other low-income neighborhoods in Denver.

Residential property values in the study area have been declining, and it is possible that, during construction, this trend would continue. However, upon project completion, the safety and traffic improvements, improved connections, and multi-modal transportation options within the study area would have a positive impact on residential and commercial property values.

The improved efficiency and capacity of the completed project would have a positive impact on the future redevelopment opportunities, provided that convenient access to commercial properties is provided. The ability to efficiently move customers and goods to and from commercial properties would compel new and potentially larger businesses to consider moving into the study area. This reinvestment in the study area would have positive impacts on nearby property values, and would contribute to job growth.

Regional Economy

Long-term impacts to the regional economy would be minimal due to the small percentage of businesses in the study area compared to Denver as a whole. Even if none of the totally acquired parcels were resold and redeveloped in the future, the $123,495 in property taxes lost per year due to conversion of private property to public property is a small percentage of the total property taxes collected in Denver ($619 million in 2005). Additionally, the $84,570 in sales taxes potentially lost per year due to business displacements is also a small percentage of the total sales taxes collected regionally. In comparison, almost $24 billion in sales taxes were collected in Denver in 2003 (CCD OED, 2005).

Improved flow of customers and goods through the study area would likely enhance the overall economic situation in Denver, although the study area contributes only a small amount of economic activity compared to the overall regional economic activity.

3.3.4 Mitigation

Mitigation for displaced businesses is described in Section 3.2.7.

3.4 Right-of-Way and Relocations

3.4.1 Right-of-Way Requirements

This section describes the acquisitions, displacements, and relocation assistance that would occur under the Build Alternative. The right-of-way analysis contained in this EA was based upon conceptual engineering and certain assumptions were made based on a "worse case" scenario. For example, in some cases, a total property acquisition was assumed to be required if a portion of a structure was located in the right-of-way area, or if significant zoning non-conformances or marketability challenges to remainder parcels were identified as a result of partial acquisitions. When the Build Alternative is refined through further engineering during final design, some partial acquisitions may be eliminated and some total acquisitions may change to partial acquisitions. Furthermore, if variances are allowed for certain remainder parcels and creative cost to cure solutions are developed for perceived market deficiencies to remainder parcels, some total acquisitions could change to partial acquisitions. Accordingly, the right-of-way impacts described herein are subject to change as the project design and right-of-way acquisition process progresses.

3.4.2 Property Acquisition and Displacement Impacts

No Action Alternative

This alternative would not require acquisition of property or displacements.

Build Alternative

The Build Alternative would require acquisition of 213,545 sf (approx. 4.9 acres) of property. Of the 75 property acquisitions, 54 would be partial acquisitions and 21 would be full acquisitions. Six outdoor advertising signs also would be acquired. These property acquisitions are summarized in Table 3-7.

Table 3-7
Summary of Property Acquisitions

Item	Property Location	Land Use	Full/Partial	Acquisition of Outdoor Advertising Sign	Estimated Current Structure Size to be Acquired (Square Feet)	Estimated Area to be Acquired (Square Feet)
1	270 and 270A South Federal Boulevard	Commercial	Partial			380
2	244 South Federal Boulevard	Commercial	Partial			660
3	230 South Federal Boulevard	Commercial	Full		3,762	6,750
4	214 South Federal Boulevard	Commercial	Partial			550
5	194 A and 194 B South Federal Boulevard	Commercial and Residential	Full		1,311	6,250
6	180 and 182 South Federal Boulevard	Commercial	Full		4,122	6,250
7	82 South Federal Boulevard	Commercial	Full		2,786	7,150
8	60 – 80 South Federal Boulevard	Commercial	Partial			770
9	50 South Federal Boulevard	Commercial	Full		4,860	7,150
10	40 South Federal Boulevard	Commercial	Partial			240
11	36 and 20 South Federal Boulevard	Commercial	Partial			510
12	12 South Federal Boulevard	Commercial	Partial			1,020
13	2 Federal Boulevard	Commercial	Full		1,682	5,525
14	8 Federal Boulevard	Commercial	Full		2,550	4,875
15	12 Federal Boulevard	Commercial	Partial			410
16	40 Federal Boulevard	Commercial	Partial			1,090
17	60 Federal Boulevard	Commercial	Partial			480
18	70 Federal Boulevard	Commercial	Partial			650
19	82 Federal Boulevard	Commercial	Partial			660
20	86 - 90 Federal Boulevard	Commercial	Full		5,265	7,150
21	110 Federal Boulevard	Commercial	Full		6,000	16,400
22	114 and 120 Federal Boulevard	Commercial	Full		4,995	16,800
23	138 Federal Boulevard	Commercial	Partial			260
24	150-160 Federal Boulevard	Commercial	Partial			10
25	168 and 188 Federal Boulevard	Commercial	Partial			10
26	230 Federal Boulevard	Commercial	Partial			10
27	330 Federal Boulevard	Commercial	Billboard Encroaches	1	0	0
28	400 Federal Boulevard	Commercial	Full		1,008	5,959
29	412 Federal Boulevard	Commercial	Partial			110
30	450 Federal Boulevard	Commercial	Partial			1,440

Source: CDOT, 2007.

Table 3-7. Summary of Property Acquisitions (continued)

Item	Property Location	Land Use	Full/Partial	Acquisition of Outdoor Advertising Sign	Estimated Current Structure Size to be Acquired (Square Feet)	Estimated Area to be Acquired (Square Feet)
31	445 Federal Boulevard	Commercial	Partial			130
32	425 Federal Boulevard	Religious	Partial			250
33	405 Federal Boulevard	Commercial	Partial			450
34	401 Federal Boulevard	Commercial	Full		2,000	3,131
35	375, 377, 379, 385, 391, 393, 397, & 399 Federal Boulevard	Commercial	Partial			5,290
36	303 Federal Boulevard	Commercial	Partial			2,420
37	275 Federal Boulevard	Commercial	Partial			1,610
38	263 Federal Boulevard	Commercial	Partial			810
39	221 - 253 Federal Boulevard	Commercial	Full		12,550	31,250
40	201 Federal Boulevard	Commercial	Partial	1		1,610
41	195 Federal Boulevard	Commercial	Partial			760
42	159 Federal Boulevard	Commercial	Building only (Partial)		1,860	700
43	155 Federal Boulevard	Commercial	Partial	1		610
44	149 Federal Boulevard	Commercial	Partial			510
45	137 Federal Boulevard	Commercial	Partial			590
46	135 Federal Boulevard	Commercial	Partial			150
47	125 Federal Boulevard	Commercial	Partial			490
48	115 Federal Boulevard	Commercial	Partial	1		210
49	105 Federal Boulevard	Commercial	Full		3,800	6,250
50	75 Federal Boulevard	Commercial	Partial			450
51	47 Federal Boulevard	Commercial	Partial			230
52	45 Federal Boulevard	Commercial	Partial			230
53	35 Federal Boulevard	Commercial	Partial			470
54	27 Federal Boulevard	Commercial	Partial			240
55	21 Federal Boulevard	Commercial	Building only (Partial)		2,035	240
56	11 Federal Boulevard	Commercial	Partial			250
57	5 Federal Boulevard	Commercial	Partial			250
58	1 South Federal Boulevard	Commercial	Partial			260
59	9-19 South Federal Boulevard	Commercial	Partial			590
60	23 South Federal Boulevard	Commercial	Partial			1,360
61	47 South Federal Boulevard	Commercial	Full		3,465	6,244
62	57 South Federal Boulevard	Commercial	Full		816	6,240
63	65 South Federal Boulevard	Commercial	Full		898	6,240
64	75 South Federal Boulevard	Commercial	Full		1,057	6,244
65	101 South Federal Boulevard	Commercial	Partial	1		650
66	109 South Federal Boulevard	Commercial	Partial			660
67	119 South Federal Boulevard	Commercial	Partial			660
68	139 South Federal Boulevard	Commercial	Partial			660

Source: CDOT, 2007.

Table 3-7. Summary of Property Acquisitions (continued)

Item	Property Location	Land Use	Full/Partial	Acquisition of Outdoor Advertising Sign	Estimated Current Structure Size to be Acquired (Square Feet)	Estimated Area to be Acquired (Square Feet)
69	141 South Federal Boulevard	Residential	Partial	1		660
70	145 South Federal Boulevard	Commercial	Full		3,920	9,366
71	161 South Federal Boulevard	Commercial	Partial and acquisition of outbuilding		576	2,290
72	203 - 225 South Federal Boulevard	Commercial	Partial			2,830
73	233 - 235 South Federal Boulevard	Commercial and Residential	Full		1,137	4,687
74	237-239 South Federal Boulevard	Commercial	Full		2,030	4,644
75	249 South Federal Boulevard	Commercial	Partial			140
76	275 South Federal Boulevard	Gas Station	Partial			20
	TOTAL		**54 - Partial/ 21 - Full**	**6**	**74,485**	**213,545**

Source: CDOT, 2007.

Forty-three businesses and two residential occupants would be displaced as a result of the property acquisitions. There would be one personal property relocation. These displacements are summarized in Table 3-8.

For the purposes of this EA, the methodology for determining if a partial acquisition should be a full acquisition, was as follows: (i) If any portion of a building was located within the partial acquisition area, an acquisition of the entire building, and in some circumstances, an acquisition of an entire ownership was determined to be necessary. These acquisitions are designated “Portion of Building in Acquisition Area” in Table 3-8. (ii) In other situations, no portion of any building was located in the partial acquisition area, however it was determined that there was a reasonable likelihood that, after the partial acquisition, the value of the buildings and remaining property would be diminished. If so, an acquisition of the entire property was determined to be necessary. These acquisitions are designated “Uneconomic Remnant” in Table 3-8. This methodology was employed to identify the worst case, (*i.e.*, the largest number of full ownership and building acquisitions), so the largest number of possible displacements could be identified. It is possible that some of these full acquisitions may be converted to partial acquisitions in the preconstruction process as a result of additional engineering of the Build Alternative

In addition to the permanent property acquisitions described herein, temporary construction easements also may need to be acquired. Quantification of such construction easements cannot be established until further engineering of the Build Alternative is completed and therefore is not included in the estimated impacts.

Table 3-8
Summary of Displacements

Type of Business and Location	Number and Type of Displacements	Reason for Acquisition
Motorcycle Shop 230 South Federal Boulevard	1 Business	Uneconomic Remnant
Business and Residential 194A and 194B South Federal Boulevard	1 Business 1 Residence	Uneconomic Remnant
Business 180 and 182 South Federal Boulevard	2 Businesses	Uneconomic Remnant
Auto Sales and Embroidery 82 South Federal Boulevard	2 Businesses	2 Buildings in Acquisition Area
Chiropractor/Mortgage 50 South Federal Boulevard	2 Businesses	Uneconomic Remnant
Jewelry Store 2 Federal Boulevard	1 Business	Uneconomic Remnant
Advertising 8 Federal Boulevard	1 Business	Uneconomic Remnant
Sporting Goods, Clothing, Decorating, Vacant & Insurance 86 - 90 Federal Boulevard	5 Businesses	Portion of Building in Acquisition Area
Accounting 110 Federal Boulevard, Unit A	1 Business	Uneconomic Remnant
Photography Studio 110 Federal Boulevard, Unit B	1 Business	Uneconomic Remnant
Finance 110 Federal Boulevard, Unit C	1 Business	Uneconomic Remnant
Tortilla Shop 110 Federal Boulevard, Unit D	1 Business	Uneconomic Remnant
Hair Salon 110 Federal Boulevard, Unit E	1 Business	Uneconomic Remnant
Windows and Siding 114 & 120 Federal Blvd	1 Business	Common Wall with Adjoining Building (Adjoining building is total acquisition)
Restaurant 400 Federal Boulevard	1 Business	Uneconomic Remnant
Auto Glass 401 Federal Boulevard	1 Business	Uneconomic Remnant
Car Audio Store 253 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Furniture 241/251 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Vacant 251 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Auto Painting 237 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Used Furniture Store 235 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Hair Salon 231 Federal Boulevard	1 Business	Portion of Building in Acquisition Area

Source: CDOT, 2007.

Table 3-8. Summary of Displacements (continued)

Type of Business and Location	Number and Type of Displacements	Reason for Acquisition
Accounting 225 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Candy Store 221 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Tattoo 159 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Restaurant 105 Federal Boulevard	1 Business	Uneconomic Remnant
Law Office 21 Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Bail Bonds/Commercial 47 South Federal Boulevard	2 Businesses	Uneconomic Remnant
Commercial 57 South Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Commercial 65 South Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Restaurant 75 South Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Auto Repair 145 South Federal Boulevard	1 Business	Portion of Building in Acquisition Area
Heating 161 - 175 South Federal Boulevard	Personal Property Relocation Only	Portion of Storage Building in Acquisition Area
Residential/Barbershop 233 – 235 South Federal Boulevard	1 Residential 1 Business	Uneconomic Remnant
Hair Salon and Vitamin Store 237 - 239 South Federal Boulevard	2 Businesses	Uneconomic Remnant
Total	**43 Businesses 2 Residential 1 Personal Property**	**N/A**

Source: CDOT, 2007.

3.4.3 Mitigation

Acquisition

For any person(s) whose real property interests may be impacted by this project, the acquisition of those property interests will comply fully with the *Uniform Act.* The *Uniform Act* is a federally mandated program that applies to all acquisitions of real property or displacements of persons resulting from Federal or federally assisted programs or projects. It was created to provide for and insure the fair and equitable treatment of all such persons. To further ensure that the provisions contained within this act are applied "uniformly", regardless of the funding source, all property acquistions for any Build Alternative shall comply with the *Uniform Act*. Additionally, the Fifth Amendment of the U.S. Constitution provides that private property may not be taken for a public use without payment of "just compensation." All impacted owners will be provided notification of the acquiring agency's intent to acquire an interest in their property including a written offer letter of just compensation

specifically describing those property interests. A Right-of-Way Specialist will be assigned to each property owner to assist them with this process.

Relocation

In certain situations, it also may be necessary to acquire improvements that are located within a proposed acquisition parcel. In those instances where the improvements are occupied, it becomes necessary to "relocate" those individuals from the subject property (residential or business) to a replacement site. The *Uniform Act* provides for numerous benefits to these individuals to assist them both financially and with advisory services related to relocating their residence or business operation. Although the benefits available under the *Uniform Act* are far too numerous and complex to discuss in detail in this document, they are available to both owner occupants and tenants of either residential or business properties. In some situations, only personal property must be moved from the real property, which is also covered under the relocation program. As soon as feasible, any person scheduled to be displaced shall be furnished with a general written description of the displacing agency's relocation program, which provides, at a minimum, detailed information related to eligibility requirements, advisory services and assistance, payments, and the appeal process. It shall also provide notification that the displaced person(s) *will not be required to move without at least 90 days advance written notice*. For residential relocatees, this notice cannot be provided until a written offer to acquire the subject property has been presented, and at least one comparable replacement dwelling has been made available. Relocation benefits will be provided to all eligible persons regardless of race, color, religion, sex or national origin. Benefits under the *Uniform Act*, to which each eligible owner or tenant may be entitled, will be determined on an individual basis and explained to them in detail by an assigned Right-of-Way Specialist.

In addition, as stated in Section 3.3.4, it is not yet known whether potential displacements are dependent on their present location for continued viability. If a displaced business is identified with such a dependency, such businesses will be provided with assistance from the CCD to identify a suitable site for their relocation. See Section 3.2.7 for additional mitigation measures.

3.5 Transportation

3.5.1 Existing Roadway Network

As described earlier, Federal Boulevard serves as a major north/south arterial providing service through the Denver metropolitan region, and connects to other major corridors such as U.S. 36, I-25, I-76, I-70, and 6th Avenue to the north and U.S. 285 to the south. The CCD has designated Federal Boulevard as a parkway within the city limits. A parkway is described as a "*wide, landscaped street with a park-like setting… that is typically characterized by landscape features such as broad medians…*" (CCD website).

There are nine study intersections identified as part of this project that are described below. The intersections chosen are either signalized or unsignalized with high traffic volumes. The cross-streets that are not continuous and are offset across Federal

Boulevard are indicated by a north or south designation. Other intersections exist along Federal Boulevard in the study area that were not included in the evaluation because they are unsignalized and have low traffic volumes. These intersections are at 4th Avenue, 3rd Avenue, Park Place, Irvington Place, Archer Place and Cedar Avenue.

- **6th Avenue eastbound on-ramp / Federal Boulevard.** This is an unsignalized T-intersection. Federal Boulevard at this intersection is a five-lane facility with three southbound lanes and two northbound lanes, including a southbound left turn lane. This intersection provides access to the eastbound 6th Avenue on-ramp, 5th Avenue, Bryant Street and to East Barnum Park.

  This intersection was evaluated as part of the *Valley Highway Final Environmental Impact Statement* (EIS). The Preferred Alternative described in the EIS for the Federal Boulevard and 6th Avenue Interchange is described below:

  > *"The Preferred Alternative would reconstruct the Federal Boulevard interchange as a standard diamond interchange with ramps in all four quadrants and traffic signals at the ends of the ramps at Federal Boulevard. Access to and from Bryant Street would be accommodated through connections to the eastside Federal Boulevard ramps. The existing westbound off-ramp to Bryant Street would be eliminated. Traffic wanting to make that move would exit at Federal Boulevard and either take 5th, 7th, or 8th Avenues. Federal Boulevard would be widened to accommodate double left-turn lanes at the intersections with the US 6 on- and off-ramps. A braided eastbound on-ramp would be provided that would allow traffic continuing east on US 6 to avoid mixing with traffic destined for I-25.*
  >
  > *Traffic on US 6 between I-25 and Federal Boulevard would be managed with collector/distributor roads. Access to the highway would no longer come from 5th Avenue, therefore, converting it to a local street use. Federal Boulevard would be widened to accommodate double left-turn lanes at the intersections with US 6 on- and off-ramps."*

- **2nd Avenue (North) / Federal Boulevard.** This is a signalized T-intersection with protected/permitted left turn phasing in the southbound direction. Federal Boulevard at this intersection is a five-lane facility with three southbound lanes and two northbound lanes, including a left turn lane in the southbound direction.

  2nd Avenue (North) is a T-intersection to the east and is a two-way two-lane street. The westbound approach has a left turn lane and a right turn storage lane. The posted speed limit for this cross street is 25 miles per hour (mph).

- **2nd Avenue (South) / Federal Boulevard.** This is an unsignalized T-intersection. 2nd Avenue (South) is a T-intersection to the west and is a two-way two-lane street. The eastbound approach has a shared lane for all possible movements. The posted speed limit for this cross street is 25 mph.

- **1st Avenue (North) / Federal Boulevard.** This is an unsignalized T-intersection; 1st Avenue (North) is a two-way two-lane street to the east of Federal Boulevard.

The westbound approach has a shared lane for all possible movements. The posted speed limit for this cross street is 25 mph.

- **1st Avenue (South) / Federal Boulevard.** This is a signalized T-intersection with a protected/permitted left turn phasing in the northbound direction.

  1st Avenue (South) is a T-intersection to the west and is a two-way two-lane street. The eastbound approach has a double left turn storage lane and a right turn lane. The posted speed limit for this cross street is 30 mph. To the west, 1st Avenue (South) serves as CCD's bike route D-14. This trail crosses Federal Boulevard and travels along the east side of Federal Boulevard before turning east at Irvington Place.

- **Ellsworth Avenue / Federal Boulevard.** This is an unsignalized intersection. Ellsworth Avenue is a two-way two-lane street. Both the eastbound and the westbound approaches have a shared lane for all possible movements. The posted speed limit for this cross street is 25 mph.

- **Bayaud Avenue (North) / Federal Boulevard.** This is an unsignalized T-intersection. Bayaud Avenue (North) is a T-intersection to the west and is a two-way two-lane street. The eastbound approach has a shared lane for all possible movements. The posted speed limit for this cross street is 25 mph.

- **Bayaud Avenue (South) / Federal Boulevard.** This is an unsignalized T-intersection. Bayaud Avenue (South) is a T-intersection to the east and is a two-way two-lane street. The westbound approach has a shared lane for all possible movements. The posted speed limit for this cross street is 25 mph.

- **Alameda Avenue / Federal Boulevard.** This is a signalized intersection with protected left turn phasing in all directions. Federal Boulevard at this intersection is a six-lane facility consisting of three through lanes and dual left turn lanes in both directions. The three northbound through lanes are reduced to two through lanes approximately 250 feet past Alameda Avenue (lane drops from right). Alameda Avenue is a two-way street.

  Alameda Avenue, at this intersection, is a six-lane facility, plus dual left turn lanes in both directions. The posted speed limit for this cross street is 35 mph.

3.5.2 Existing Traffic and Safety Conditions

Existing and Future Traffic Volumes

Traffic volume counts for the Federal Boulevard study corridor were collected in August 2005 over a 24-hour period at two locations: just north of Alameda Avenue and just south of 6th Avenue. Traffic turning movement counts at the nine study intersections were also were taken in August 2005. The counts were taken in the a.m. (7-9 a.m.) and p.m. (4-6 p.m.) peak times and were recorded in 15-minute intervals. The volume that was used for analytical purposes is the highest four consecutive 15-minute volume counts, referred to as the peak hour volume. The a.m. peak hour for the study area occurred between 7:15 and 8:15 a.m. and the p.m. peak hour occurred between 4:30 and 5:30 p.m.

Table 3-9 shows the existing average daily traffic (ADT) as well as the 2030 projections based on DRCOG travel demand modeling results.

Table 3-9
Federal Boulevard Existing and Future Average Daily Traffic

Location	Average Daily Traffic Volumes					
	Southbound		Northbound		Total	
	2005 (Existing)	2030 (No Action)[1]	2005 (Existing)	2030 (No Action)[1]	2005 (Existing)	2030 (No Action)[1]
South of 6th Avenue	20,785	29,310	22,170	31,480	42,955	60,790
North of Alameda Avenue	17,900	23,810	19,420	26,220	37,320	50,030
[1] This information is based on demand for use of Federal Boulevard.						

Sources: Existing 2005 traffic counts conducted by All Traffic Data, 2005. 2030 future forecasts developed by DRCOG and PB, 2005.

Existing Traffic Operations

Traffic turning movement counts also were taken in August 2005. The counts were taken in the a.m. (7-9 a.m.) and p.m. (4-6 p.m.) peak times and were recorded in 15-minute intervals. The volume that was used for analytical purposes is the highest four consecutive 15-minute volume counts, referred to as the peak hour volume. The a.m. peak hour for the study area occurred between 7:15 and 8:15 a.m. and the p.m. peak hour occurred between 4:30 and 5:30 p.m.

Future traffic volumes were projected for the design year 2030 using the DRCOG regional model. The study intersections were evaluated using the methodologies outlined in the Transportation Research Board's *Highway Capacity Manual, 2000 Edition* (HCM) and was conducted for both the a.m. and the p.m. peak hours. The Synchro computer model, which incorporates the HCM methodology, was used to determine traffic operations for the signalized and unsignalized intersections.

Existing and Future Operational Analysis

The nine study intersections were evaluated using the methodologies outlined in the HCM and was conducted for both the a.m. and the p.m. peak hours. The Synchro computer model, which incorporates the HCM methodology, was used to determine traffic operations for the signalized and unsignalized intersections.

The results of the intersection operational analyses were used to assess the Level of Service (LOS) experienced by the drivers. The LOS describes the quality of traffic operating conditions, ranging from A to F, and is measured as the duration of delay a driver experiences at a given intersection. LOS A represents free-flow movement of traffic and minimal delays to motorists. LOS F generally indicates severely congested conditions with excessive delays to motorists. Intermediate grades of B, C, D, and E reflect incremental increases in congestion.

The duration of delay was measured differently for signalized intersections compared to unsignalized intersections. The LOS delay range for an unsignalized intersection is typically shorter than at a signalized intersection primarily because at a stop sign,

drivers expect to experience less delay than at a signal. In addition, studies have shown that at unsignalized intersections, drivers tend to become impatient with long delays and may use inadequate and unsafe gaps in the traffic stream to make left turns or enter the major street. Table 3-10 provides the delay thresholds for signalized and unsignalized intersections.

Table 3-10
Delay Thresholds for Level of Service

Level of Service (LOS)	Signalized Intersection (seconds/vehicle)	Unsignalized Intersection (seconds/vehicle)
A	0.0 – 10.0 Seconds	0.0 – 10.0 Seconds
B	10.1 – 20.0 Seconds	10.1 – 15.0 Seconds
C	20.1 – 35.0 Seconds	15.1 – 25.0 Seconds
D	35.1 – 55.0 Seconds	25.1 – 35.0 Seconds
E	55.1 – 80.0 Seconds	35.1 – 50.0 Seconds
F	Greater than 80.0 Seconds	Greater than 50.0 Seconds

Source: Transportation Research Board, Highway Capacity Manual, 2000 Edition.

The LOS rating deemed acceptable varies by jurisdiction, facility type, and traffic control device. At signalized intersections, LOS D is generally recognized as the minimum desirable operating condition. For special cases, higher delays with LOS greater than D can be acceptable (i.e., LOS E and F as determined by the CCD and CDOT). It is important to note that LOS E or F does not necessarily imply a capacity issue. Other conditions or combinations of the following can cause degradation in LOS: long cycle lengths, inefficient signal timing, poor signal progression, or long delays on a side street at an unsignalized intersection.

Table 3-11 presents the existing and future LOS results for signalized and unsignalized intersections. For the signalized intersections, the LOS is shown for the overall signalized intersection and for each lane group. For unsignalized intersections, the LOS is shown for the minor movement and for the major left turn movement on Federal Boulevard. It is the objective of both CCD and CDOT to have the signalized intersections, mainline through, mainline right-turn and approach movements operate at a LOS D or better and the mainline left-turn operate at a LOS E or better. Any movements that operate at a LOS E or F are italicized in Table 3-11.

In the existing condition, nearly all intersections operate satisfactorily during the a.m. and p.m. peak periods. However, LOS F conditions exist for unsignalized intersection movements at 2nd Avenue (South), Ellsworth Avenue, and Bayaud Avenue (north) in both a.m. and p.m. peak periods. Various movements at the signalized Alameda Avenue and Federal Boulevard intersections also experience LOS E or F in the existing condition for both time periods; the longest delays occur especially in the p.m. peak period where all of the left turn movements are LOS E or F. Additional information on the traffic operations analysis can be found in the *Baseline Traffic Analysis Report* completed in July 2006 for this project as well as an addendum, dated January 25, 2007.

Table 3-11
2005 and 2030 Level of Service Analysis for Study Intersections

	2005 Existing				2030 No Action				2030 Build			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
6th Avenue EB on-ramp (Unsignalized)												
Southbound Left-Turn	C	24.7	D	26.3	*F*	*>150.0*[3]	*F*	*>150.0*[3]	*F*	*154.4*	*F*	*>150.0*[3]
2th Avenue (North) (Signalized)												
All Movements	**A**	**7.4**	**B**	**12.2**	**D**	**37.9**	***E***	***62.8***	**B**	**14.3**	**C**	**30.1**
Westbound Left-Turn	D	45.1	D	47.2	D	43.2	D	50.0	D	43.5	D	52.9
Westbound Right-Turn	D	41.7	D	36.0	D	40.6	D	36.1	D	39.4	C	35.4
Northbound Through	A	8.4	B	14.4	*E*	*63.3*	*F*	*116.3*	B	15.5	C	30.8
Southbound Left-Turn	B	19.0	B	19.2	*E*	*55.5*	*E*	*55.0*	B	23.5	D	52.4
Southbound Through	A	1.4	A	6.0	A	1.4	C	23.9	A	8.4	C	26.1
2th Avenue (South) (Unsignalized)												
Eastbound Approach	*F*	*62.9*	*F*	*220.5*	*F*	*> 50.0*[3]	*F*	*56.3*	B	10.9	C	17.5
Northbound Left-Turn	B	10.1	B	11.2	B	10.6	B	11.9	n/a	n/a	n/a	n/a
1st Avenue (North) (Unsignalized)												
Westbound Approach	C	16.6	C	21.2	*F*	*>150.0*[3]	C	20.4	B	10.0	C	20.9
Southbound Left-Turn	B	10.8	B	10.6	B	11.6	B	12.2	n/a	n/a	n/a	n/a
1st Avenue (South) (Signalized)												
All Movements	**B**	**10.0**	**A**	**9.3**	**C**	**33.1**	***F***	***83.2***	**B**	**10.8**	**D**	**50.7**
Eastbound Left-Turn	D	42.7	D	42.1	D	47.6	D	38.9	D	43.6	D	38.3
Eastbound Right-Turn	C	33.8	D	40.6	C	32.0	D	47.7	C	31.7	D	47.6
Northbound Left-Turn	A	4.1	C	26.9	B	19.4	*E*	*73.6*	B	14.2	*F*	*135.6*
Northbound Through	A	6.5	A	4.8	D	45.4	A	9.2	A	3.9	A	5.7
Southbound Through	A	3.1	A	6.1	B	15.5	*F*	*138.1*	A	8.0	*E*	*76.9*
Ellsworth Avenue (Unsignalized)												
Eastbound Approach	*F*	*84.8*	*F*	*519.0*	*F*	*>150.0*[3]	*F*	*>150.0*[3]	B	10.2	B	15.0
Westbound Approach	*F*	*97.0*	*F*	*72.6*	*F*	*>150.0*[3]	*F*	*>150.0*[3]	A	9.9	A	9.6
Northbound Left-Turn	B	10.1	B	10.9	B	10.7	B	11.7	n/a	n/a	n/a	n/a
Southbound Left-Turn	B	10.3	B	10.3	B	10.8	B	11.0	B	10.9	B	11.4

Table 3-11
2005 and 2030 Level of Service Analysis for Study Intersections (continued)

	2005 Existing				2030 No Action				2030 Build			
	AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour		AM Peak Hour		PM Peak Hour	
	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]	LOS[1]	Delay[2]
Bayaud Avenue (Signalized)[4]												
All Movements	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	5.8	A	4.0
Eastbound Approach	*F*	*89.1*	*F*	*86.8*	*F*	*>150.0*[3]	*F*	*>150.0*[3]	D	46.3	D	45.2
Westbound Approach	D	28.8	C	21.3	*F*	*>150.0*[3]	*F*	*>150.0*[3]	D	45.1	D	44.5
Northbound Left-Turn	B	10.1	B	10.9	B	10.7	B	11.7	A	2.1	C	37.6
Northbound Through	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	4.5	A	2.2
Southbound Left-Turn	B	10.5	B	10.5	B	11.1	B	11.2	A	9.4	A	2.6
Southbound Through	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	A	5.2	A	2.1
Alameda Avenue (Signalized)												
All Movements	**D**	**43.1**	**D**	**47.7**	***F***	***109.3***	***F***	***135.4***	***E***	***77.1***	***F***	***124.9***
Eastbound Left-Turn	*E*	*60.0*	*F*	*85.3*	*F*	*>240.0*[3]	*F*	*>240.0*[3]	*F*	*184.5*	*F*	*>240.0*[3]
Eastbound Through	D	43.2	C	33.7	*E*	*62.3*	D	38.3	*F*	*87.9*	C	33.6
Westbound Left-Turn	*E*	*77.2*	*F*	*80.1*	*F*	*>240.0*[3]	*F*	*121.3*	*F*	*130.1*	*F*	*>240.0*[3]
Westbound Through	C	31.4	*E*	*62.6*	C	32.0	*F*	*116.1*	C	32.0	*F*	*116.1*
Northbound Left-Turn	D	49.0	*F*	*107.2*	D	53.3	*F*	*>240.0*[3]	D	53.3	*F*	*>250.1*[3]
Northbound Through	D	55.0	D	37.4	*F*	*173.6*	*F*	*128.2*	*F*	*90.6*	*E*	*56.2*
Northbound Right-Turn	C	21.1	C	22.3	C	21.3	B	19.9	N/A	N/A	N/A	N/A
Southbound Left-Turn	*F*	*109.2*	*E*	*55.1*	*F*	*>240.0*[3]	*F*	*214.5*	*F*	*212.2*	*F*	*79.0*
Southbound Through	B	14.6	C	28.5	B	11.7	*F*	*157.1*	B	10.6	F	156.9

Source: PB, 2006.
Notes:
[1]Level of Service
[2]Delay is expressed in seconds per vehicle
[3]Greatly exceeds delay for LOS F, over 3 times the LOS threshold (over 150 seconds at an unsignalized intersection and over 240 seconds at a signalized intersection)
[4]*In the No Action Alternative, Bayaud Avenue is unsignalized and offset, therefore there are no through movements.*

Existing Safety Issues

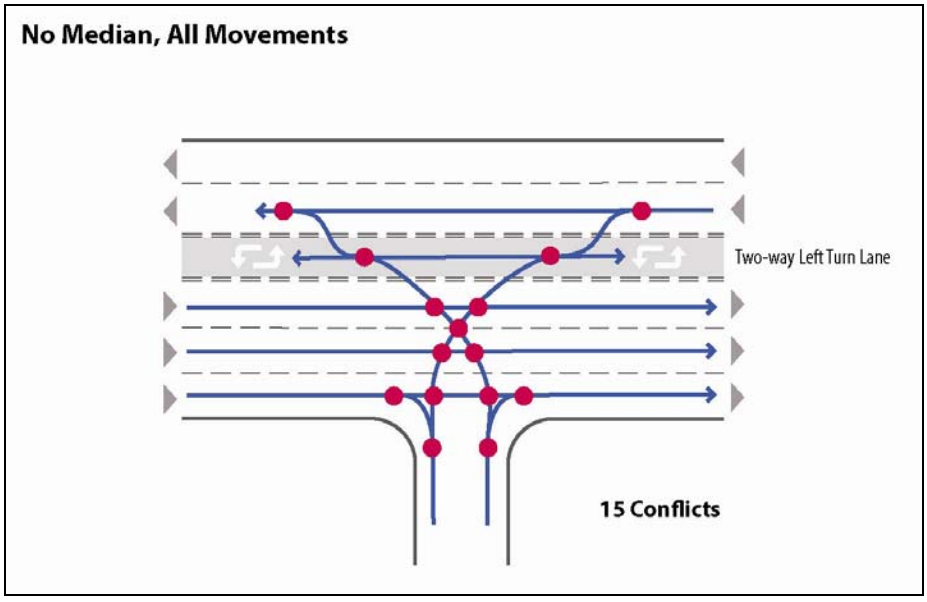
A *Safety Assessment Report* for Federal Boulevard was completed in July 2006. Accident history was examined for a three-year period, from January 1, 2001 to December 31, 2003. According to the report, accidents that occur within the study area are three times higher than similar roadways in Colorado. The most common types of accidents in the study area are rear-end accidents, followed by sideswipe, broadside, and approach turn accidents. Rear-end accidents occur frequently due to the high number of accesses along the corridor. Rear-end accidents occur more frequently in northbound traffic because there are only two northbound lanes as opposed to three southbound lanes. The additional lane southbound provides more maneuverability to avoid accidents. Sideswipe accidents can be attributed to narrow lane widths and the continuous two-way-left-turn lane in the middle of the roadway. Broadside and approach turn accidents frequently occur because northbound vehicles are turning left across three-lanes of traffic and using the continuous two-way-left-turn lane.

For more detailed safety information and recommendations, refer to the *Safety Assessment Report,* 2006.

Existing Conflict Points

The high number of accidents in this corridor can be explained in part by conflict points. A conflict point is the point at which a driver that is crossing, merging with, or diverging from a road or driveway conflicts with another driver using the same roadway or driveway. It is at any point where the paths of two through or turning vehicles diverge, merge, or cross. Conflict points are associated with increased levels of roadway accidents. Figure 3-7 shows conflict points for a typical three-way existing intersection along Federal Boulevard.

Figure 3-7
Existing (and No Action) Conflict Points for a Standard Three-Way Intersection



Source: PB, 2006.

There are a total of 400 conflict points within the project study limits. It has been shown that reducing the number of conflict points can significantly reduce the number of accidents.

3.5.3 Future Traffic and Safety Impacts

The No Action and the Build Alternative impacts were evaluated for the 2030 design year and are described below.

Future Traffic Impacts

No Action Alternative

The 2030 No Action Alternative assumes no changes to the street network or traffic control devices in the area although normal signal timing updates will likely occur. As such, the existing safety issues along Federal Boulevard would be expected to stay the same or worsen due to the forecast increase in vehicles. In addition, it is likely that the frequency of accident types that occur within the study area would increase compared to similar roadways in Colorado in the future.

The average operating conditions at the study intersections are shown in Table 3-11. Under this Alternative, delays are anticipated to increase at many of the study area intersections. The number of intersection movements which degrade from LOS A-D to LOS E or F, or remain in LOS E or F double in number from those occurring in 2005. Whereas 16 intersection movements exhibited very poor operations during 2005, 35 intersection movements are projected to experience LOS E or F by 2030.

Build Alternative

The travel patterns from the surrounding neighborhoods under the Build Alternative would likely change. This is because the proposed raised median along Federal Boulevard would prohibit vehicles from making left-turns at non-signalized locations from the side-streets. Also, vehicles could not turn left from Federal Boulevard, except at three-quarter openings or at signalized intersections. Additionally, higher use of Bayaud Avenue is expected due to the proposed signalized intersection location. The average operating conditions at the study intersections are shown in Table 3-11 for the Build Alternative.

Unsignalized Intersections - With the Build Alternative and due to the presence of the proposed median, all of the unsignalized intersections show improved conditions as compared to the No Action Alternative. Most movements improve to LOS A-C with some operating at LOS D.

Note that the 5th Avenue intersection (6th Avenue eastbound on-ramp) continues to operate at a LOS F with no appreciable difference between the Build and No Action Alternatives. This is because this project assumed that this intersection would remain unsignalized. However, improvements proposed under the Valley Highway EIS at this intersection will occur to improve operations at this location.

Signalized Intersections - Operational improvements at the signalized intersections under the Build Alternative are more mixed. A fair number of movements would still

result in LOS E or F as compared with the No Action Alternative. The amount of delay would remain comparable between the two alternatives or with some improvement under the Build Alternative:

- The 2nd Avenue (North) intersection would operate acceptably for all movements (i.e., LOS A-D).
- The 1st Avenue (South) would operate acceptably (i.e., LOS B-D) for most movements. However, in the PM peak condition, both the northbound left-turn and the southbound through and right-turn would operate at LOS E or F. Because of the proposed median, the volume for the northbound left-turn would increase under the Build Alternative. The vehicles desiring to turn left near this intersection would do so only at 1st Avenue (south) thus increasing the volume and worsening the delay as compared to the No Action Alternative.
- The new Bayaud Avenue signalized intersection would operate acceptably for all movements (i.e., LOS A-D).
- The Alameda Avenue intersection is anticipated to operate at a LOS E in the a.m. and LOS F in the p.m. under the Build Alternative compared to LOS F in both a.m. and p.m. peak periods for the No Action Alternative. The a.m. movement would improve from F to E in the 2030 Build condition and the seconds of delay for both a.m. and p.m. would decrease overall.

Overall, the Build Alternative would improve conditions as compared to the No Action Alternative. However, due to increased volume from today to the 2030 study year, traffic operating conditions would steadily worsen over the years.

Future Safety Impacts

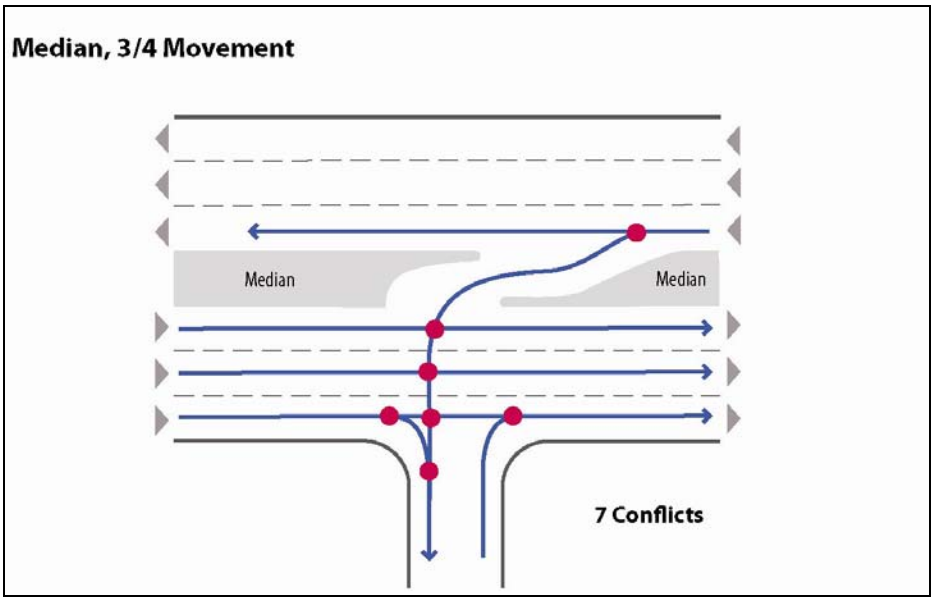
The Build Alternative addresses several accident types. In locations where the median is proposed, several accident types will likely decrease. The approach turn and broadside accidents will be eliminated for vehicles currently using the two-way left-turn lane to make a left turn. Also, head-on and sideswipe opposite accident types will decrease where the median is proposed. However, accidents may occur at median openings since traffic volumes will be greater and the roadway will be wider in the future condition.

The sideswipe accident type should decrease with the proposed uniform 11-foot lanes. Accidents with fixed objects should also decrease, since proposed improvements will consider the offset of fixed objects to standard distances from the traveled way.

The pedestrian accidents may decrease because pedestrians would have a median refuge as well as the potential addition of a signal at Bayaud Avenue. This design would provide improved safety for pedestrians to cross Federal Boulevard at a controlled location.

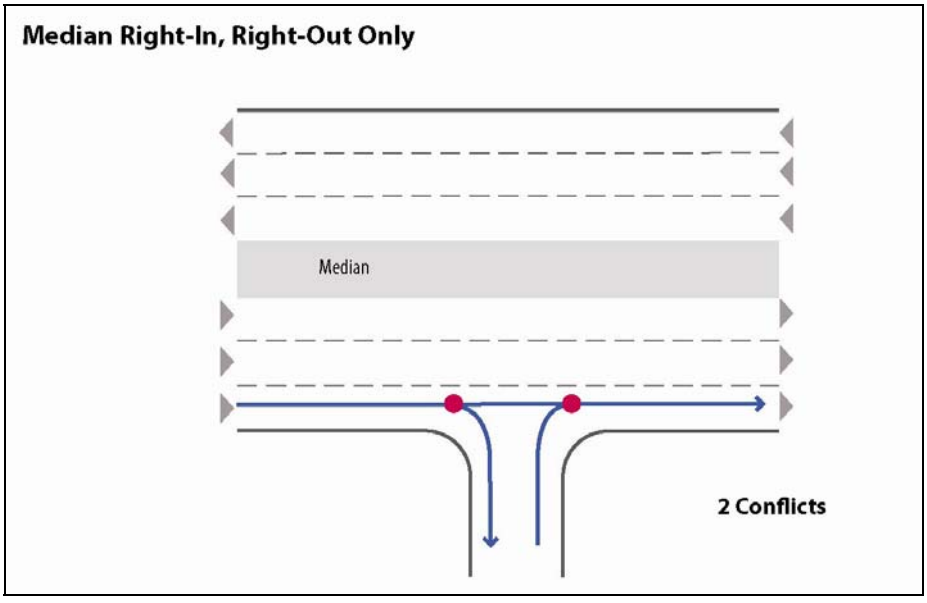
It has been shown that a reduction in conflict points generally means a reduction in accidents. Figure 3-8 and Figure 3-9 show an example of a three-quarter proposed opening and a right-in and right-out opening, respectively.

Figure 3-8
Proposed Conflict Points for a Three-Quarter Opening



Source: PB, 2006.

Figure 3-9
Proposed Conflict Points for a Right-In Right-Out Opening



Source: PB, 2006.

There are a total of 270 conflict points under the Build Alternative, which is a reduction of 130 from the No Action Alternative. With a raised median, the left-turn diverging and crossing conflict points no longer exist, thus resulting in an overall decrease in conflict points.

3.5.4 Mitigation

No mitigation is required for streets intersecting with Federal Boulevard or for either the signalized and unsignalized intersections. Because the 5th Avenue (6th Avenue EB on-ramp) intersection was evaluated by the Valley Highway EIS, any safety and operations improvements for this intersection would occur as part of that project.

3.5.5 Transit Facilities and Service

Bus Service

RTD provides bus services to/from the study area. In general, Federal Boulevard, including and beyond the EA study area, is a heavily used transit corridor. As described in Chapter 1, there are three routes that provide service along Federal Boulevard within this study area: Route 30: South Federal Boulevard, Route 30L: South Federal Boulevard Limited Stop Service and Route 36L: Fort Logan Limited Stop Service.

RTD Bus Route 30 along Federal Boulevard ranks second in boardings per hour.

From the Wadsworth and Hampden park-n-Ride, Route 30 generally follows Wadsworth Boulevard to Dartmouth Avenue to Federal Boulevard and travels to Colfax Avenue into the downtown area. Service is provided every 10 minutes and varies to 15 minutes during the evening hours; and every 30 minutes during late-night hours.

Route 30L follows the same route as Route 30. Service is provided by four northbound trips and one southbound trip during the a.m. peak period and one northbound trip and five southbound trips during the p.m. peak period.

Route 36L travels from the Littleton Station, and generally follows Bowles Avenue to Federal Boulevard and travels to Colfax Avenue into downtown Denver. Service is provided by six northbound trips and four southbound trips during the a.m. peak period and six northbound trips and nine southbound trips during the p.m. peak period.

For more detailed information on these bus routes, please refer to Chapter 1, Section 1.2 of this EA.

This corridor is the second highest in terms of RTD's boardings per hour. From field observation, many transit patrons cross mid-block, especially in areas where the bus stops are located mid-block.

As part of the FasTracks program, the West Corridor LRT station is proposed near Federal Boulevard and Holden Place, approximately six blocks north of the study area. There is potential for an increase in bus ridership in this corridor for those accessing this station.

3.5.6 Transit Facilities and Service Impacts

Bus Service

No Action Alternative

The No Action Alternative would have no direct impacts on bus service. Indirectly, bus travel times would likely increase due to increased traffic volumes.

Build Alternative

Under the Build Alternative, buses would continue to stop along curbside lanes and would be located on the farside of the intersection. CCD's Transit Amenity Program may be followed to provide bus shelters at bus stop locations along the corridor. It is expected that the added capacity of a third northbound lane would reduce vehicular traffic disruptions and delays.

3.5.7 Mitigation

No mitigation is required.

3.5.8 Pedestrian and Bicycle Facilities

Pedestrian facilities within the study corridor include pedestrian crosswalks at signalized intersections and a continuous sidewalk on both sides of Federal Boulevard that shifts in both alignment and in width. At various points the sidewalk is between the traveled lane and a parking lot. In many areas, the sidewalk is in poor condition. As described in Chapter 1, many of the sidewalks, curb ramps, and driveway curb cuts are not compliant with ADA requirements and, due to pavement overlays, the roadway pavement thickness adjacent to the ramps makes them unsuitable for wheelchair use.

There is one CCD bike route, D-14, that crosses Federal Boulevard within the study area. It crosses Federal Boulevard at 1st Avenue (south intersection) and travels south along Federal Boulevard to Irvington Place, where it heads east. Route D-14, an east-west route, intersects with Route D-3, a north-south route, west of Federal Boulevard on Irving Street/Knox Court providing access to the north across 6th Avenue. Additionally, Weir Gulch provides an off-street bicycle path connecting into Barnum Park. Less than one percent of the total accidents involved bicycles, which is less than expected for this type of roadway.

3.5.9 Pedestrian and Bicycle Facilities Impacts

No Action Alternative

The No Action Alternative would have no direct impacts on pedestrian and bicycle facilities. Indirectly, pedestrians and bicycle related crashes would likely increase due to increased traffic volumes.

Build Alternative

Pedestrians would be served by the construction of sidewalks with consistent widths and a buffer between the sidewalk and traffic on Federal Boulevard. The sidewalks, curb ramps, and driveway curb cuts would be upgraded to CCD and ADA standards. Also, at signalized intersections where crosswalks are available, the addition of a raised median would provide pedestrians a refuge to stand on in instances when they do not have enough time to cross Federal Boulevard. This refuge would create safer pedestrian conditions.

Many children currently cross Federal Boulevard to access the schools described in Section 3.2.2. The addition of a raised median, crosswalks, and improved sidewalks would improve the safety conditions for these children.

The existing D-14 on-street bicycle route would likely be re-routed by the CCD Bicycle Coordinator to cross at the potential signalized intersection at Bayaud. Additional signage would be provided as part of the Build Alternative and would be coordinated with the CCD Bicycle Coordinator.

3.5.10 Mitigation

No mitigation is required.

3.6 Air Quality

Several air pollutants have been identified by the U.S. Environmental Protection Agency (USEPA) as being of concern nationwide. These pollutants, known as criteria pollutants, are carbon monoxide (CO), nitrogen dioxide (NO_2), ozone, particulate matter (PM_{10} and $PM_{2.5}$), sulfur dioxides (SO_2), and lead (Pb). Ambient concentrations of CO and ozone in the study area are predominantly influenced by motor vehicle activity. NO_2 is emitted from both mobile and stationary sources. Emissions of SO_2 are associated mainly with stationary sources. Emissions of particulate matter are associated mainly with stationary sources and diesel-fueled mobile sources (heavy trucks and buses). Pb emissions, which historically were principally influenced by motor vehicle activity, have been substantially reduced, due to the elimination of lead from gasoline.

National and State Ambient Air Quality Standards

National Ambient Air Quality Standards (NAAQS) are concentrations set for each of the criteria pollutants specified by USEPA (49 Code of Federal Regulations (CFR) 50) that have been developed to protect human health and welfare. The state of Colorado has adopted the NAAQS as state ambient air quality standards. These standards, together with their health-related averaging periods, are presented in Table 3-12. New PM_{10} and $PM_{2.5}$ standards were adopted by USEPA on October 17, 2006, and went into effect on December 17, 2006. For $PM_{10,}$ the 24-hour standard remains the same, but the annual standard was dropped. For $PM_{2.5}$ USEPA will re-designate non-attainment areas based on the new stricter 24-hour $PM_{2.5}$ standard. This recently adopted standard has not been implemented at the time of this analysis.

Table 3-12
National Ambient Air Quality Standards

Pollutant	Averaging Period	National and Colorado Standards	
		Primary	Secondary
Ozone	8 Hour	0.08 ppm (157 µg/m^3)	Same as Primary
Carbon Monoxide	8 Hour	9 ppm (10 mg/m^3)	Same as Primary
	1 Hour	35 ppm (40 mg/m^3)	Same as Primary Standard
Nitrogen Dioxide	Annual Average	0.053 ppm (100 µg/m^3)	Same as Primary
Sulfur Dioxide	Annual Average	80 µg/m^3 (0.03 ppm)	-
	24 Hour	365 µg/m^3 (0.14 ppm)	-
	3 Hour	--	1300 µg/m^3 (0.5 ppm)
Coarse Particulate Matter (PM_{10})	24 Hour	150 µg/m^3	Same as Primary
Fine Particulate Matter ($PM_{2.5}$)	24 Hour	65 µg/m^3	Same as Primary
	Annual Arithmetic Mean	15 µg/m^3	Same as Primary
Lead	Calendar Quarter	1.5 µg/m^3	Same as Primary

Source: http://epa.gov/air/criteria.html
ppm = parts per million; µg/m^3 = micrograms per cubic meter

3.6.1 Existing Air Quality

Monitored Pollutant Levels

The highest ambient pollutant levels recorded in the CCD in 2005 that correspond to the NAAQS are shown in Table 3-13. As shown, no exceedances of any of the NAAQS occurred. In addition, ambient air quality data in the Denver area show no violations of the 8-hour CO standard since 1995, and no violation of the 24-hour PM_{10} standard since 1995.

Regulatory Setting and Compliance with Standards

The 1970 federal Clean Air Act (CAA) (42 U.S.C) defines nonattainment areas as geographic regions that have been designated as not meeting one or more of the NAAQS. The CAA requires that a State Implementation Plan (SIP) be prepared for each non-attainment area, and a maintenance plan be prepared for each former non-attainment area that subsequently has demonstrated compliance with the standards. These plans present the strategies that the states must implement to meet and/or maintain the NAAQS under the deadlines established by the CAA. A Transportation Improvement Program (TIP) is a staged, multiyear, intermodal program of transportation projects covering a metropolitan planning area, consistent with that area's Transportation Plan (also known as a Regional Transportation Plan or RTP). A TIP includes projects (planned and future) anticipated within three to five years and is developed by DRCOG for the Denver metro region.

Table 3-13
Representative Pollutant Data (2005)

Pollutant	Location	Averaging Time	Unit	Value*	NAAQS
Carbon Monoxide	2105 Broadway-Camp	8 hour	ppm	2.5	9
Nitrogen Dioxide	2105 Broadway-Camp	Annual	ppm	0.028	0.053
Ozone	2325 Irving St	8 hour	ppm	0.074	0.08
Sulfur Dioxide	2105 Broadway-Camp	Annual	ppm	0.026	0.50
		24 hour	ppm	0.009	0.14
		3 hour	ppm	0.003	0.30
$PM_{2.5}$	4650 Columbine St	Annual	mg/m^3	10.1	15
		24 hour	mg/m^3	26	65
PM_{10}	225 W. Colfax Ave	24 hour	mg/m^3	67	150

Source: USEPA AirData (http://oaspub.epa.gov/airdata)
* Values shown correspond to NAAQS time periods, and are the highest values recorded in the City of Denver.

USEPA's Transportation Conformity Rule requires SIP conformity determinations on transportation plans, programs, and projects before they are approved or adopted, (i.e., eliminating or reducing the severity and number of violations of the NAAQS), and achieving expeditious attainment of such standards (40 CFR Part 93). In addition, Federal activities may not cause or contribute to new violations of air quality standards, exacerbate existing violations, or interfere with timely attainment or required interim emissions reductions towards attainment.

The Denver region is currently designated as an attainment/maintenance area for CO and PM_{10}, and attainment of the federal standards for the remaining pollutants. Although exceedance of the federal 8-hour ozone standard was monitored in the region in 2002 and 2003, USEPA has deferred designating the region as a non-attainment area for the 8-hour ozone standard as long as the region meets the milestones specified in the region's Ozone Early Action Compact (EAC). The EAC is an agreement between state and regional agencies in the Denver metropolitan area and USEPA to implement emission control measures necessary to comply with the 8-hour ozone standard by December 31, 2007. However, concentrations higher than the 8-hour standard of ground-level ozone were monitored on July 20, 2007 and may, if verified, have put the Denver region in the position to be designated as a non-attainment area for ozone. If it is designated as a non-attainment area, a new SIP for ozone will have to be developed that will require further reductions of ozone to levels beyond those required by Ozone EAC.

Pollutants for Analysis

As the study area is designated as being a maintenance area for CO and PM_{10}, the potential localized (microscale) impacts of the proposed project on the levels of these pollutants were estimated. Regional effects, however, were not evaluated because the

proposed project is included in DRCOG's 2007-2012 TIP and CO, PM_{10} and ozone regional effects of the proposed project have already been considered. CO and PM_{10} regional analyses are in CO and PM_{10} SIPs and ozone regional analysis is in the EAC.

Analyses were conducted for existing (2006) conditions and future conditions with and without the proposed project. The project's estimated first year of operation (2010) and its design year (2030) were considered.

3.6.2 Air Quality Assessment

Microscale CO Analysis Methodology

The microscale CO mobile source analysis was conducted using the following procedures and assumptions.

Analysis Sites

For localized or microscale analysis of existing conditions, CO levels were estimated at locations where local traffic conditions would be most affected by the Build Alternative. As shown in Table 3-14, the three sites selected were those with the highest existing traffic volumes and/or worst existing LOS that would be affected by the Build Alternative.

Table 3-14
Air Quality Analysis Sites

1	Federal Blvd & Alameda Ave
2	Federal Blvd & 1st Ave South
3	Federal Blvd & 2nd Ave North

The following factors were considered in the selection of these analysis sites:

- Heavily traveled roadway segments that would experience an increase in peak-period volumes between existing, No Action, and Build conditions; and
- Heavily traveled roadway segments that would experience adverse peak-period changes in volume-to-capacity ratios between existing, No Action, and Build conditions.

Modeling Approach

Analysis was conducted following USEPA's *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* for modeling methodology and receptor placement. All major roadway segments (links) within approximately 1,000 feet from each analysis site (i.e., congested intersection) during the critical PM time period were considered.

The locations at which pollutant concentrations are estimated are known as "receptors." Following guidelines established by the USEPA, receptors were located where the maximum projected concentrations are likely to occur and where the general public (or any significant segment thereof) is likely to have access. For this analysis, receptors

were distributed along sidewalks near the major roadway links surrounding each analysis site. The exact placement of these receptors was determined on the basis of traffic conditions, roadway geometry, and the potential location of queued traffic. Receptor heights were 6.0 feet above ground level.

Vehicular Emissions

CO emission factors were estimated using the most recent version of the USEPA emission factor algorithm (MOBILE 6.2.03) and the most current CDOT inputs for the Denver area, including vehicular age-distribution rates, inspection/maintenance (I/M) and anti-tampering program (ATP) credits, and low emission vehicle (LEV) program.

Vehicle classification required to determine composite emission factors were obtained from vehicle classification and registration data provided by CDOT in their MOBILE 6.2.03 inputs, which include percentages of light-duty gas vehicles (LDGVs), light-duty trucks (LDGT), and heavy-duty trucks (HDGV and HDDV).

Dispersion Model

Mobile source models are the basic analytical tools used to estimate pollutant concentrations expected under given traffic, roadway geometry, and meteorological conditions. The dispersion modeling program used in this study for estimating pollutant concentrations near roadway intersections is the CAL3QHC (Version 2.0) dispersion model developed by the USEPA. CAL3QHC is a Gaussian model recommended in the USEPA *Guidelines for Modeling Carbon Monoxide from Roadway Intersections* (EPA-454/R-92-005).

Background Concentrations

To estimate total pollutant concentrations at an analysis site, background concentrations were added to modeled values to account for pollutants entering the area from other upwind sources. Pollutant background concentrations were based on monitored values, and calculated using procedures established by the USEPA. These values, which are provided in Table 3-15, were added to the modeling results to obtain total pollutant concentrations at each receptor site for each analysis year.

Table 3-15
Representative Background Data

Pollutant	Averaging Time	Background Value
CO	8-hour	2.6 ppm
	1-Hour	4.7 ppm

Source: USEPA AirData (http://oaspub.epa.gov/airdata)
Note: 1 and 8 hour CO level — highest second highest of the latest three years (2003-2005) concentrations at West 57th Avenue and Garrison Street monitor.

Existing CO Results

Results of mobile source air quality modeling for existing (2006) conditions are shown in Table 3-16. The values provided are the maximum 8-hour CO concentrations predicted near each selected site. Predicted existing levels would not exceed the applicable standards. The highest estimated 8-hour CO concentration (8.9 ppm) would occur near the intersection of Federal Boulevard and Alameda Avenue (Analysis Site 1). The relatively high estimated levels are based primarily on long vehicular queues and a conservative approach to the analysis.

Table 3-16
Maximum Estimated 1 and 8-Hour CO Concentrations under Existing (2006) Conditions

Site	Intersection	1-Hour CO ppm	8-Hour CO ppm
1	Federal Blvd & Alameda Avenue	13.7	8.9
2	Federal Blvd & 1st Avenue South	12.7	8.2
3	Federal Blvd & 2nd Avenue North	11.8	7.6
	NAAQS	**35.0**	**9.0**

Source: PB, 2006.
Note: Results include 1 and 8-hour CO background concentrations

No Action CO Results

Future CO levels without the proposed project have been estimated at the three air quality analysis sites previously discussed. The results of this analysis are provided in Table 3-17 and Table 3-18. Predicted levels would not exceed the applicable standards. The highest estimated 8-hour CO concentrations (8.6 ppm in 2010 and 6.4 in 2030) would occur near the intersection of Federal Boulevard and Alameda Avenue (Analysis Site 1).

Table 3-17
Maximum Estimated 1-Hour CO Concentrations under Future No Build (2010 and 2030) Conditions (ppm)

Site	Intersection	2010	2030
1	Federal Boulevard & Alameda Avenue	13.2	10.1
2	Federal Boulevard & 1st Avenue South	12.0	9.1
3	Federal Boulevard & 2nd Avenue North	12.2	9.2
	NAAQS	**35.0**	**35.0**

Source: PB, 2006.
Note: Results include 1-hour CO background concentration = 4.7 ppm

Table 3-18
Maximum Estimated 8-Hour CO Concentrations under Future No Build (2010 and 2030) Conditions (ppm)

Site	Intersection	2010	2030
1	Federal Boulevard & Alameda Avenue	8.6	6.4
2	Federal Boulevard & 1st Avenue South	7.7	5.7
3	Federal Boulevard & 2nd Avenue North	7.9	5.8
	NAAQS	**9.0**	**9.0**

Source: PB, 2006.
Note: Results include 8-hour CO background concentration = 2.6 ppm

Build CO Results

Future CO levels with the proposed project are provided in Table 3-19 and Table 3-20. Predicted levels do not exceed the applicable standards. The highest estimated 1-hour and 8-hour CO concentrations (12.4 ppm/8.0 ppm in 2010 and 9.5 ppm/6.0 in 2030) would occur near the intersection of Federal Boulevard and Alameda Avenue (Analysis Site 1).

Table 3-19
Maximum Estimated 1-Hour CO Concentrations under Future Build (2010 and 2030) Conditions (ppm)

Site	Intersection	2010	2030
1	Federal Blvd & Alameda Avenue	12.4	9.5
2	Federal Blvd & 1st Avenue South	12.1	9.1
3	Federal Blvd & 2nd Avenue North	10.9	8.3
	NAAQS	**35.0**	**35.0**

Source: PB, 2006.
Note: Results include 8-hour CO background concentration = 4.7 ppm

Table 3-20
Maximum Estimated 8-Hour CO Concentrations under Future Build (2010 and 2030) Conditions (ppm)

Site	Intersection	2010	2030
1	Federal Blvd & Alameda Avenue	8.0	6.0
2	Federal Blvd & 1st Avenue South	7.8	5.7
3	Federal Blvd & 2nd Avenue North	6.9	5.1
	NAAQS	**9.0**	**9.0**

Source: PB, 2006.
Note: Results include 8-hour CO background concentration = 2.6 ppm

PM_{10} Analysis

An analysis was conducted to address localized impacts of particulate matter, following guidance provided in the USEPA and FHWA *$PM_{2.5}$ and PM_{10} Hot-Spot Analyses in Project-level Transportation Conformity Determinations for the New $PM_{2.5}$ and Existing PM_{10} National Ambient Air Quality Standards (71 FR 12468).*

Based on traffic projections, the proposed project does not meet the criteria set forth in 40 CFR 93.123(b)(1) as a project of air quality concern. This is because the estimated annual average daily traffic (AADT) and truck percentages on nearby roadways are less than the threshold values of 125,000 AADT and 8 percent diesel truck traffic. However, according to USEPA and FHWA March 29, 2006 *Transportation Conformity Guidance for Qualitative Hot-Spot Analyses in $PM_{2.5}$ and PM_{10} Nonattainment and Maintenance Areas (EPA420-B-06-902)*, a hot-spot analysis must still be performed because the study area currently has an approved SIP that has not as yet been revised to incorporate the hot-spot requirements of the March 10, 2006 Final Conformity Rule.

A qualitative project-level hot-spot assessment was therefore conducted to assess whether the project would cause or contribute to any new localized PM_{10} violations, or increase the frequency or severity of any existing violations, or delay timely attainment of the PM_{10} NAAQS. Based on this analysis, it is determined that the proposed project would not cause or contribute to a new violation of the PM_{10} NAAQS.

Additional information on the air quality analysis for this project can be found in the *Air Quality Technical Report*, April 4, 2007.

3.6.3 Air Quality Conformity

As discussed earlier, the proposed project is included in DRCOG's 2007-2012 TIP, which is in conformance with the SIP. In addition, microscale analyses have demonstrated that traffic conditions with the Build Alternative would not cause localized violations of the NAAQS for CO and PM_{10}. As such, the proposed project would be in compliance with the Transportation Conformity Rule. Additional information on air quality conformity for this project can be found in the *Air Quality Analysis Conformity Assessment*, March 2007.

3.6.4 Air Toxics

In addition to the criteria pollutants, small quantities of a wide range of the non-criteria air pollutants, known as air toxic pollutants, which are emitted from the vehicular fleet, are also of concern. The Clean Air Act identified 188 air toxics, also known as hazardous air pollutants. The USEPA has assessed this expansive list of toxics and identified a group of 21 as mobile source air toxics (MSAT), which are set forth in an USEPA final rule, *Control of Emissions of Hazardous Air Pollutants from Mobile Sources* (66 FR 17235). Six of them are identified as priority pollutants: acetaldehyde, benzene, formaldehyde, diesel exhaust, acrolein and 1,3 butadiene.

USEPA's national emission control programs are projected to reduce MSAT emissions. These programs include the use of reformulated gasoline, the national

low emission vehicle program, and stricter standards for passenger vehicles. Additional programs include the following: new on-road diesel vehicles will be subject to stringent emission standards and emission control requirements starting in 2007; a drastic reduction of the allowable sulfur content in diesel fuel (from 500 parts per million to 15 parts per million) came into effect by mid-2006.

Between 2000 and 2020, FHWA expects that even with a 64 percent increase in vehicle miles traveled (VMT), these programs will reduce on-highway emissions of benzene, formaldehyde, 1,3-butadiene, and acetaldehyde by 57 percent to 65 percent, and will reduce on-highway diesel PM emissions by 87 percent.

Local conditions may differ from the national reduction projections due to area-specific conditions such as fleet mix, vehicle turnover, VMT growth projections, and local emission control requirements. However, the anticipated effectiveness of USEPA's emission control measures is so great (even after accounting for variations in local conditions), that mobile source air toxic emissions in the study area are likely to be lower in the future.

There are no NAAQS for air toxics. Methods for quantifying air toxic impacts from mobile source are subject to scientific debate, and the analysis of air toxics is an emerging field. FHWA's ongoing work with air toxics includes a research program to determine and quantify the contribution of mobile sources to air toxic emissions, the establishment of policies for addressing air toxics in environmental reports, and the assessment of scientific literature on the health impacts associated with motor vehicle air toxic emissions.

The proposed project fits the definition of the project with low potential MSAT effect. Since the highest design AADT that would occur at any of the affected intersections is 60,790 in 2030, which is below the FHWA criterion, the proposed project is considered to be "Project with Low Potential MSAT Effects."

MSAT emissions are proportional to the number of vehicle miles traveled. Because the estimated AADT under the No Action Alternative and the Build Alternative is nearly the same, increasing by less than one percent, it is expected there would be no appreciable difference in overall MSAT emissions generated by the project's vehicles. Also, regardless of the alternative, emissions would likely be lower than present levels in the design year as a result of USEPA's national control programs that are projected to drastically reduce MSAT emissions between 2000 and 2020.

3.6.5 Mitigation

No mitigation is required since the proposed project would not cause or increase a violation of the NAAQS and has a low potential MSAT effect.

3.7 Noise

Environmental noise is comprised of many frequencies, each occurring simultaneously at its own sound pressure level. Frequency weighting, which is applied electronically by a sound level meter, combines the overall sound frequency into one sound level that simulates how an average person hears sounds. The commonly used frequency

weighting for environmental noise is A-weighting (dBA), which is most similar to how humans perceive sounds of low to moderate magnitude. The human ear can barely perceive a three dBA increase, but a five or six dBA increase is readily noticeable and sounds as if the noise is about one and one-half times as loud. A 10 dBA increase is perceived to be a doubling in noise level to most listeners.

Noise levels from traffic sources depend on volume, speed, and the type of vehicle. An increase in volume, speed, or vehicle size generally increases traffic noise levels. Vehicular noise is a combination of noises from the engine, exhaust, and tires. Other conditions affecting traffic noise include defective mufflers, steep grades, terrain, vegetation, distance from the roadway, and shielding by barriers and buildings.

A widely used descriptor for environmental noise is the equivalent sound level (Leq). The Leq can be considered a measure of the average noise level during a specified period of time.

Methodology

Existing or ambient noise levels were measured to describe the existing noise environment, identify major noise sources in the study area, and validate the noise model. Fifteen-minute ambient noise level measurements were taken at eleven locations within and near the study area to characterize weekday noise levels. Measurement locations represent a variety of noise conditions and are representative of other sensitive receptors near the study area.

The hourly equivalent sound levels (Leq(h)) traffic noise levels were predicted using FHWA's Transportation Noise Model (TNM) Version 2.5 computer model (FHWA, 2005). TNM provides precise estimates of noise levels at discrete points, by considering interactions between different noise sources and topographical features. For this project, major roadways, topographical features, building rows, and sensitive receptors were digitized into the model.

A noise impact is considered to occur when the future noise levels meet or exceed the levels shown below in Table 3-21. In addition, a noise impact is considered to occur if construction of the project would result in a noise increase of 10 dBA or greater over existing noise levels (CDOT, 2002). FHWA has approved the use of CDOT's Noise Abatement Criteria (NAC) levels and 10 dBA noise level increase criterion.

A severe noise impact is defined as occurring when a receiver is either exposed to absolute exterior noise levels of 75 dBA or greater, or a projected increase of 30 dBA or more over existing noise levels (CDOT, 2002).

The accuracy of the model was confirmed by predicting existing (2004) Leq noise levels and comparing them to actual field measurements of existing conditions. Validation Leq noise levels were predicted using the posted speed and actual traffic volumes observed during the noise measurement period. Predicted results were within three decibels for all monitoring sites.

Table 3-21
CDOT Noise Abatement Criteria

Activity Category	CDOT Leq(h) dBA)[1]	Description of Activity Category
A	56 Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of these qualities is essential for the area to continue to serve its intended purpose.
B	66 Exterior [2]	Picnic areas, recreation areas, playgrounds, active sports areas, parks, residences, motels, hotels, schools, churches, libraries, and hospitals.
C	71 Exterior	Developed lands, properties, or activities not included in Categories A or B above.
D	--	Undeveloped lands
E	51 Interior	Residences, motels, hotels, public meeting rooms, schools, churches, libraries, hospitals, and auditoriums.

Source: CDOT Noise Analysis and Abatement Guidelines, December 2002.
[1] Leq(h) describes the hourly value of Leq. Leq is the mean noise level during the peak traffic period. dBA is the weighted decibels by which noise levels are measured.
[2] Activity Category B experiences severe impacts at 75 dBA or with a project increase of 30 dBA.

Once the model was validated, noise levels were modeled for existing and future design hour traffic volumes to estimate worst-case noise levels. Truck percentages taken from the traffic analysis (seven percent medium trucks and one percent heavy trucks) were used. Posted speed limits were used for modeling. Receptors were modeled that were representative of all noise sensitive receptors in the study area.

3.7.1 Existing Noise Levels

Traffic noise was the dominant noise source in the study area. Table 3-22 shows that existing measured noise levels range from approximately 51 dBA to 74 dBA and the majority of the locations are in the high-50s dBA to the low-60s dBA.

Table 3-22
Existing Noise Measurement Results

Location	Address	Start Time	Leq
1	Barnum Park West	11:30 A.M.	50.8
2	2947 West 4th Avenue	3:14 P.M.	60.1
3	3025 West 3rd Avenue	11:55 A.M.	58.2
4	2947 West 2nd Avenue	3:07 P.M.	62.1
5	2833 West Irvington Place	2:45 P.M.	62.0
6	2 Grove Street	11:57 A.M.	60.7
7	65 South Federal Boulevard	2:05 P.M.	74.0
8	100 South Federal Boulevard	2:00 P.M.	70.6
9	161 Grove Street	12:25 P.M.	50.7
10	2900 Cedar Street	2:40 P.M.	60.1
11	246 Grove Street	12:20 P.M.	62.8

Source: PB, 2005.

As shown in Figure 3-10, existing noise levels were modeled at 11 measurement locations to evaluate the existing loudest traffic hour. Existing traffic noise levels were modeled and ranged from 53 to 74 dBA, as shown in Table 3-22. Existing noise levels exceeded the noise abatement criteria at two of the modeled sites (Receptors 7 and 8), two single-family residences and a thirteen unit apartment complex located along the first row of buildings west and east of Federal Boulevard at Bayaud Avenue.

3.7.2 Future Noise Levels

Noise levels were modeled at 11 measurement locations. Four of the 11 locations meet or exceed the impact criteria shown in Table 3-21. As shown in Table 3-23, future noise levels would be slightly greater than existing levels due to increased traffic in both the No Action and Build Alternatives.

Table 3-23
Traffic Noise Modeling Results

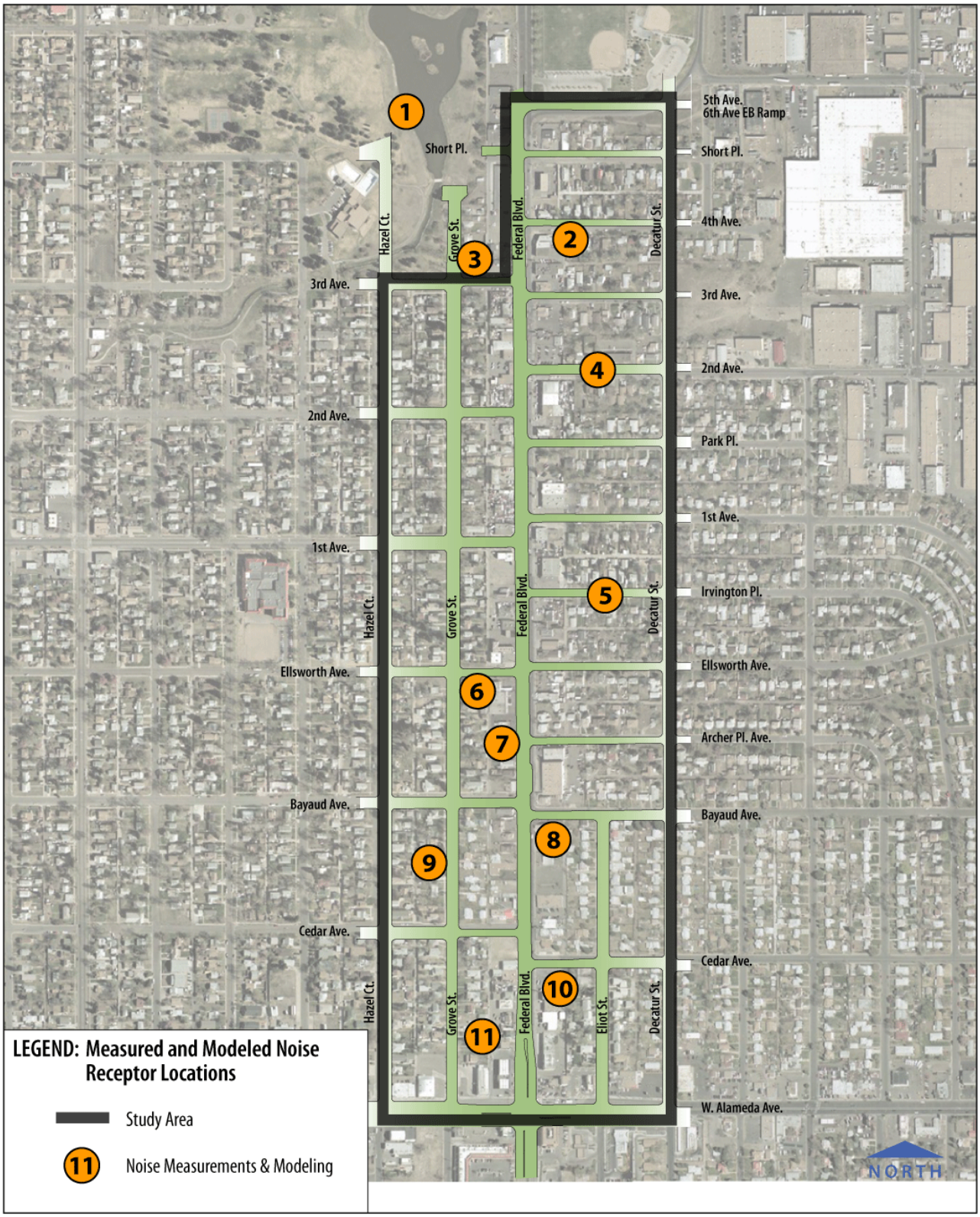
Location	Receptors Represented	2005 Existing Leq(h) (dBA)	2030 No Action Leq(h) (dBA)	2030 Action Leq(h) (dBA)
1	Park	53	55	55
2	8 Homes	61	63	63
3	15 Homes	62	63	63
4	8 Homes	63	65	65
5	13 Homes	63	65	65
6	24 Homes	62	64	64
7	2 Homes	**74**	**76**	**74**
8	13 Apartments	**72**	**74**	**72**
9	13 Homes	55	57	57
10	21 Homes	64	**66**	**66**
11	11 Homes	64	**66**	**66**

Source: PB, 2006.
Values in **BOLD** approach or exceed the Noise Abatement Criteria of 66 dBA.

3.7.3 Noise Impacts

No Action Alternative

Under the No Action Alternative, traffic noise levels would increase by 1 to 2 dBA at receptors in the study area. An increase of 1 to 2 dBA would not be perceptible to most individuals. Noise levels at four locations (Receptors 7, 8, 10, and 11) were predicted to meet or exceed the NAC in 2030 under the No Action Alternative. Receptors 7 and 8 are located adjacent to Federal Boulevard to the west and east respectively. Noise levels at Receptor 7, which represents two single family homes, would exceed the severe impact level of 75 dBA. Receptors 10 and 11 are located near the southern study area limits, behind commercial properties, which partially shield traffic noise from Federal Boulevard. In total, 34 homes and 13 apartment units would be affected by noise levels that meet or exceed the NAC.



Measured and Modeled Noise Receptor Locations

Federal Boulevard Environmental Assessment — Figure 3-10

Build Alternative

Noise levels at 34 homes and 13 apartment units would meet or exceed noise standards.

Under the Build Alternative, traffic noise levels would increase from 0 to 2 dBA relative to existing conditions. Thirty-four homes and 13 apartment units would be affected by noise levels that meet or exceed the NAC with the Build Alternative. Again, a 1 dBA increase would not be perceptible to most individuals, and a 3 dBA change would be barely perceptible. 2030 peak traffic noise levels on Federal Boulevard would be within 2 dBA of the No Action Alternative. Noise levels at Receptors 7 and 8 are predicted to remain at existing noise levels. The outdoor use spaces represented by Receptors 7 and 8 are located adjacent to Federal Boulevard and the public sidewalk. Due to the widening of Federal Boulevard in these areas, both receivers were relocated further from the road in order to maintain future Federal Boulevard right-of-way. Their relocated positions are similar to their current locations in relation to Federal Boulevard. In total, 34 homes and 13 apartment units would meet or exceed the NAC with no severe impacts predicted.

2030 Build peak-hour through-traffic on Federal Boulevard is projected to increase approximately 30 percent compared to existing conditions and stay approximately the same compared to the No Action Alternative. Some shielding would be lost as a number of structures are planned for removal as a part of the Build Alternative. Receptors that would be shielded by those structures planned for removal would be most affected by structure removal.

Based on the modeling of residential sites, outdoor noise levels at the commercial buildings bordering Federal Boulevard are expected to range between 60 and 70 dBA Leq, depending on the distance from the roadway. None of the commercial sites are expected to meet or exceed the noise abatement criteria for commercial activities of 71 dBA.

Additional information on the noise analysis for this project can be found in the *Noise Analysis Report*, April 2007.

3.7.4 Mitigation

Noise mitigation must be considered if noise levels meet or exceed the CDOT NAC, or if the receptors would experience an increase of 10 dBA over existing levels. First row residential noise levels adjacent to Federal Boulevard near Bayaud Avenue exceed the NAC and second row residential noise levels between Cedar Avenue and Alameda Avenue meet the NAC. Noise mitigation was considered in these areas; however, due to property access constraints no mitigation was deemed feasible at all four locations.

A 20-foot tall noise barrier was evaluated along Federal Boulevard from Bayaud Avenue to Ellsworth Avenue to confirm this predicted result. Several breaks in the barrier were included to maintain driveway access to Federal Boulevard for adjacent properties. The evaluated barrier did not provide the necessary 5 dBA noise

reduction at first or second row receivers in the area to meet CDOT criteria for a feasible noise barrier.

Noise mitigation must be feasible and reasonable in order to be provided. In the case of all 47 impacted residences, a noise barrier could not be constructed that would be continuous to reduce noise levels while allowing access to driveways, cross streets, and sidewalks along Federal Boulevard. As a result, mitigation for the impacted residences is not feasible or reasonable and is not recommended for inclusion in this project.

3.8 Vegetation and Wildlife

Native vegetation such as that in wetlands and riparian areas was not found within the study area. The existing urban landscape contains small areas of irrigated and non-irrigated lawn, shrubs and trees that are associated with commercial businesses. There are also non-native trees that are not maintained in business, residential and abandoned lot landscapes.

A site inventory of the study area was conducted on July 29, 2005 and photographs were taken to illustrate field conditions at that time. No agricultural or sensitive ecological areas were found to be present and no threatened and/or endangered species or habitats were identified. However, landscape trees and planting areas along Federal Boulevard were noted.

3.8.1 Existing Vegetation

The land uses surrounding the study area are predominantly business and commercial areas that have little natural habitat. The area to the west of Federal Boulevard and south of 6th Avenue is the only area with natural habitat remaining. This area is in Barnum Park and is outside of the study boundaries. The study area does not contain riparian or wetland habitats nor is there suitable tree and vegetation cover for wildlife species. The plant materials found within the study area are associated either with small business and residential landscapes or with an abandoned lot on the southwest corner of the project limits.

Existing native vegetation along Federal Boulevard is found only as isolated patches, typically associated with business and residential landscapes and abandoned lots such as the one on the southwest corner of W. Cedar Avenue and Federal Boulevard. These areas are highly disturbed with the predominant species being non-native species such as Siberian elm (*Ulmus pumila*), Russian olive (*Elaeagnus angustifolia*). Existing landscape trees and plantings are a mixture of native and non-native species and are located in small areas between the sidewalk and roadway, and in planting beds adjacent to businesses.

3.8.2 Vegetation Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts to vegetation.

Build Alternative

Direct impacts to native vegetation would be minimal as there is very little native vegetation within the study area. Landscape plants such as ornamental trees and shrubs located in the existing right-of-way would be impacted by roadway widening in this alternative. These plants are located in association with commercial businesses on both sides of Federal Boulevard and are either in landscape beds or lawns. Existing landscape trees and plantings are a mixture of native and non-native species and are located in small areas between the sidewalk and roadway adjacent to businesses. Species of trees impacted include green ash (*Fraxinus pennsylvanica*), Siberian elm (*Ulmus pumila*), crabapple (*Malus sp.)* and Russian olive (*Elaeagnus angustifolia).* Table 3-24 lists the estimated type and quantity of impacted trees.

Table 3-24
Vegetation Impact Estimates

Item Description	Item	Quantity
Roadside	Native Trees	0
Roadside	Ornamental Deciduous Trees	29
Roadside	Ornamental Conifer Trees	4
Roadside	Evergreen Shrubs	42
Roadside	Deciduous Shrubs	15

Source: PKM Design Group, 2006.
Note: Plants within project limits or less than 10' from new ROW.

3.8.3 Mitigation

CDOT Region 6 has a tree replacement policy of 1:1 for trees over 2 inches in diameter on roadway projects or a 3:1 or 4:1 ratio of replacement shrubs for removed trees.

The following mitigation measures will be implemented:

- Replacement of landscape trees impacted by the project will take place on private property, on CDOT right-of-way or on other public land as determined by the Project Engineer.
- Revegetation for erosion and noxious weed control will be done with vegetation including grasses and forbs to provide natural habitats and displace potential noxious weed invasions. All disturbed areas will be re-seeded with native grasses, forbs, or lawn species.
- Avoidance of existing trees, shrubs, and vegetation to the maximum extent practicable.

3.8.4 Existing Wildlife Species and Wildlife Habitat

Several federal and state statutes, regulations, and policies have been developed to protect wildlife. The regulations and policies associated with the assessment of wildlife and wildlife habitat was used as the basis for this EA and are discussed below.

The federal *Migratory Bird Treaty Act of 1918*, as amended, provides for the protection of migratory birds, including their nests and eggs. As a result, the effects of construction on the tree and shrub habitat within the study area were considered. The *Fish and Wildlife Coordination Act) of 1934*, as amended, is a federal law that requires consultation with the U.S. Fish and Wildlife Service (USFWS) to prevent loss of and damage to wildlife resources for projects that may impound, divert, control, or otherwise modify the waters of any stream or other water body. The potential effects to wildlife resources were evaluated for the project to be compliant with this requirement. The *Fish and Wildlife Conservation Act of 1980*, as amended, is a federal law that includes a provision for the USFWS to determine the effects of environmental changes and human activities.

The Colorado Wildlife Commission, under the authority of the Colorado State Revised Statutes 33-1, 33-4, and 24-4 protects non-game species in addition to administering laws governing hunting and possession of wildlife.

3.8.5 Wildlife Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on wildlife.

Build Alternative

Potential impacts to wildlife and wildlife habitat were evaluated. No game or non-game species would be affected by the proposed improvements.

Direct impacts to wildlife would be minimal as there is very little native vegetation within the study area and consequently, very little suitable wildlife habitat. The proposed project could have an impact on nesting birds. Habitat fragmentation would be negligible in this area as the minimal viable size is low due to the high density of surrounding urban development. There also would be no indirect impacts to these resources. The existing ornamental landscape that would be impacted does not provide a suitable quantity or quality wildlife habitat.

3.8.6 Mitigation

Trees will be removed outside of the nesting season of April 1st through August 31st If this is unavoidable, a nesting bird survey will be accomplished no earlier than one week prior to the removal of trees. Any active nests will be avoided until the chicks are able to fly.

3.9 Farmlands

3.9.1 Existing Farmland

The Farmland Protection Act of 1981 protects prime and unique farmland. There is no farmland located in or near the study area and therefore no unique or prime farmland will be affected by the project.

3.9.2 Farmland Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on unique or prime farmland.

Build Alternative

The Build Alternative would have no direct or indirect impacts on unique or prime farmland.

3.9.3 Mitigation

No mitigation is required.

3.10 Noxious Weeds

3.10.1 Existing Noxious Weeds

The study corridor for the proposed improvements is predominantly urban hardscape with scattered areas of unmaintained right-of-way and undeveloped adjacent properties. Noxious weeds are found in one undeveloped area at the southwest corner of W. Cedar Avenue and Federal Boulevard. Other areas include landscaped planters on the west side of Federal Boulevard north of W. 3rd Avenue and in thinly scattered, unirrigated right-of-way. Four species of weeds were found in the study area that are listed in at least one of the following three noxious weed lists; the Denver County Weed List, the CDOT List and/or the Colorado State Noxious Weed List as shown in Table 3-25. The four species of noxious weeds found within the study area are Canada thistle (*Cirsium arvense*), field bindweed (*Convolvulus arvensis*), Russian olive (*Elaeagnus angustifolia*), and downy brome (*Bromus tectorum*). None of the weed species identified within the project boundaries are found on the Colorado State "A" list species as being one of the most invasive species.

Table 3-25
List of Noxious Weed Species Present in the Study Area

Common Name	Botanical Name	Denver Co. Weed List	CDOT Weed List	Colorado State Noxious Weed List List A, B, or C
Canada thistle	*Cirsium arvense*	X	X	B
Field bindweed	*Convolvulus arvensis*		X	C
Russian olive	*Elaeagnus angustifolia*		X	B
Downy brome	*Bromus tectorum*			C

Source: CCD, CDOT, and Colorado State

3.10.2 Noxious Weeds Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on noxious weeds within the study area.

Build Alternative

Roadway widening would produce positive effects in regard to noxious weed impacts in landscaped planters and beds where removal or redevelopment of the area would eliminate the existing few and small infestations. However, roadway widening and the disturbance of soil could have negative effects especially when bindweed is present. Disturbing soils can leave the site vulnerable to new infestations of noxious weeds. No indirect impacts would result from this project.

3.10.3 Mitigation

No mitigation is required.

3.11 Threatened and/or Endangered Species

3.11.1 Existing Threatened and/or Endangered Species

The regulations and policies associated with the assessment of federally and state-listed threatened, endangered, proposed, candidate species, and state species of special concern include the *Endangered Species Act of 1973* and the *Colorado Revised Statutes 33-1, 33-4 and 24-4*, as amended.

The Colorado Wildlife Commission, under the authority granted by the Colorado statutes cited above, has published lists of endangered and threatened species and species of special concern. The list of federally listed species and State listed species were evaluated for this project. Based on the project description, location and site visits, no suitable habitat exists for these species in the study area.

3.11.2 Threatened and/or Endangered Species Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on threatened and/or endangered species.

Build Alternative

The Build Alternative would not affect any threatened, endangered, proposed, candidate, or sensitive species or any designated critical habitats. Field reviews indicate that critical habitat is not present in the study area and there would be no direct or indirect impacts associated with the proposed improvements.

No wildlife or threatened and/or endangered species are present in the study area.

3.11.3 Mitigation

No mitigation is required.

3.12 Historic Properties

3.12.1 Historic Resources

Federal Boulevard between Alameda Avenue and 6th Avenue is lined by numerous commercial and a few residential buildings of varying ages, all of them dating from the past century. The purpose of the historic building survey was to determine whether any of the properties are listed in or eligible for the National Register of Historic Places (NRHP). Secondly, the study involved an assessment of possible effects to those buildings in the area of potential effect (APE) that were found to be eligible.

The historic buildings survey conducted within the APE complies with Section 106 requirements of the National Historic Preservation Act and CDOT's Cultural Resources Procedures Manual. The APE is shown in Figure 3-11. Consultation with staff from both CDOT and the Colorado Historical Society's State Historic Preservation Office (SHPO) was frequent throughout the course of the survey and Section 106 process. Copies of correspondence with the SHPO can be found in Appendix C.

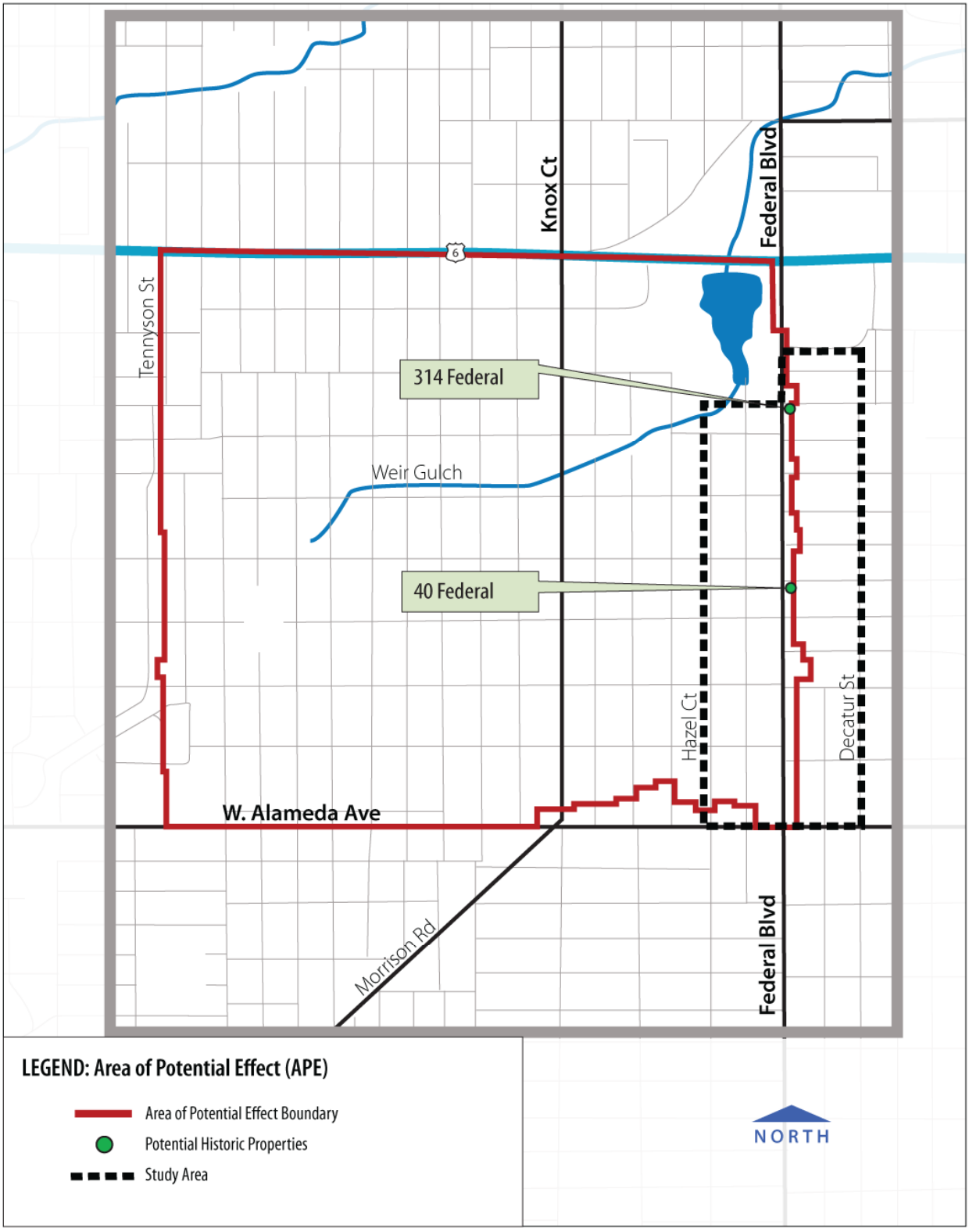
Methodology

A reconnaissance survey of Federal Boulevard was completed between August and December 2005. The primary goal of the reconnaissance survey was to define the APE in fulfillment of Section 106 requirements. This included a review of the buildings lining Federal Boulevard, and the adjacent residential neighborhoods to the east and west. The results of this survey were documented in the *Reconnaissance Survey Report, April 2006.*

The reconnaissance survey focused primarily within the boundary of the APE. The APE boundary includes the Barnum neighborhood to the west of Federal Boulevard due to its potential eligibility as a future National Register historic district. In addition to the buildings along Federal Boulevard, intensive surveys were completed on a limited number of residential properties along the side streets in the adjacent neighborhoods. CDOT and SHPO approvals were required in order to determine which residences along the side streets were to be surveyed. The SHPO also determined that it was not necessary to survey every building in the adjacent neighborhoods. Only the buildings that may be directly and indirectly impacted by the proposed property acquisitions along Federal Boulevard were surveyed. This assessment documented existing characteristics and conditions and contributed to a determination of historic architectural integrity for each resource.

3.12.2 Survey Results

The reconnaissance survey determined that 54 of the approximately 90 developed properties that front onto Federal Boulevard contain buildings that are at least 45



Area of Potential Effect (APE)

Federal Boulevard Environmental Assessment — Figure 3-11

years old. This group of 54 properties served as the initial focus of the intensive-level survey. Later in the project, CDOT and SHPO added another 16 residential properties to the survey, all of them located on streets adjacent to Federal Boulevard where property acquisitions are anticipated. By the time the *Intensive-Level Survey of Historic Buildings* (April 2007) was completed, a total of 70 properties were intensively surveyed. Two of these were found to be potentially NRHP eligible. No other historic features, such as bridges, ditches or landscaping, were documented within the study area.

Homes in Barnum Neighborhood

Since the late 1800s, the study area has undergone several periods of development and redevelopment. Although the area was originally settled in the late 1800s, no buildings that remain along Federal Boulevard today were found to date from that period. Consequently, the buildings that line Federal Boulevard in 2006 all date from the early 1900s to the early 2000s.

Eligible property at 314 Federal Boulevard

Within the APE, two properties were found to be eligible for National Register listing. One property is located at 314 Federal Boulevard (5DV.10347). This one-story masonry commercial building is eligible under Criterion A in the area of Communications for its long history of use as the home of the *Barnum News* and other community newspapers. Under Criterion B in the area of Community Planning & Development, it is eligible for its association with the lives of publishers Joseph and Ivan Rosenberg, influential voices in the community who promoted its development as a previously neglected area of the city. Finally, the property is eligible under Criterion C as a good example of early twentieth-century commercial architecture in the Denver area.

Eligible property at 40 Federal Boulevard

The second property that is eligible for the National Register is located at 40 Federal Boulevard (5DV.10328). This one-story service station is eligible under Criterion A in the area of Transportation for its association with the development of Federal Boulevard as a major auto route through west Denver. It represents the evolution of Federal Boulevard from a predominantly residential street to a more heavily commercial thoroughfare in the years following World War II. The property also represents the growing importance of the automobile in the city and the associated development of combined fuel and service stations by the middle of the century. In addition, this property is eligible under Criterion C as a good example of

mid-20th century service station architecture, exhibiting all of the stylistic elements that are typical of the oblong box gas station.

Potential Barnum Neighborhood District: Due to its well-documented history and apparent architectural integrity, there is historic district potential for the Barnum neighborhood. For this reason, and at the request of SHPO, the APE was extended westward to include the entire neighborhood. A conclusive determination of whether Barnum is eligible for historic district designation, however, can only be made through intensive-level documentation of its numerous historic buildings and features. This would involve a level of effort and timeline that would go beyond the scope of work for this EA. The survey did include the documentation of seven properties (5DV10372 -Mountain View Missionary Baptist Church, 5DV10375 -Smith House, 5DV10378 -Tobias House, 5DV10380 - Fegan House, 5DV10381 - Buckann-Genner House, 5DV10382 - Barone House, 5DV10383 - Wilson House) that were determined eligible to the NRHP under Criterion C as examples of vernacular working-class residences from early 20th century Denver. It was also determined that these seven properties would contribute to a potential Barnum Neighborhood District.

3.12.3 Historic Property Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts to either 40 Federal Boulevard (5DV.10328) or 314 Federal Boulevard (5DV.10347), both of which are individually eligible for the NRHP.

Build Alternative

314 Federal Boulevard (5DV.10347) - Typical of early twentieth-century commercial buildings, 314 Federal Boulevard was originally constructed so that its facade abuts the sidewalk along the east side of the street. The Build Alternative would leave the sidewalk intact as a buffer in front of the building, with no impact to the building itself. No changes are anticipated in terms of the property's use or physical features. To address the close proximity of the historic building to the proposed roadway, the design team employed context sensitive solutions to avoid direct impacts. A flat, curved alignment rather than a straight alignment was used in front to direct the proposed roadway footprint away from the historic building. The result was an alignment that met all AASHTO criteria, provided improved sidewalk conditions in front of the building, and avoided any direct impact to the building, its direct ingress/egress, and its functionality. Changes to noise levels would be minimal and are not anticipated to result in any detrimental impact to the historic property. Construction of the roadway will require permanent acquisition of 8.4 feet of sidewalk in front of the building and a 2- to 5-foot temporary construction easement as part of the roadway widening and sidewalk construction. However, these improvements will not alter the characteristics of the property that make it eligible. The proposed improvements along Federal Boulevard would not significantly change the character of the historic property's surroundings. Determination of effect: No Adverse Effect.

40 Federal Boulevard (5DV.10328) - The building at 40 Federal Boulevard was originally constructed in the center of the parcel and set back from the adjacent streets. This location on the property historically allowed autos to access gasoline pumps that were formerly situated in front of the building. These pumps were removed years ago and the property is no longer engaged in the sale of gasoline. The Build Alternative would leave the sidewalk intact as a buffer in front of the property, which with the existing on-site paved parking area, would continue to ensure that there would be no impact to the building itself. Any loss to square footage of the pavement along the property's frontage would be minimal and would not diminish the site's historic integrity. Changes to noise levels would to be minimal and are not anticipated to result in any detrimental impact to the historic property. Construction of the roadway will require permanent acquisition of 8.5 feet of sidewalk in front of the building and a 2- to 5-foot temporary construction easement as part of the roadway widening and sidewalk construction. However, these improvements will not alter the characteristics of the property that make it eligible. The proposed improvements along Federal Boulevard would not significantly change the character of the historic property's surroundings. Determination of effect: No Adverse Effect.

5DV10372 - Mountain View Missionary Baptist Church, 5DV10375 - Smith House, 5DV10378 - Tobias House, 5DV10380 - Fegan House, 5DV10381 - Buckann-Genner House, 5DV10382 - Barone House, 5DV10383 - Wilson House - These seven properties are located along Grove Street, one block west of Federal Boulevard. The project would widen existing lanes, construct a raised median, and add ADA-compliant sidewalks and ramps along Federal Boulevard. Construction along Federal Boulevard would not have a permanent or temporary impact on these seven properties on Grove Street. In consultation with SHPO, it was determined that the project would result in no historic properties affected with regard to these properties.

3.12.4 Mitigation

No mitigation is required.

3.12.5 Archaeological Resources

Archaeological resources consist of the remains of past human activities preserved on the surface and in the subsurface. The evidence of human activity in the Denver area extends back as far as 10,000 years ago. Historic maps of Denver (formally known as Auraria) from 1860 depict Native American villages at the confluence of Cherry Creek and the South Platte River just east of the study area.

Historically, several linear resources were located within and around the study area including roads, railroads, ditches and pipelines. A portion of the Bradford Road was located west of the study area from the 1860s and a portion of the Morrison Road from the 1880s crossed through the study area. The Barnum Branch of the Denver, Lakewood, and Golden Railroad from the 1880s was located in the Barnum Subdivision west of the study area and a portion of the Denver Circle Railroad also from the 1880s crossed through it. Two unnamed ditches from the 1880s were located outside the study area to the north and east. One historic pipeline from the

1920s extended along the east side of Federal Boulevard between 2nd and 8th Avenues and along 2nd Avenue to the east and west.

Methodology

A records search was performed at several research institutions and management agencies in Denver to determine the potential archaeological resources within the study area. The files at the Office of Archaeology and Historic Preservation (OAHP) were consulted to determine if there were any documented archaeological sites within the study area. Historic records and maps at the Denver Public Library (DPL), Stephen H. Hart Research Library, State Bureau of Land Management (BLM) Office, and the Denver Federal Center were then consulted to document the types of resources present within the study area. Lastly, a reconnaissance inventory of the study area was performed to determine if any evidence of the historic resources shown on the maps was still present and to examine any open areas for archaeological remains.

3.12.6 Existing Archaeological Resources

The records search performed at the OAHP indicated that there are no recorded historic archaeological resources within the study area. The reconnaissance survey also did not identify any National Register eligible archaeological resources in the APE.

3.12.7 Native American Consultation

Section 106 of the National Historic Preservation Act (as amended) and the Advisory Council on Historic Preservation regulations (36 CFR 800.2[c][2][ii]) mandate that federal agencies coordinate with interested Native American tribes in the planning process for federal undertakings. Consultation with Native American tribes recognizes the government-to-government relationship between the U.S. government and sovereign tribal groups. In that context, federal agencies must acknowledge that historic properties of religious and cultural significance to one or more tribes may be located on ancestral, aboriginal, or ceded lands beyond modern reservation boundaries.

Consulting tribes are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. If it is found that the project will impact cultural resources that are eligible for inclusion on the NRHP and are of religious or cultural significance to one or more consulting tribes, their role in the consultation process may also include participation in resolving how best to avoid, minimize, or mitigate those impacts. By describing the proposed undertaking and the nature of any known cultural sites, and consulting with the interested Native American community, FHWA and CDOT strive to effectively protect areas important to American Indian people.

In April 2006, FHWA contacted the following twelve federally recognized tribes with an established interest in the CCD, Colorado, and invited them to participate as consulting parties:

- Apache Tribe of Oklahoma
- Cheyenne and Arapaho Tribes of Oklahoma (two tribes administered by a unified tribal government)
- Cheyenne River Sioux Tribe (South Dakota)
- Comanche Nation of Oklahoma
- Crow Creek Sioux Tribe (South Dakota)
- Kiowa Tribe of Oklahoma
- Northern Arapaho Tribe (Wyoming)
- Northern Cheyenne Tribe (Montana)
- Oglala Sioux Tribe (South Dakota)
- Pawnee Nation of Oklahoma
- Rosebud Sioux Tribe (South Dakota)
- Standing Rock Sioux Tribe (North Dakota)

Three tribes responded in writing to the solicitation, two of which (Comanche Tribe of Oklahoma and Cheyenne River Sioux Tribe) indicated a desire to be consulting tribes, whereas the remaining tribe (Pawnee Nation of Oklahoma) declined to participate. Both the Comanche and Cheyenne River Sioux Tribes specified that they had no concerns or issues and that the project would not affect properties of religious and cultural significance. FHWA and CDOT have committed to notifying both tribes if Native American materials are discovered during any phase of construction, and to keep the tribes apprised of progress as the project develops. As a result of these actions, FHWA has fulfilled its legal obligations for tribal consultation under federal law.

3.12.8 Archaeological Resource Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impacts on archaeological resources.

Build Alternative

The Build Alternative would have no direct or indirect impacts to archaeological resources.

Additional information on the archaeology assessment completed for this project can be found in the *Archaeological Resources Inventory of the Federal Boulevard Improvement Project*, September 2006.

3.12.9 Mitigation

No mitigation is required.

3.13 Paleontology

Paleontological resources (fossils) are the physical remains of once present organisms preserved in rocks and sediments (geologic units). They include the mineralized, partially mineralized, and unmineralized bones, teeth, soft tissues, shells, wood, leaf impressions, footprints, burrows, and microscopic remains of once-living and now deceased organisms. Within the study area, five geologic units are present, four of which have the potential to contain significant paleontological resources.

Methodology

To evaluate the potential for significant paleontological resources within the study area, a records search and literature review were performed. Geologic maps of the study area and relevant literature were consulted to determine what geologic units underlie the study area and assess the potential for them to contain significant paleontological resources. The records of the Denver Museum of Nature and Science in Denver and the University of Colorado Museum in Boulder were searched to determine if any paleontological localities had been identified in the study area in the past or in the same geologic units elsewhere.

3.13.1 Existing Paleontological Resources

The five geologic units that occur within the study area consist of the Piney Creek Alluvium, colluvium, loess, Broadway Alluvium, and the Denver Formation. They vary in age from less than 10,000 years old (Holocene) to more than 65 million years old (Cretaceous) with most being of Pleistocene age (2 million to 10,000 years old). The Piney Creek Alluvium, colluvium, loess and Broadway Alluvium all occur on the surface within the study area. The Denver Formation underlies these surficial units at varying depths, but was encountered within the study area under semi-confined conditions at depths of 15 feet or greater during the installation of seven groundwater monitoring wells (MW) as part of a Phase II hazardous materials investigation. The colluvium (Holocene to Pleistocene age), loess (Holocene to Pleistocene), Broadway Alluvium (Pleistocene), and Denver Formation (Cretecaous) all have the potential to contain paleontological resources. The Holocene age Piney Creek Alluvium and Holocene age colluvium and loess are of too young an age to contain any fossils. The Pleistocene age colluvium, loess, and Broadway Alluvium have the potential to contain rare and important fossils, but they are rarely encountered within these units. The Denver Formation contains an abundance of significant plant fossils and several important fossil vertebrate fauna. Of the five geologic units that occur within the study area, the Denver Formation is considered the most likely to contain paleontological resources. For this reason, it is considered the most sensitive to potential impacts.

The records search at the Denver Museum of Natural History and University of Colorado Museum documented no fossil localities within the study area and none have been documented in the scientific and technical literature. However, numerous fossil localities have been recorded from the same geologic units elsewhere in the central Denver area. Seventeen of the fossil localities were associated with Pleistocene age deposits and five were associated with Cretaceous-Paleocene age deposits (Denver Formation). Fossil remains recovered from Pleistocene age

deposits (usually alluvium) are frequently isolated and fragmentary in nature. The collections from the Denver Formation are much larger in size and are the subject of much ongoing research.

3.13.2 Paleontological Resource Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect physical impacts on any documented paleontological resources.

Build Alternative

The Build Alternative would have no direct or indirect impacts on any documented paleontological resources. Direct or indirect impacts to any undocumented paleontological resources are unlikely. Because construction work for the Build Alternative would be at or just below the existing grade, it most likely would not reach the depth of the highly sensitive Denver Formation.

Additional information on the paleontological resources assessment for this project can be found in the *Paleontological Resource Assessment for the Federal Boulevard Improvement Project*, April 2007.

3.13.3 Mitigation

No preconstruction mitigation is required. The CDOT paleontologist will examine final design plans when they are available in order to estimate the size and location(s) of likely construction impacts to presently buried Denver Formation outcrop and the scope of the paleontological construction monitoring work, if any, that will be required. If fossils are uncovered in areas not being actively monitored, the CDOT paleontologist will be contacted to evaluate the scientific importance of the fossils.

3.14 Section 4(f) - Finding of De Minimis Impact

Section 4(f) was created when the USDOT was formed in 1966. It was initially codified at Title 49 United States Code (U.S.C) Section 1653(f) (Section 4(f) of USDOT Act of 1966).

In 1983, Section 1653(f) was reworded and recodified at Title 49 U.S.C. Section 303. These two statutes have no real practical distinction and are still commonly referred to as “Section 4(f)”. Congress amended Section 4(f) in 2005 when it enacted the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59, enacted August 10, 2005)(SAFETEA-LU). Section 6009 of the SAFETEA-LU added a new subsection to Section 4(f), which authorizes the FHWA to approve a project that results in a *de minimis* impact to a Section 4(f) resource without the evaluation of avoidance alternatives typically required in a Section 4(f) Evaluation. Section 6009 amended Title 23 U.S.C. Section 138 to state.

> *"The Secretary shall not approve any program or project (other than any project for a park road or parkway under Section 204 of this title) which requires the use of any publicly owned land from a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance as determined by the federal, state, or local officials having jurisdiction thereof, or any land from an historic site of national, state, or local significance as so determined by such officials unless (1) there is no feasible and prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreational area, wildlife, and waterfowl refuges, or historic site resulting from such use. The requirements of this section shall be considered to be satisfied and an alternatives analysis not required if the Secretary determines that a transportation program or project will have a de minimis impact on the historic site, parks, recreation areas, and wildlife or waterfowl refuges. In making any determination, the Secretary shall consider to be a part of a transportation program or project any avoidance, minimization, mitigation, or enhancement measures that are required to be implemented as a condition of approval of the transportation program or project. With respect to historic sites, the Secretary may make a finding of de minimis impact only if the Secretary has determined in accordance with the consultation process required under Section 106 of the National Historic Preservation Act that the transportation program or project will have no adverse effect on the historic site or there will be no historic properties affected by the transportation program or project; the finding has received written concurrence from the State Historic Preservation Officer (SHPO); and the finding was developed in consultation with the parties consulted under the Section 106 process."*

As discussed in Section 3.12.3, two properties eligible for the NRHP, 314 Federal Boulevard (5DV.10347) and 40 Federal Boulevard (5DV.10328) would be minimally impacted by the project, however, the structures would not be affected.

The Build Alternative would add a third northbound lane and widen existing lanes to 11 feet. In addition, the pedestrian zone would be 8 feet wide, which includes a 5-foot sidewalk and 3-foot pedestrian zone. The widening of the roadway would require permanent acquisition of 8.4 feet of sidewalk for 314 Federal Boulevard (5DV.10347) and 8.5 feet of sidewalk for 40 Federal Boulevard (5DV.10328) and 2 to 5 feet for a temporary construction easement of both eligible historic properties as described in Section 3.12.3. However, neither the permanent acquisition nor the temporary easement would affect the structures on the property and would not diminish the qualities that make the properties eligible for the NRHP.

As stated in the *Guidance for Determining De Minimis Impacts to Section 4(f) Resources* (FHWA 2005), SHPO must concur in writing with the Section 106 "no adverse effect" determination and must be informed that FHWA intends to make a de minimis finding based on the Section 106 determination. CDOT consulted with the SHPO regarding eligibility and effects for these sites in March and April 2007. In response to the April 24, 2007 letter, the SHPO agreed with the finding of "no

adverse effect" and *de minimis* findings for both properties. On June 15, 2007, FHWA also concurred with the *de minimis* findings.

3.14.1 Mitigation

No mitigation is required.

3.15 Section 6(f) Evaluation

Section 6(f) of the Land and Water Conservation Act prohibits the conversion of property acquired or developed with grants obtained from this Act to a non-recreational purpose without the approval of the Department of the Interior's National Park Service. No evidence was found that properties in the study area were funded by Section 6(f) grants.

3.15.1 Section 6(f) Impacts

There are no impacts from the No Action Alternative or Build Alternative because there are no Section 6(f) properties.

3.15.2 Mitigation

No mitigation for Section 6(f) is required.

3.16 Visual Quality/Aesthetics

3.16.1 Existing Visual Character

The existing views from Federal Boulevard include concentrated commercial development within a few yards of the street edge. Buildings are in close proximity to the edge of the road, and background views are non-existent. Middle ground views are only apparent at street crossings, where adjacent single family residential neighborhoods can be partially seen. The majority of properties are one-story retail or service businesses, with parking visible in front of the building or between the road and the structure façade.

Federal Boulevard and Cedar Avenue, facing north

There is a wide variety of signage along the corridor, including several large billboards, free-standing local signage and signs attached to buildings. This diversity of signage creates visual complexity for travelers driving through the study area. Little landscaping exists on either side of the roadway, with the exception of a few tree lawns and Denver's Barnum Park and Barnum East at the far north end of the study area.

Billboard in Study Area

The views toward Federal Boulevard are visually consistent. The 5-lane roadway dominates the immediate foreground of views from the adjacent properties.

3.16.2 Visual Impacts

Visual impacts were rated on a five-point scale, with a rating of 1 - having no impact, 2 - very little impact, 3 - some noticeable impact, 4 - moderate impact, and 5 - high noticeable impact.

The following discussion addresses potential impacts to the visual environment as a result of the No Action Alternative and Build Alternative.

No Action Alternative

The No Action Alternative would have no new direct or indirect visual impacts. The current roadway would remain with no change or improvements to the visual quality or viewer distances.

Build Alternative

The study area is highly complex and textured from a visual standpoint. As a result, most changes would not result in high contrast unless the existing feature is much larger in scale, or if it is extraordinarily unique in color or form. Viewer sensitivity is affected by how close and for how long the viewer sees the feature, while driving through the study area, as well as the importance of the element in context with all other elements.

Within the study area, the affected properties' average score for magnitude of change is 3.1, which means there would be some noticeable visual impact, especially where proposed buildings are completely removed.

The Build Alternative would impact existing properties for a minimum of 18.5 feet on the west side of Federal Boulevard and a minimum of 13.5 feet on the east side. Table 3-26 summarizes the properties that would be impacted by the Build Alternative.

Overall, the visual impacts resulting from the Build Alternative represent less than 25 percent of the properties within the study area.

The Build Alternative would include a pedestrian zone along both sides of Federal Boulevard, resulting in improved continuity and appearance in the area. With these improvements, it is expected that some business frontages would be improved. Utility poles would be realigned and lighting would be enhanced along the corridor.

Indirect impacts of the Build Alternative would be most noticeable to and from adjacent properties. Where buildings are completely removed, new views would emerge. For example, at Bayaud Avenue, where Unique Auto Sales would be acquired for street relocation, the vacated street area would open up a new parcel of land. In other locations, such as at Puerto Vallarta Restaurant, Gunn Automotive, Slang'N Ink Tattoo and the businesses from 221 to 253 Federal Boulevard, where the entire buildings would be removed, views to the alley and residential properties to the west would be seen from Federal Boulevard until redevelopment occurs. This change would affect land use, noise, circulation, night lighting, and aesthetics in the area.

Table 3-26
Properties with Moderate to High Visual Impacts

Northbound Federal Boulevard West Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 233 and 237-239 S. Federal Bouelvard - Phil's Barbershop, Vida Sana, and Estetica del Sol	Parking lot impacts; buildings removed.	Moderate	Moderate	3
 145 S. Federal Boulevard - Gunn Automotive	Parking lot impacts; building removed.	Low to Moderate	Low to Moderate	3
 75 S. Federal Boulevard - Puerto Vallarta Restaurant	Building and sign removed.	Moderate to High	Moderate to High	4

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

Table 3-26
Properties with Moderate to High Visual Impacts (continued)

Northbound Federal Boulevard West Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 57 S. Federal Boulevard - Commercial	Building removed.	Moderate	Moderate	3
 65 S. Federal Boulevard - Commercial	Building removed.	Moderate	Moderate	3
 47 S. Federal Boulevard - Dove's Bail Bonds/Mile High Detail and Tint	Parking lot impacts; buildings and sign removed.	Moderate	Moderate	3

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

Table 3-26
Properties with Moderate to High Visual Impacts (continued)

Northbound Federal Boulevard West Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 21 Federal Boulevard - Law Office	Building and sign removed.	Moderate	Moderate	3
 105 Federal Boulevard - Paleteria La Mexicana	Building removed.	Moderate	Moderate	3
 159 Federal Boulevard - Slang 'N Ink Tattoo	Building and sign removed.	Low to Moderate	Low to Moderate	3

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

Table 3-26
Properties with Moderate to High Visual Impacts (continued)

Northbound Federal Boulevard West Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 231-235 Federal Boulevard - Various Businesses	Four buildings removed.	Moderate to High	Moderate to High	4
 401 Federal Boulevard - Tran's Auto Glass	Parking lot impacts, building and sign removed.	Moderate	Moderate	3
Northbound Federal Boulevard East Side	**Proposed Change**	**Contrast of Change**	**Viewer Sensitivity Level**	**Magnitude of Change***
 230 S. Federal Boulevard - Howell's Harley Davidson	Parking lot impacts; building removed.	Moderate	Moderate	3

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

Table 3-26
Properties with Moderate to High Visual Impacts (continued)

Northbound Federal Boulevard East Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 180 - 194 S. Federal Boulevard - Vacant	Parking lot impacts; two buildings removed.	Moderate to high	Moderate to high	4
 82 S. Federal Boulevard - Unique Auto Sales, Cricket Phones, Embroidery Avenue	Parking lot impacts; two buildings removed; sign removed.	Moderate to high	Moderate to high	4
 50 S. Federal Boulevard - Chiropractor's office	Parking lot impacts; building removed.	Moderate	Moderate	3

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

Table 3-26
Properties with Moderate to High Visual Impacts (continued)

Northbound Federal Boulevard East Side	Proposed Change	Contrast of Change	Viewer Sensitivity Level	Magnitude of Change*
 2-8 S. Federal Boulevard - Joyeria and Critical Mass Media	Parking lot impacts; two buildings removed next to Ellsworth.	Moderate to high	Moderate to high	4
 90 Federal Boulevard - Seguros Americo Insurance	Building removed.	Moderate	Moderate	4
 110 Federal Boulevard - Multiple Businesses	Parking lot impacts; one building removed next to 1st Avenue.	Moderate to high	Moderate to high	4

Source: PKM Design Group, 2006.
Magnitude of Change Key:
*1-No impact, 2-Very little impact, 3-Some noticeable impact, 4- Moderate noticeable impact, 5-High noticeable impact.

3.16.3 Mitigation

Aesthetic treatments that will be considered will enhance the visual quality of the corridor by providing a consistent theme along its entire length. Elements such as patterned, colored concrete, enhanced pedestrian lighting, and site accessories in the pedestrian buffer zone and in medians will achieve this requirement.

Modifications to structures that remain in place should be visually consistent with the existing structure and its surroundings. For example, where a portion of a roof overhang is impacted, the roof should be reconfigured to blend in with the existing structure. Similar materials should be used and continuous lines in the architecture should be achieved.

In locations where buildings are removed, the remaining site should blend in with the surrounding lines and grades. New development will meet CCD design guidelines.

The specific details of the aesthetic treatment, including landscaping, special pavements, site furnishings, and lighting will be determined during final design.

3.17 Parks and Recreation Resources

3.17.1 Existing Park and Recreation Resources

There are no parks or recreation resources in the study area. Barnum Park, Barnum Park North, Barnum Park East, and Weir Gulch Park are located just outside of the study area. In addition, the following parks are located in the general vicinity of the study area: Frog Hollow Park, Phil Milstein Park, Bryant Street Park, and West-Bar-Val-Wood Park. The locations of the parks can be found on Figure 3-4.

3.17.2 Park and Recreation Resource Impacts

No Action Alternative

The No Action Alternative would have no new direct or indirect impacts on park and recreation resources.

Build Alternative

The Build Alternative would have no new direct or indirect impacts on park and recreation resources.

3.17.3 Mitigation

No mitigation is required.

3.18 Water Resources

3.18.1 Existing Surface Water

Four CCD storm sewers cross Federal Boulevard within the project limits. Each is a localized system conveying stormwater from the west side of Federal Boulevard to

the east, and eventually empties into the South Platte River, which is approximately one mile to the east of the study area. The existing storm drains are undersized based on CDOT drainage criteria.

At the northwest end of the area, Weir Gulch flows north from Barnum Lake under 6th Avenue, crosses under Federal Boulevard approximately 0.25 miles north of 6th Avenue, and empties into the South Platte River approximately 0.50 miles north and east of the Federal Boulevard and 6th Avenue interchange. Weir Gulch is a natural drainage; the lake and park were built in the 1950s during construction of 6th Avenue (French, 2005). Weir Gulch is identified as a flood-prone area (McCain and Hotchkiss, 1975).

3.18.2 Existing Groundwater

Existing groundwater resources in the Denver Basin include shallow aquifers and deeper aquifers. A near-surface, alluvial aquifer consisting of water-bearing sands, gravels, and clays is present under approximately one-quarter of the land in the Denver Basin, primarily near creeks and rivers. This aquifer is present within the study area. The Colorado Division of Water Resources, Office of the State Engineer (State Engineer's Office) has 87 records in their database relating to wells or well permits within the same one square mile section of the study area. The vast majority of these records relate to domestic, irrigation, or monitoring wells completed in the alluvial aquifer.

There are four major deep aquifers in the Denver Basin. From deepest to shallowest, they are known as the Laramie-Fox Hills Aquifer, Arapahoe Aquifer, Denver Aquifer, and Dawson Aquifer. The formations occur in a sequence of layers that form a bowl shaped basin. The layers dip at a low angle toward the center from the north and east, and dip at a greater angle from the Front Range in the west and Colorado Springs to the south. At any given site, the aquifer closest to the surface depends on the location within the Denver Basin.

At the Federal Boulevard site, the Denver formation is nearest the surface and the Arapahoe and Laramie-Fox Hills Aquifers are beneath it. Water from the Denver and Arapahoe Aquifers is used for domestic and municipal water supplies. Of the 87 wells registered in the project vicinity, all but three have been abandoned. The three remaining wells function as monitoring stations for the Federal Boulevard and Alameda Boulevard Rehabilitation Project (Colorado Division of Water Resources, 2006) and are located near that intersection. All three wells are used for groundwater monitoring remediation.

Depth to the water table varies significantly within the area. Along natural drainages, the water table is typically less than 10 feet deep and commonly less than 5 feet deep; shallow water tables may occur along Weir Gulch. Colluvium also may have locally very shallow water tables. Elsewhere in the northern and central portions of the area, the water table is expected to be approximately 10 to 20 feet deep in unconsolidated alluvium or colluvium, with greater depths generally toward the east and north. In the southern part of the area, localized shallow water tables at 3 to 16 feet deep may exist in loess, but the perennial water table is typically in the bedrock, generally more than 20 feet deep and commonly more than 100 feet deep. Water

tables in artificial fill are variable but generally deep in highway embankments and shallow in loosely filled areas. (Lindvall, 1978; Hillier et al., 1983; Topper et al., 2003)

3.18.3 Existing Water Quality and Drainage

Near the study area, water quality in the South Platte River is impacted primarily at the outlet points of Denver Wastewater Treatment Plants (Litke, 2002). The USEPA uses the Clean Water Act (CWA) Section 305(b) water quality reports and Section 303(d) lists of impaired waters to communicate and regulate the health of the nation's waters. In Colorado, the Colorado Department of Public Health and Environment (CDPHE) is responsible for ensuring the requirements of the federal CWA.

The Colorado Water Quality Control Commission classifies the South Platte River as aquatic life warm 2, recreation 2, water supply, agriculture. This means that the CDPHE water quality standards for the South Platte River are intended to support warm-water aquatic life; secondary contact recreation, (e.g., boating and fishing; public water supply; and agriculture). The 2006 CWA Section 305(b) water quality report states that agriculture and recreation uses are fully supported.

Near the study area, the South Platte River is currently listed as impaired for E. coli.

As required by Section 303(d), CDPHE has evaluated the South Platte River's water quality at various locations. Upstream of the project site in certain mountain reaches, the South Platte River is considered impaired because it violates water quality standards for zinc (CDPHE, 2006). Near the study area, the South Platte River had previously been listed as impaired for nitrate, manganese, cadmium, and E. Coli (Fecal Coliform) (CDPHE 1998), but is currently listed as impaired for E. coli only (CDPHE, 2006). Total Maximum Daily Loads (TMDL) for nitrate, manganese, and cadmium were approved by the EPA, and therefore, listing is no longer required. The main pollutants of concern regarding roadway projects per CDOT's Erosion Control and Stormwater Quality Guide include particulates or Total Suspended Solids (TSS); nutrients such as nitrogen and phosphorous; metals including lead, zinc, iron, copper, cadmium, chromium, nickel, and manganese; petroleum; rubber; and asbestos (USEPA, 1995; FHWA and CDOT, 2002).

Currently, study area runoff discharges to storm sewers without the benefit of detention or best management practices.

The entire area is fully developed and therefore, the potential for stormwater runoff is moderate to high. Urbanization has resulted in decreased permeability, which increases runoff rates. The paved areas of the study limits currently drain to storm sewers, which drain east. Offsite basins also drain east. Within the study area and vicinity, runoff is collected by four storm sewer systems that discharge into the South Platte River near its confluence with Cherry Creek.

One of the existing potential sources of water quality impacts is street de-icing. Federal Boulevard is within an area that CCD refers to as the *Sandbox Area*. These areas require sweeping within four days after a snowstorm where sand is applied. However, current practice by CCD is to use *Ice Slicer* instead

of salt or sand *Ice Slicer* is a naturally mined sodium based product similar to salt and, through testing, is not thought to adversely impact stormwater or snowmelt runoff. (Duffy, 2007).

3.18.4 Water Resources Impacts

Water resources would be considered impacted if a project negatively influences surface water or groundwater flow rates; adversely impacts surface water or groundwater quality; discharges sediments, impacts a public water supply; or depletes a groundwater aquifer.

The types and concentrations of pollutants in highway runoff are affected by many factors including climatic conditions, pavement quantity, right-of-way vegetation, average daily traffic, surrounding land use, and highway drainage features. Pollutants of concern include particulates or TSS; nutrients such as nitrogen and phosphorous; metals including lead, zinc, iron, copper, cadmium, chromium, nickel, and manganese; petroleum; rubber; and asbestos (USEPA, 1995; FHWA and CDOT, 2002).

No Action Alternative

The study area is currently urbanized, although future development may allow more intense uses. Runoff from the study area discharges to storm sewers without the benefit of detention or other Best Management Practices (BMPs) to aid in reducing pollutant loads. Because the study area is very small (less than 100 acres) compared to the basin area of the receiving water body (the South Platte River basin area is approximately 21,000 square miles or over 13 million acres), the quantity of stormwater runoff from the study area is very small compared to flows in the South Platte River. However, the study area may contribute in some small part to the degradation of water quality within the South Platte River basin due to the urban land use within the study area. Impervious surface areas may increase in the study area due to private development, outside of this project. No direct or indirect impacts to water resources are anticipated under the No Action Alternative.

Build Alternative

In both short and long term, the Build Alternative would result in minor impacts due to construction (short term construction impacts are described in Section 3.23.9) and beneficial impacts to water resources overall. The study area has reached full build out and the paved footprint of Federal Boulevard will likely remain almost identical to the existing condition. Some business frontages would be removed in place of additional infrastructure for the roadway, such as pavement and sidewalks. However, a majority of this area is currently developed with impervious surfaces. The Build Alternative would not substantially affect initial surface water runoff quantities, rates, and patterns.

Under the TMDL program, the receiving water for the Project (South Platte River) is listed as impaired for fecal coliform and exceeds the limit set by EPA. Fecal coliform, however, is not a pollutant of concern for highway projects. Therefore, the project is

not expected to contribute to the South Platte's fecal coliform impairment under the TMDL program.

Extended Detention Basins (EDB) were considered at various locations along the Federal Boulevard alignment, as well as in areas not impacted by proposed roadway improvements. Based on the recommendations submitted in the *Hydrologic, Hydraulic, and Water Quality Report (September 2007)* for Federal Boulevard, the selected alternative would consist of providing two EDBs within the study area. The first EDB would be located at the northeast corner of Federal Boulevard and 1st Avenue. The second would be located west of the intersection of Federal Boulevard and 2nd Avenue. These locations are indicated on the plan drawings in Appendix A. Several other alternatives were examined and can be reviewed in the technical report referenced above. It should be noted that CCD may consider locating the EDB on a vacant off-site lot at 201 Clay Street instead of the two Federal Boulevard sites described above. This possibility may be considered during final design.

A summary of the alternatives versus the property impacts is shown in Table 3-27. The Build Alternative would have minor negative impacts due to construction, and would have a beneficial impact to water resources in the long term.

Table 3-27
Extended Detention Basin Alternatives Considered

Alternative	Property Impacted	Minority Owned Property	Minority Owned Business(es)	Proposed Acquisition for Roadway Improvement
Alternative 1 North	300 Federal Boulevard	No	No	No
Alternative 1 South	110-114 Federal Boulevard	No	Yes - 3 Known Minority Businesses	Yes
Alternative 2	221-253 Federal Boulevard	No	Yes - 4 Known Minority Businesses	Yes
Alternative 3	201 Clay Street	No	No	No
Alternative 4	Not Defined	N/A	N/A	No
Alternative 5 North*	221-253 Federal Boulevard	No	Yes - 4 Known Minority Businesses	Yes
Alternative 5 South*	110-114 Federal Boulevard	No	Yes - 3 Known Minority Businesses	Yes

** Preferred Detention Basin Locations*

Additional investigation would be needed before the design is finalized. Options such as over sizing the detention area to provide park-like areas would be determined in final design. In each of the alternatives, the existing storm drain in Federal Boulevard would be modified or replaced to maintain the minimum standards set by CDOT, CCD, and UDFCD. Per the Intergovernmental Agreement (IGA) between the CCD and CDOT and policy directive (PD) provided by CDOT, maintenance of the water quality basins would be the responsibility of the local jurisdiction as expressly provided in 43-2-135 C.R.S.

This project is classified as a "*significant highway modification*" per the *CDOT New Development and Redevelopment Manual* because it meets a number of requirements, including disturbance of more than 1 acre. Therefore, permanent

BMPs would be required under CDOT's Municipal Separate Storm Sewer System (MS4) permit (see Section 3.23.6). With the use of in-line filters or EDBs, in the long term, construction of the Build Alternative would have a positive impact on water quality and runoff because stormwater from the study area currently flows to the storm sewer and then to the South Platte River without BMPs in place.

Additional information on the water resources assessment for this project can be found in the *Hydrology, Hydraulic, and Water Quality Final Report*, September 2007.

3.18.5 Mitigation

Mitigation measures designed to reduce construction impacts include BMPs as required by the stormwater permitting system in the State of Colorado. For the Build Alternative, the feasibility of adding a BMP such as a Water Quality Capture Volume (WQCV) basin was investigated along with Minimizing Directly Connected Impervious Areas (MDCIA) such as tree lawns Through public meetings and discussion with property owners, it was determined that providing planter areas and other infiltration areas such as tree lawns would not be included in the project features. However, CCD may still consider the installation of tree lawns during final design. Therefore, EDBs were considered as part of the proposed project design.

This project commits to the following:

- CDOT's Erosion Control and Stormwater Quality Guide (CDOT, 2002), section 107.25 and 208 of the specifications for the Standard Specifications for Road and Bridge Construction (CDOT, 2005)
- Provide permanent BMPs in the form of EDBs to capture 100 percent of the WQCV or 80 percent of the TSS. The Build Alternative locates one EDB on the northeast corner of Federal Boulevard and 1st Avenue and a second on the west side of Federal Boulevard at across from 2nd Avenue.

Impacts to groundwater are minimal. Therefore, no mitigation for groundwater impacts is required.

3.19 Wetlands

3.19.1 Existing Wetlands

No naturally occurring wetlands are present within the study area.

3.19.2 Wetland Impacts

No Action Alternative

No direct or indirect wetland impacts would occur.

Build Alternative

No direct or indirect wetland impacts would occur.

3.19.3 Mitigation

No mitigation is required.

3.20 Floodplains

3.20.1 Existing Floodplains

The study area is mapped in the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (FIRM), CCD, Colorado, Panels 182 and 184 of 300, Map Numbers 0800460182G and 0800460184G, Effective Date November 17, 2005 (FEMA, 2007). The FIRM indicates that the study area is located outside of all designated floodplains. The Weir Gulch floodplain is approximately 0.10 miles west of Federal Boulevard.

3.20.2 Floodplain Impacts

No Action Alternative

No direct or indirect floodplain impacts would occur.

Build Alternative

No direct or indirect floodplain impacts would occur.

3.20.3 Mitigation

No mitigation is required.

3.21 Hazardous Materials

Hazardous materials includes all waste materials that require specific handling, worker health and safety precautions, and special disposal handling because of their potential to significantly contribute to an increase in illness or mortality, or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed. Hazardous substances include those materials regulated as solid waste, toxic substances, hazardous materials, hazardous waste, radioactive materials, petroleum fuels, and others as defined and regulated by multiple state and federal laws.

Numerous laws and regulations exist regarding the management, handling and disposal of non-hazardous and hazardous wastes, such as the Resource Conservation Recovery Act (RCRA), the Comprehensive Environmental Response Compensation and Liability Act (CERCLA, or Superfund), Toxic Substances Control Act (TSCA), the CDPHE Hazardous Waste Commission Regulations, State Board of Health Regulations, Water Quality Control Commission Regulations, and Colorado Department of Labor and Employment Division of Oil and Public Safety (OPS) regulations.

Methodology

In accordance with the American Society of Testing and Materials (ASTM) standards (1527-05), the USEPA All Appropriate Inquiry (AAI) rule and CDOT requirements, an Environmental Site Assessment (ESA) was conducted for the Federal Boulevard study area in October 2006. The ESA included a search of environmental databases, review of records at public agencies, examination of historical aerial photographs and topographic maps, a review of historical city directories, site reconnaissance, and interviews with selected property owners. During the visual site reconnaissance performed in October and November 2005, properties adjoining Federal Boulevard between Alameda Avenue and 6th Avenue were observed and photographed from Federal Boulevard and the adjoining public right-of-way. Field personnel did not enter onto private properties, nor inspect the interiors of any structures.

The study area's lengthy history of heavy commercialization involving rapid business and property owner turnover resulted in the identification of numerous properties with recognized environmental conditions (RECs) or the potential for RECs to be present. The large number of suspect sites coupled with practical limitations on time and budget made it necessary to prioritize the environmental concerns by property and focus attention and resources on the most likely and significant environmental concerns. Prioritization was based on the available information, including the physical characteristics (i.e., hydrology) of the study area.

3.21.1 Existing Hazardous Materials

The ESA identified six high priority sites with RECs, five sites with lower priority RECs or environmental concerns, and an additional 19 sites with low level potential for RECs or environmental concerns to exist. All of these sites are located within the study area and adjoin Federal Boulevard to the east or west. All six of the high priority sites are either an open leaking underground storage tank (LUST) site, closed LUST site, closed underground storage tank (UST) site, or suspected UST site not on record with the OPS. Closed sites indicate the release was either contained or the affected media (i.e., soil and/or groundwater) were cleaned up to state standards, and therefore present no potential risk to human health or the environment. There are two active gasoline stations located within the study area, including one of the two open LUST sites. Open LUST sites are those with on-going site investigations or corrective action plans (CAP) intended to characterize the extent of the release or remediate contamination levels to below applicable state and federal regulatory limits.

There are six high priority sites with recognized environmental concerns (hazardous materials) in the study area.

The five lower priority REC sites are those where the extent, nature, and levels of contamination are well documented and unlikely to affect worker safety and the environment or sites where the presence of a hazardous materials release could not be confirmed, but the site's lengthy history of commercial use indicates a reasonable possibility that such conditions exist.

Using available groundwater well data, including groundwater elevation data and maps obtained from previous LUST Site Investigation (SI) reports on file with the

OPS, an easterly trending groundwater flow direction was assigned to the study area. The available data indicates groundwater generally flows from the study area towards the South Platte River, which flows south to north approximately one-half mile to the east of the study area. The inferred easterly groundwater flow direction was used to prioritize the sites with known or potential RECs. More precise groundwater flow directions are provided for those sites where previously conducted site investigations established a site-specific hydraulic gradient and groundwater flow direction. Generally, those sites located to the west of Federal Boulevard were assigned a higher priority due to their hydrologically upgradient position with respect to the roadway. Hazardous material findings associated with each specific REC are presented in the following section.

Sites With Recognized Environmental Concern

The following are high priority sites that are shown in Figure 3-12:

- Site #1 - Conoco Filling Station, 275 South Federal Boulevard

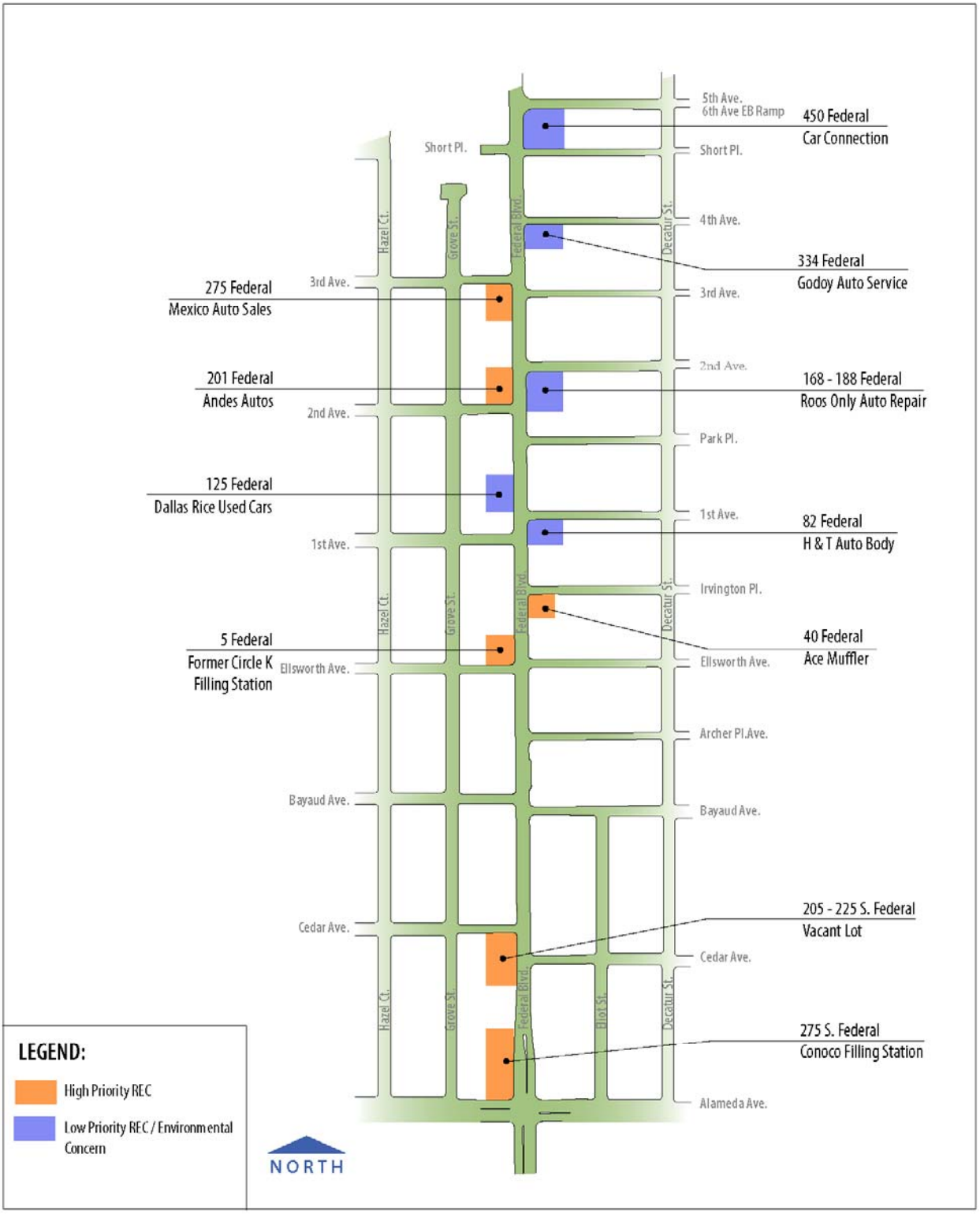
  This active filling station is a LUST facility. The LUST site was reported to the OPS in 2005. The facility was the subject of an ongoing site characterization related to releases of fuel hydrocarbons into the property's soil and groundwater at the time of last inquiry. A limited Phase II SI was performed for the property in March of 2005. The SI identified Benzene concentrations in groundwater above the maximum contaminant level (MCL) of 5.0 micrograms per liter (ug/L) in one of two installed monitoring wells (MW). Based on an inferred groundwater flow direction of east to east-southeast, it is likely the hydrocarbon plume has migrated onto the proposed road expansion area and would likely be disturbed during road widening and construction activities.

- Site #2 - Vacant Lot, 203 – 225 South Federal Boulevard

  Potential RECs were observed at this vacant lot during site reconnaissance. Historic city directories and aerial photographs indicate two single-family residences with detached garages and an automotive repair shop (Berts Volkservice) existed on the property as recently as 2003. Concrete foundations and other remnants of the pre-existing structures were observed on the lot; however, site conditions suggest the demolition debris was transported off-site for disposal and not land-filled on-site. A four-inch diameter steel pipe protrudes several feet above the ground surface on the southern end of the property, within the former footprint of Berts Volkservice. A concrete manhole cover is located adjacent to the piping. These observations indicate an abandoned UST or sand trap/sump may be present on the property. In addition, the presence of fill dirt on the property of an unknown origin is another possible REC.

- Site #3 - Mexico Auto Sales, 275 Federal Boulevard

  Historic city directories for 1961 and 1966 identified the property as a former Phillips 66 filling station. However, the OPS has no record of a current or former UST facility at this property address. This allows the possibility that USTs remain in the subsurface at this location. Based on the inferred easterly groundwater



Phase 1 Environmental Site Assessment Findings

Federal Boulevard Environmental Assessment — Figure 3-12

flow direction, any hydrocarbon release originating from this site would likely migrate onto the proposed road expansion corridor and potentially be disturbed during road construction activities.

- Site #4 - Former Circle K Filling Station, 5 Federal Boulevard

  The property is on record with the OPS as a closed LUST facility. A confirmed release was reported for the property in November 1993. A petroleum LUST cleanup was initiated in January of 1994 and concluded in June of 1995 with a No Further Action (NFA) finding from the OPS. Even though the LUST facility is currently listed as "closed" with the OPS, the potential for disturbance of petroleum contaminated soil during road widening/construction activities is appreciable given the proximity of the former pump island and UST pit to the proposed construction zone. Residual petroleum contamination likely remains on the site at levels below applicable state and federal regulatory limits.

  Based on the inferred easterly groundwater flow direction, any historic hydrocarbon release from this site would likely migrate onto the proposed construction zone and potentially be disturbed during road construction and related activities.

- Site #5 - Andes Autos, 201 Federal Boulevard

  OPS records indicate two gasoline USTs were permanently closed at this property in 1971, when it was known as Dallas Rice used cars. It is unclear from a preliminary review of OPS records if the tanks were removed or closed in place or if soil contamination was encountered during tank closure. The property is listed as Whitney's Conoco Filling Station in the 1956 city directory. Based on the study area's inferred easterly groundwater flow direction, any past hydrocarbon release from this site would likely have migrated into the proposed road expansion area and potentially could be disturbed during road construction activities.

- Site #6 - Ace Muffler, 40 Federal Boulevard

  The remnants of a gas pump island were observed on the west side of the building, which fronts Federal Boulevard, during the visual site reconnaissance. The property is listed as F & I Carter Servicenter Gas in the 1956 city directory. The property is on record with the OPS as a closed LUST site. A single UST was reportedly removed from the property in 1997. Even though the LUST facility is listed as "closed" with the OPS, the potential for disturbance of petroleum contaminated soil during road improvement/widening activities exists given the proximity of the former pump island and UST to the proposed construction zone. However, the study area's inferred easterly groundwater flow direction would presumably transport groundwater contamination away from the proposed construction zone.

The following sites are lower priority RECs and environmental concerns. These sites are shown in Figure 3-12. Additional detail may be found in the *Final Phase I Environmental Site Assessment*, March 2007, completed for this project.

- Site #1 - Car Connection, 450 Federal Boulevard
- Site #2 - Roos Only Auto Repair, 168 – 188 Federal Boulevard
- Site #3 - Godoy Auto Service, 334 Federal Boulevard
- Site #4 - H&T Auto Body, 82 Federal Boulevard
- Site #5 - Dallas Rice Used Cars, 125 Federal Boulevard

Additional Environmental Concerns

Nineteen additional sites of concern along Federal Boulevard were identified during the review of historical city directories. These properties were not identified during the field reconnaissance or environmental database review, but still raise environmental concern with respect to the study area due to their listed historical usage within the city directories. Many of the facilities have been converted to alternative uses, combined with existing facilities, or demolished since appearing on the historic city directory and could not easily be assessed during the site reconnaissance.

Phase II Limited Site Investigation Findings

Field observations, photo-ionization detector (PID) headspace readings, and/or laboratory analytical results indicate low level petroleum hydrocarbon contamination is present, to varying degrees, within the soil and/or groundwater at all seven suspect properties. However, none of the reported concentrations exceed applicable state or federal regulatory limits. In addition, a petroleum odor or sheen was not produced by the purge water at any of the MWs.

Groundwater within the study area is generally present under semi-confined conditions at depths of 15 feet below ground surface (bgs) or greater. Proposed road improvement/construction activities therefore would be unlikely to come into contact with contaminated groundwater, if present. Based on the findings of this Limited SI, the suspected RECs pose a minimal threat to worker health or the environment. All of the reported concentrations at the seven MW sites listed below are below the applicable state and federal regulatory limits. Site specific SI findings are presented in the *Limited Phase II Site Inspection* report.

- MW-1 - Conoco Filling Station, 275 South Federal Boulevard
- MW-2 - Vacant Lot, 203 – 225 South Federal Boulevard
- MW-3 - Mexico Auto Sales, 275 Federal Boulevard
- MW-4 - Former Circle K Filling Station, 5 Federal Boulevard
- MW-5 - Andes Autos, 201 Federal Boulevard
- MW-6 - Ace Muffler, 40 Federal Boulevard
- MW-7 - Roos Only Auto Repair, 168 – 188 Federal Boulevard

3.21.2 Hazardous Materials Impacts

No Action Alternative

There would be no hazardous material impacts under the No Action Alternative.

Build Alternative

Based on the findings of the Phase I ESA and Phase II Limited SI, the proposed Build Alternative for Federal Boulevard would likely encounter low level petroleum contamination in the shallow soils (0-10 feet bgs) at multiple locations, particularly at 5 Federal Boulevard, 188 Federal Boulevard, and 201 Federal Boulevard. However, detections of all target analytes, which are substances or chemical constituents that are identified through an analytical procedure from the Phase II SI, are below USEPA's Region 9 Preliminary Remediation Goals (PRGs) for soil. The threat to human health and the environment based on currently known contaminant concentrations would be considered minimal.

Low level groundwater contamination was also identified in multiple MWs within the study area. However, all detections would fall below CDPHE's groundwater standards. In addition, groundwater within the study area occurs under semi-confined conditions at depths of greater than 15 feet bgs. It is unlikely that the proposed Build Alternative would come in contact with contaminated groundwater.

Low level petroleum contamination will likely be encountered in shallow soils at multiple locations.

3.21.3 Mitigation

Mitigation for hazardous materials includes the following:

- For those properties identified with high priority RECs by the Phase I ESA and subsequently investigated during the Limited Phase II SI, no further pre-construction assessment and investigation is recommended at this time due to the absence of contamination above applicable state and federal regulatory standards. However, at a minimum, it is recommended that a properly trained environmental professional be present at 5 Federal Boulevard, 188 Federal Boulevard, and 201 Federal Boulevard for the initial excavation phase of construction to properly screen (and if need be sample) excavated soils for petroleum contamination. It is also recommended that an environmental professional be present if there is excavation at other properties that are suspected to contain orphan USTs or sand traps/sumps. This initial screening will be performed both visually and using a PID to record headspace readings for excavated soils.
- The Phase II SI confirmed the presence of shallow soil contamination at these locations at concentrations below USEPA and state action levels (RMC, 2006). However, higher concentrations may be present in the vicinity of these locations. Consideration will be given to screening excavated soils at all the potential REC sites, both high and low priority, identified in the Phase I ESA given the relative uncertainties regarding the environmental condition of these sites and the limited

scope of the Phase II SI. These measures are intended to protect worker and public safety and the environment in the event contamination is encountered during road construction/improvement activities.

- Structures built prior to 1975 that are scheduled for demolition as part of the road improvement activities will be inspected and sampled for lead-based paint (LBP) and asbestos building materials (ABM) prior to being demolished. The comprehensive pre-demolition inspections will be performed according to Colorado Regulations 8 and 19 and applicable Occupational Safety and Health Administration (OSHA) regulations to ensure adequate protection of worker health and the environment. Abatement (removal) of friable (easily crumbled or pulverized) ABM or non-friable ABM, which may be rendered friable during demolition, will be required prior to demolition. In addition, asbestos may be present in soil from buried demolition debris or wrapped utility lines. A state-licensed asbestos inspector must be present if these materials are encountered during excavation. Asbestos in soil must also be abated per CDPHE regulations.
- Prior to and during construction, CDOT Standard Specification, Section 250 will be used to address issues related to the transportation, handling, monitoring, and disposal of any hazardous or solid waste materials encountered during construction including contaminated soils, lead-based paint, contaminated groundwater, and other toxic substances.
- If deemed necessary, a materials management plan will be prepared regarding the removal and disposal of contaminated soils and/or groundwater.
- A Health and Safety Plan will also be developed to protect workers during construction.

3.22 Utilities

An inventory and impact analysis of all existing and proposed utilities in the study area was prepared in 2005. This section describes existing utilities and impacts to utilities by alternative.

Methodology

The Utility Notification Center of Colorado (UNCC) was contacted for initial identification of private utility companies and municipalities with facilities in the study area. The identified utility owners were contacted, and maps or verbal descriptions of the facilities were obtained. Follow-up field reconnaissance confirmed the findings and provided additional information. The information was compiled into a map, contact list, and utility table.

It should be noted that not all utility companies responded to requests for information. In addition, there may be buried utilities that were not documented by utility companies and are not apparent from the surface. As such, this utility inventory should be supplemented by field verification and UNCC coordination before any construction.

3.22.1 Existing Utilities

Utilities in the study area include overhead and buried fiber optic lines, overhead and buried cable television lines, overhead and buried telephone lines, overhead electric distribution lines, buried electric service lines, buried water distribution lines, buried water transmission lines, buried gas lines of varying pressure types, and sanitary sewers. The following provides general information for each type of utility.

- **Fiber Optic Lines –** Comcast Cable Company owns fiber lines throughout the study area. The majority of the Comcast fiber runs overhead along Xcel poles located in alleyways east and west paralleling Federal Boulevard with one crossing at Bayaud Avenue. Additional fiber lines are buried along the south side and east side of the Federal Boulevard and Alameda Avenue intersection and are owned by Denver Traffic. Qwest Communications may also own fiber within the study area. Qwest provides line locations, but not type, therefore all Qwest lines are discussed as telephone lines.
- **Cable Television Lines –** Comcast Cable Company owns all of the cable television lines within the study area. The majority of the cable television lines run overhead along Xcel owned poles in the alleyways east and west paralleling Federal Boulevard with one crossing at Bayaud Avenue. All of the cable lines in the study area are overhead with one exception: A buried cable line is located on the corner of Short Place and Federal extending from the overhead line along the east alley.
- **Telephone Lines –** Qwest Communications owns all of the telephone lines within the study area. The telephone lines in this area run along three main zones: the east and west alleyways paralleling Federal Boulevard and along Federal Boulevard in both alleyways. The telephone lines are mainly overhead, but in some locations occur as both buried and overhead. Along Federal Boulevard, Qwest owns a major duct run buried beneath the western edge of the roadway that extends north and south of this project.
- **Electric Lines –** Xcel Energy owns all of the electric lines in the study area, but Xcel shares the electric service to traffic signals through an agreement with Denver Traffic. The electric lines in this area run along three main zones: The east and west alleyways paralleling Federal Boulevard and along Federal Boulevard. The electric lines run overhead along the alleyways providing the bulk of the power to the area residents and businesses. The electric line running along the east side of Federal provides power mainly for street lighting. In some locations, electric service feeds traffic signals. Some street lights on the south end of the study area are buried.
- **Water Lines –** Denver Water Department owns all of the water lines in this area. The Denver Water transmission conduit #3 runs beneath Federal Boulevard throughout most of the study area. Several additional transmission conduits also enter Federal Boulevard and connect with conduit #3 including #12, #9, and #44. Denver Water transmission conduits are a minimum of 30 inches in diameter and carry the bulk of the water supply to treatment centers. Additional distribution lines, mainly 8-inch and 12-inch lines, provide water to many of the side streets from a 12-inch line buried beneath the east lanes of Federal Boulevard.

- **Gas Lines –** Xcel Energy owns the gas lines in the study area. In two locations high pressure gas lines cross Federal Boulevard (W. 2nd and W. 3rd Avenues). In most other locations, low pressure and intermediate pressure lines provide gas service to this area. Table 3-28 lists the major utility concerns to date.

Table 3-28
Utilities with Potential High Project Costs and Significant Schedule Implications

Utility Owner	Description	Description
Qwest	Telephone (duct run) parallels Federal Boulevard along west side of roadway.	Some uses may be critical. Service interruption must be limited.
Denver Water	30-inch transmission line runs along west lanes of Federal Boulevard.	Service interruption must be limited to minimize impacts to Denver Water supplies. Service cannot be interrupted during high use period (e.g., summer months).
Xcel Energy	12-inch and 20-inch high pressure gas lines along 2nd Avenue; 10-inch line along 3rd Avenue; all cross Federal Boulevard.	Service interruption must be limited to minimize impacts to area natural gas supply. Service can only be interrupted during low use period (e.g., summer months).

Source: Goodbee and Associates, 2006

3.22.2 Utility Impacts

No Action Alternative

No impacts would result from the No Action Alternative.

Build Alternative

With the Build Alternative, utility relocations will be necessary because of the road widening and additional right-of-way needed along Federal Boulevard. The extent of the utility impacts includes the following:

- **Telephone and Communications**

  Qwest Communications owns a number of telephone lines that would potentially be impacted by this project. The majority of underground lines are located either in or cross Federal Boulevard. Qwest owns a major duct in Federal Boulevard that is buried beneath the western edge of the roadway and extends beyond the boundaries of this project.

  Comcast Cable Company owns both cable television lines and fiber lines that would potentially be impacted by this project. The potentially affected lines are located on Xcel-owned poles that may need to be relocated as a result of the roadway widening. The cable television and fiber lines cross over Federal Boulevard from the southwest corner to the northeast corner of Bayaud Avenue. The remaining two locations impacted are located along the east side of Federal Boulevard near 2nd Avenue.

Denver Traffic has additional fiber lines buried along the south side and east side of the Alameda Avenue and Federal Boulevard intersection. Denver Traffic also has an empty conduit running the entire length of the project along the east side of Federal Boulevard.

- **Electrical and Gas**

  The majority of the Xcel electric lines that potentially would be impacted as a result of this project are lines that cross over Federal Boulevard. Underground lines along the north, west, and east sides of the Alameda Avenue and Federal Boulevard intersection are used by Denver Traffic to feed the traffic signals. Additional overhead lines approaching Federal Boulevard may need to have poles relocated to accommodate this project.

  Xcel Energy owns a number of both high and low pressure gas lines that potentially would be impacted with this project. A 12-inch high pressure gas line crosses Federal Boulevard at W. 2nd Avenue, and a 10-inch high pressure gas line crosses Federal Boulevard at W. 3rd Avenue. There are a number of locations with both low and intermediate pressure gas lines running underneath Federal Boulevard or crossing Federal Boulevard.

- **Water and Sanitary**

  Denver Water Department owns several transmission conduits that would potentially be affected in the study area. The CCD Wastewater Management Division owns the sanitary sewer lines that could be potentially impacted by this project. There are two locations with Metro sanitary sewer lines; a 24-inch line crossing Federal Blvd at 1st Avenue and a 30-inch RCP line crossing Federal Boulevard at 3rd Avenue. Additionally, there is a public line running in Federal Boulevard from approximately Cedar Avenue to Bayaud Avenue, then west in Bayaud Avenue.

As part of this project, Bayaud Avenue would be realigned. Utility impacts are anticipated at Bayaud Avenue from S. Grove Street to S. Eliot Street. These impacts include the following:

- **Telephone and Communications**

  Qwest Communications owns one buried telephone line that would be impacted by this project. The telephone line in this area crosses Bayaud Avenue at S. Grove Street.

  Comcast Cable Company owns one cable television line that would potentially be impacted with this project. The overhead cable television line crosses Bayaud Avenue and runs north/south in the alleyway between Ellsworth Avenue and Cedar Avenue.

- **Electrical and Gas**

  Xcel Energy owns one gas line that would be potentially affected with this project. There are low pressure gas lines located in Bayaud Avenue east and west of Federal Boulevard.

- **Water and Sanitary**

  The Denver Water Department owns a number of water lines that would potentially be affected with this project. There is an 8-inch water distribution line in Bayaud Avenue east of Federal Boulevard, as well as two fire hydrants located on the north side of the street. Additionally, there is a 6-inch line crossing Bayaud Avenue at S. Grove Street.

  The CCD Wastewater Management Division owns a public sanitary sewer line that would be affected as a result of this project. There is also a public line in the alleyway east of Federal Boulevard that enters the Bayaud Avenue right-of-way from the alley.

  Three utilities in the study area have the potential to cause significant impacts to project cost and/or schedule. They are listed in Table 3-28 Additional information on utilities in the study area can be found in the *Existing Utilities Technical Memorandum*, April 2007.

3.22.3 Mitigation

Private utility owners are responsible for relocating a utility to accommodate a public improvement project. This usually applies to telephone and communications and electrical and gas subgroups. When a publicly held utility must be relocated to accommodate a public improvement project, it is the project's responsibility to fund the related construction for relocation. Publicly held utilities generally fall under the water and sanitary subgroup. Cost responsibility for all utility relocations will be determined per the appropriate rules and regulations during final design.

Utility impacts will be mitigated through close coordination with utility owners during final design. Relocations will be avoided when possible by making minor adjustments to the design or by placing encasement for protection over a buried utility. For situations where relocation cannot be avoided, construction will be conducted in a manner that minimizes disruption of services.

3.23 Geology

This section summarizes geologic conditions, soil conditions, geological resources, and associated environmental consequences along Federal Boulevard. Geologic conditions of note include:

1) Probable adverse characteristics of soil, surficial deposits, and bedrock, including moderate to high shrink-swell potential, locally shallow depth to bedrock, low-strength collapsible soils and surficial materials, corrosive soils, highly erodible soils, and soils exhibiting moderate frost action;
2) Potential for shallow and/or perched water tables in soils and surficial deposits, particularly adjacent to drainages, in slope colluvium, and in windblown loess.

Methodology

Two site reconnaissance visits were supplemented with investigation of relevant maps, reports, and documents from the Colorado Geological Survey, the U.S.

Geological Survey, U.S. Department of Agriculture Natural Resources Conservation Service (USDA/NRCS), and other governmental agencies. Discussions were held with CCD parks personnel regarding conditions at Barnum Park and with USDA/NRCS personnel regarding soils.

3.23.1 Existing Geologic Conditions

No oil and gas production is occurring in the area. Although alluvial sand and gravel deposits exist in the area, they are covered by existing urban development and are not being quarried. Seismic risk is moderate, in accordance with seismic risk across Colorado.

Faults and Structure

Weir Gulch is associated with a north-northeast trending fault zone which joins the northeast-trending Cherry Gulch Wrench Fault along Lakewood Gulch, north of the study area (Weimer, 1996). Neither fault zone is considered active (Colorado Geological Survey, Colorado Late Cenozoic Fault and Fold Database and Internet Map Server). The study area is approximately 12 miles east of the Golden Fault, which is suspected of Quaternary activity (Colorado Geological Survey, Colorado Late Cenozoic Fault and Fold Database and Internet Map Server). Colorado is in a moderate seismic risk area and could experience damaging earthquakes, but risk assessment indicates less than 10 percent probability in 50 years for peak ground acceleration exceeding threshold levels for damage to older (pre-1965) dwellings (U.S. Geological Survey Earthquake Hazards Program website).

Surficial and Bedrock Geological Units

Sedimentary bedrock is exposed in Barnum Park at the northwest margin of the area. Overlying surficial deposits include: a) water-transported alluvium in terraces and in natural drainages, b) wind-transported silty loess capping terraces, c) gravity-transported colluvium on terrace slopes, and d) human-emplaced artificial fill.

The entire area is underlain by bedrock consisting of more than 800 feet of interbedded sandstone, claystone, siltstone, shale, and some conglomerate. The finer-grained units commonly have moderate to very high shrink-swell potential, requiring foundation piers that reach into the zone of permanent groundwater saturation. The coarser-grained units generally have good foundation stability but may exhibit groundwater seepage.

Artificial fill exists at the Federal Boulevard and 6th Avenue interchange and in the park just to the southeast; the fill was not examined for this project. Artificial fill varies in materials, thickness, and compaction. Most highway artificial fill is well compacted, with good slope stability; resistance to erosion is moderate on vegetated slopes but very poor where unvegetated, and earthquake stability may be poor if the fill overlies thick alluvium. (Lindvall, 1978; Tweto, 1979)

Depth to Bedrock

Depth to bedrock is expected to vary from less than 10 feet to as much as 30 to 40 feet within the area. Typical thicknesses of surficial deposits are: younger alluvium,

less than 5 feet to as much as 10 feet; older alluvium, up to 30 feet; loess, less than 10 feet to as much as 25 feet; colluvium, commonly less than 5 feet. (Lindvall, 1978)

Soils

No comprehensive soil survey was performed for this project, so the assessment of soils is based on information from soil surveys by Price and Amen (1980) for Jefferson County, approximately 1.5 miles to the west of the study area. Surficial deposits in the two areas are similar but not identical, so some variation in soils is likely. Most area soils are expected to be deep, well-drained, clayey, and developed on material derived from mudstone and shale. Regional considerations with similar soils include moderate to high shrink-swell potential, moderate frost action, and moderate to high corrosivity to uncoated steel and/or concrete, particularly where soils are perennially or seasonally wet.

Shrink-Swell Potential

Based on mapping of the upper 10 feet of surficial deposits (Hart, 1974), the alluvium commonly has low shrink-swell potential, the loess has moderate shrink-swell potential, and the colluvium has high shrink-swell potential. Even where surficial deposits have low shrink-swell potential, high to very high shrink-swell potential may exist immediately below. Clay, shale, and siltstone units in the bedrock typically have high to very high shrink-swell potential. (Hart, 1974; Lindvall, 1978)

Geological Resources

There are no oil and gas wells or facilities and no approved or pending permits for oil and gas wells or facilities in the area (Colorado State Oil and Gas Conservation Commission, Colorado Oil and Gas Information System website). No records of abandoned mines or quarries were found for the area. Within metropolitan Denver, gravel is extracted from the same alluvial deposits that are present in the northern part of the study area, but no evidence for quarrying in this area was found. There are no active commodity permits for gravel, sand, clay, or other industrial minerals within the area of interest (Colorado Division of Minerals and Geology, Mine Permit Reports website); (Schwochow et al., 1974; Trimble & Fitch, 1974; Lindvall, 1978).

3.23.2 Geologic Impacts

No Action Alternative

The No Action Alternative would have no direct or indirect impact on geologic or soil resources.

Build Alternative

The Build Alternative would have no direct or indirect impacts on geologic or soil resources.

Additional information on the geologic investigation for this project can be found in the *Preliminary Geological Investigation Report*, April 2007.

3.23.3 Mitigation

No mitigation is required.

3.24 Construction Impacts

Construction of the Build Alternative would be completed in three major phases of construction. Construction is expected to begin mid-year in 2009. Construction would begin with the northbound lanes, followed by the southbound lanes, and ending in the center median. Construction would be divided into two to three block sections for each phase. Key elements within each section would be complete before moving on to the next section. Any buildings that need to be removed would be completed before construction. The key elements of construction for Phases I and II, the northbound and southbound phase, are as follows:

- New traffic signals.
- New lighting in both the northbound and southbound directions.
- New pavement.
- New ADA Ramps.
- New curb and gutter.
- New sidewalks.
- ADA/CCD standard curb cuts.
- Utility relocations.
- New inlets/drainage pipe.
- Perform miscellaneous traffic shifts in coordination with phasing
- Detour pedestrian traffic out of construction work zone.

The third phase of construction, the center median, would follow the northbound and southbound phases. The key elements of center median construction include:

- Curb and gutter.
- Raised median cover.

The following sections describe temporary impacts of construction due to the Build Alternative.

3.24.1 Social Characteristics

During construction, study area residents will experience negative impacts that would affect the quality of life in the study area. Residents, business owners, shoppers, transit riders, and pedestrians would experience increased levels of dust, particulates, noise, light, and glare. Mobility would be temporarily impaired for both vehicular and pedestrian traffic with construction-related traffic, detours, and changes in pedestrian routes. The extent to which residents would experience these adverse effects from construction activities would depend on the duration of construction.

Access to businesses would be temporarily altered, depending on the phasing of construction. The exact number of temporary and/or permanent access changes will be determined during final design.

Mitigation Measures

The following mitigation measures for construction impacts will be implemented:

- Construction updates, website(s), and contact information will be distributed to the public.
- Residents and businesses will be provided with courtesy/traffic signage, traffic circulation plans, construction schedules and activities. Construction phasing to minimize the impacts of construction duration will be implemented.
- Marketing Assistance will be provided in the form of business promotion, partnership with other organizations, encouraging contractors and others to patronize businesses during construction, and/or creating a business handbook and location maps.
- Mitigation for dust, noise, and vibration impacts is discussed in Sections 3.23.4 and 3.23.5.

3.24.2 Economics

Construction expenditures would create new demand for construction materials and jobs in the region. This demand would lead to economic output by firms in other industries to supply the construction industry. Both the direct and indirect construction expenditures cause firms in all industries to employ more workers to meet increases in demand; this would lead to induced economic output as the wages and salaries paid to additional workers lead to increased consumer spending.

Construction would create inconveniences for businesses and customers in the study area and would temporarily create an environment that is not conducive for conducting business. Construction activities that would create a difficult business environment include: the use of heavy construction equipment, the delivery and storage of construction materials within the study area and along routes to and from the study area; the use of temporary road closures, traffic diversion, changes to property access and the generation of dust, noise, and vibration from construction activities.

Construction would negatively affect employment levels, sales/economic activity (decline in sales, increase in operating costs, and/or decrease in efficiency), and sales tax revenues at existing businesses if customers choose to avoid the study area during construction. Many of the businesses in the study area are small, independently owned businesses that may be more susceptible to the negative effects of minor construction inconveniences than larger businesses would be. However, access to businesses would be maintained during construction and traffic, air, noise, and vibration mitigation techniques would be employed to minimize negative effects on employees, customers, and deliveries moving into and out of the study area.

Nearby businesses not located in the study area may benefit if customers choose to patronize them instead of businesses in the study area. On the other hand, nearby businesses, particularly those adjacent to the study area, would experience similar negative effects from minor construction inconveniences that businesses in the study area would experience. Again, these negative effects would be expected to be minimal if mitigation techniques are employed to facilitate pedestrian, car, and freight movement through the study area.

There would be temporary jobs related to construction of the project. In 2005, the average hourly wage for construction and extraction occupations in Denver was $18.32, which corresponds to an annual average wage of $38,100 (Colorado Department of Labor and Employment 2005).

Mitigation Measures

Where appropriate and feasible, the following mitigation measures will be employed to minimize or avoid construction impacts on economic conditions in the study area:

- Maintain traffic flow through the study area so that customers and goods can move to and from businesses in a timely and efficient manner.
- Coordinate the construction schedule to avoid major construction activities during the prime shopping times to the extent reasonable and prudent.
- Provide ample notice of utility shut offs, construction schedule, and detours to businesses and residents.
- Schedule utility shut offs for low-use times.
- Maintain reasonable access to businesses by minimizing navigational obstructions or delays to and from businesses.
- Provide ample signage indicating access points to businesses and residences.
- Maintain pedestrian connectivity throughout the study area and provide obvious and consistent pedestrian access to transit stops, businesses, and residences.
- Mitigation for dust, noise, and vibration impacts is discussed in Sections 3.23.4 and 3.23.5.

3.24.3 Transportation Facilities

Construction of the Build Alternative would be completed both within and outside of the existing right-of-way. Construction would encroach on privately owned properties along Federal Boulevard, as described in Section 3.4, Right-of-Way and Relocations.

Mitigation Measures

- Construction impacts to adjacent roadways will be minimized through appropriate traffic detouring and signing.
- Business access will be cut off for short periods of time for quick-setting concrete to cure. The contractor will work with business/property owners to minimize impacts during construction.

- The CCD on-street bicycle route will be appropriately signed in coordination with the CCD Bicycle Coordinator and detoured during construction.
- The construction will be phased to allow two lanes of traffic in both directions on Federal Boulevard at all times.
- The sidewalks will need to be closed intermittently due to construction; however one side of the street will be open for pedestrian use.
- Street lights will be maintained during construction.
- Signalized intersections will remain open during construction.
- Emergency service providers will make use of the detour(s) and will not be affected by construction.

3.24.4 Air Quality

According to 40 CFR 93.123(c)(5), emissions resulting from construction of the project are not required to be considered in the hot-spot analysis if such emissions are considered temporary. Since the project would be completed within five years, meeting the criteria of Section 93.123(c)(5) is not required.

Construction related effects of the project would be limited to short-term increased fugitive dust and mobile source emissions during construction. Fugitive dust is airborne particulate matter, generally of a relatively large particulate size. Construction-related fugitive dust would be generated by haul trucks, concrete trucks, delivery trucks, and other earth moving vehicles operating around the construction sites. This would be due primarily to particulate matter resuspended ("kicked up") by vehicle movement over paved and unpaved roads, dirt tracked onto paved surfaces from unpaved areas at access points, and material blown from uncovered haul trucks.

Mitigation Measures

The project's construction contractors will be required to comply with all local, state, and federal regulations concerning air pollution abatement related to construction activities.

The following preventative and mitigation measures will be taken to minimize the possible particulate pollution problem:

Site Preparation

- Minimize land disturbance;
- Use watering trucks to minimize dust;
- Cover trucks when hauling dirt;
- Stabilize the surface of dirt piles if not removed within a reasonable amount of time;
- Limit vehicular paths and stabilize these temporary roads; and
- Stabilize construction entrance per CDOT's M-208-1 requirements.

Construction

- Cover trucks when transferring materials;
- Use dust suppressants on traveled paths which are not paved;
- Minimize unnecessary vehicular and machinery activities; and
- Minimize dirt track-out by washing or cleaning trucks before leaving the construction site (alternative to this strategy is to use a gravel tracking pad by the exit road, just before entering the public road).

Post Construction

- Re-vegetate any disturbed land not used;
- Remove unused material;
- Remove dirt piles; and
- Re-vegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Mobile Source Emissions

Since emissions of CO from motor vehicles increase with decreasing vehicle speed, disruption of traffic during construction (such as the temporary reduction of roadway capacity and the increased queue lengths) would result in short-term elevated concentrations of CO. In order to minimize the amount of emissions generated, every effort will be made during the construction phase to limit disruption to traffic, especially during peak travel periods.

3.24.5 Noise and Vibration

During construction, noise levels would be bothersome to nearby residences. Construction would include clearing, cut-and-fill activities, importing fill, paving, and removing old road materials. Construction noise would be temporary and would vary widely both spatially and temporally over the course of the project.

The most prevalent noise source at construction sites would be internal combustion engines. Earth-moving equipment, material-handling equipment, and stationary equipment likely would be engine-powered. Mobile equipment operates in a cyclical fashion, but stationary equipment (e.g., generators and compressors) operates at sound levels that are fairly consistent over time. Because trucks would be present during most phases and would not be confined to the project site, noise from trucks would affect more receptors. Other noise sources would include impact equipment and tools such as jack hammers. Impact tools would be pneumatically powered, hydraulic, or electric.

Construction noise would be intermittent, occurring during the construction period at various locations in the study area. Construction noise levels would depend on the type, amount, and location of construction activities. The type of construction methods would establish the maximum noise levels of construction equipment used. The maximum sound level (L_{max}) is the greatest short duration sound level that

occurs during a single event. The amount of construction activity would quantify how often construction noise would occur throughout the day. The location of construction equipment relative to adjacent properties would determine any effects of distance in reducing construction noise levels.

Maximum noise levels from construction equipment generally ranges from about 65 to 105 dBA at 50 feet. Construction noise at residences farther away would decrease at a rate of 3 to 4 dBA per doubling of distance from the source. The number of occurrences of the L_{max} noise peaks would increase during construction. Because various pieces of equipment would be turned off, idling, or operating at less than full power at any given time and because construction machinery is typically used to complete short-term tasks at any given location, average Leq daytime noise levels would be less than the maximum noise levels discussed here.

Mitigation Measures

Construction noise effects will be reduced by incorporating methods such as the following:

- Limiting construction activities near residences to between 7 a.m. and 10 p.m. to reduce construction noise levels during sensitive nighttime hours. However, the CCD's noise hours are from 7 a.m. and 9 p.m. If CDOT should need to work outside of the CCD's hours, a noise variance will be obtained from the CCD.
- Equipping construction equipment engines with adequate mufflers, intake silencers, and engine enclosures to reduce their noise by 5 to 10 dBA (USEPA, 1971).
- Requiring contractors to use OSHA-approved ambient sound-level sensing backup alarms, to reduce disturbances to nearby residents from backup alarms during quieter periods.
- Turning off construction equipment during prolonged periods of nonuse to eliminate noise from construction equipment during those periods.
- Locating stationary equipment away from receiving properties to decrease noise from the equipment in relation to the increased distance.
- Constructing a solid, temporary barrier along a detour route would reduce noise, glare, and safety concerns related to placing traffic closer to residential receptors. One form of barrier often used in this way consists of a jersey-type safety barrier at the base with a four to five foot tall solid plywood panel extending vertically from the top of the safety barrier.

3.24.6 Noxious Weeds

Construction activities have the potential to spread noxious weeds in the study area due to excavation and movement of earth, land clearing, and vegetation and soil disturbance. Impacts to the surrounding landscape would be minimal as the area has been heavily impacted by urban development and much of the surrounding natural area has been impacted by use or neglect.

Mitigation Measures

The following mitigation measures will be implemented to prevent further spread of noxious weeds in the study area in all construction areas:

- Native grasses and forbs will be used on all CDOT right-of-way for re-vegetative purposes. Transplanting and purchasing of native plant material (trees and shrubs) from nurseries will be encouraged whenever feasible.
- All mulch materials will be inspected and regulated in accordance with the Weed Free Forage Act, Title 35, Article 27.5, CRS.
- Importing topsoil onto the project site will not be allowed.
- Contractor's vehicles will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots.
- Noxious weeds observed in and near the construction area at the start of construction will be treated with herbicides or physically removed to prevent seeds blowing into disturbed areas during construction.
- Disturbed areas will be seeded in phases throughout construction. If areas are completed and permanent seeding cannot occur due to the time of year, mulch and mulch tackifier will be used for temporary erosion control until seeding can occur.
- Fertilizer will not be used in seeded area, because it can enhance the growth of noxious weeds at the expense of desired vegetation.

3.24.7 Historic and Archaeological Resources

Construction of the Build Alternative would have no impacts on historic or archaeological resources.

Mitigation Measures

If buried archaeological remains are exposed during any phase of construction, the CDOT Senior Staff Archaeologist will be contacted to evaluate the discovery and facilitate any necessary consultation with the SHPO and other agencies or entities, as appropriate.

3.24.8 Visual Quality/Aesthetics

During construction visual impacts include the removal of existing structures, pavement and vegetation on both sides of Federal Boulevard. Construction staging areas, trailers and storage materials will have a temporary impact to visual conditions within the study area.

Mitigation Measures

No mitigation is required.

3.24.9 Water Resources

During the construction phase, adverse impacts to drainage patterns and water quality are possible.

In addition to possible disruption to existing drainage patterns, there may be impacts to water quality. The following are the most common short-term impacts to water quality during construction:

- Increased TSS in stormwater runoff due to soil erosion in areas where the surface has been disturbed.
- Discharges of chemicals into stormwater runoff, either from spills or regular construction operations. These chemicals and activities may include:
  - Petroleum products and other organic and inorganic chemicals that may be spilled during refueling, in an accident, or during operations and maintenance activities.
  - Metals and various organic chemicals which are ingredients in adhesives, cleaners, and plumbing, painting and masonry supplies used during construction.
  - Demolition work that may release asbestos, aluminum, zinc, and dusts.
  - Landscaping and earthmoving involving the use and potential release of pesticides, herbicides, fertilizers, nutrients, biological oxygen demand, acidity, alkalinity, metals, and sulfur compounds (CDPHE, 1994; CDOT, 2002).

Mitigation Measures

Temporary BMPs will be implemented to alleviate short term water quality impacts. Storm drain inlets along Federal Boulevard will be relocated as quickly as possible during construction to limit ponding that may occur at intersections.

Stormwater Management Plan

In 2006, CDPHE issued an updated *General Permit for Stormwater Discharges Associated with Construction Activity*. The Build Alternative will operate under this general permit. In compliance with the General Permit, the owner or contractor must prepare and implement a Stormwater Management Plan (SWMP). The SWMP must be completed and implemented by the beginning of construction and be revised as necessary during the construction process.

Certain BMPs will be selected during the design and implementation of the SWMP. BMPs may be nonstructural or structural. Nonstructural BMPs include management and operational procedures regarding work activities. Examples include disturbing a fraction of the total study area at one time, preventative maintenance, and preserving natural vegetation. Structural BMPs are physical structures designed to protect stormwater quality. Examples include diversions, silt fences, re-seeding, and infiltration areas.

Proposed Best Management Practices

Temporary construction BMPs will be sufficient to meet stormwater permit requirements. BMPs implemented may include the following:

- Compaction and surface roughening of disturbed soils and surface roughening of disturbed soils to reduce erosion;
- Inlet protection around storm sewer inlets;
- Non-structural BMPs to ensure that materials handling practices for petroleum products and other chemicals do not adversely impact the environment and that spill prevention measures are in place;
- Materials handling practices for raw materials to ensure that runoff coming in contact with these materials does not impact stormwater quality;
- Housekeeping and waste handling procedures to ensure that solid or liquid wastes are not carried off the site by stormwater runoff;
- Security measures to reduce the possibility of vandalism causing a release of pollutants to stormwater runoff; and
- Maintenance of BMPs and other site structures, (e.g., materials storage areas), to help ensure that BMPs function as planned and pollution of stormwater runoff is minimized.

Permanent BMPs will be designed to protect stormwater quality and reduce pollutant discharges from the site. BMPs implemented would likely include the following:

- Revegetation of all disturbed surfaces using native grasses or other appropriate vegetation;
- EDBs or in-line filters to provide water quality treatment while using a limited amount of area.

Final BMPs will be developed during the construction design process to meet stormwater permit requirements, including the requirements of the CDPHE general permit, the CCD's MS4 permit, and CDOT's MS4 permit. Through implementation of temporary and permanent BMPs, impacts to water resources due to construction will be minimized.

3.24.10 Hazardous Materials

Temporary construction impacts involve the potential exposure of workers to contaminated soils during excavation activities. Based on the findings of the Phase I ESA and Phase II Limited SI, the likelihood of encountering at least low-level petroleum contamination in shallow site soils (0 to 10 feet bgs) would be significant. It is unlikely groundwater, which occurs at depths of greater than 15 feet bgs, would be encountered under the Build Alternative.

Mitigation Measures

Visual observation and soil screening during construction activities is recommended to identify contaminated soils. In addition, CDOT's Environmental Health and Safety Management Specifications, Section 250 will be used, concerning the transportation, handling, monitoring and disposal of any hazardous or potentially hazardous solid waste materials encountered during construction.

3.24.11 Utilities

Major utility relocations, which can be completed before construction, would take place before other ground disturbing activities. Minor relocations, that can be coordinated with construction, would take place during construction activities.

Mitigation Measures

Close coordination with the utility owners will help minimize disruptions and construction will be scheduled during low use periods when possible.

3.24.12 Geology

Roadway construction would interact adversely with existing geology and soils conditions including:

- Unsatisfactory subgrade materials (significant shrink-swell potential in soils, surficial materials and bedrock; corrosive soils; soils exhibiting frost action; soils or surficial materials exhibiting differential compaction and/or low strength);
- Shallow groundwater; and
- Shallow depth to bedrock.

Removing surficial material would expose bedrock with a higher shrink-swell potential than the original surficial material. If the exposed bedrock is predominantly shale or claystone, it would also have higher susceptibility to sliding on slopes or in excavations and would be more susceptible to erosion. Either increasing depth to bedrock, by adding artificial fill, or decreasing depth to bedrock through excavation would change depth to water tables, including perched water tables, and can alter groundwater movement paths, particularly near natural drainages such as Weir Gulch and at W. 2nd Avenue. Changing the existing compaction of surficial materials would alter surface water or shallow groundwater movement, depth to water tables, and susceptibility of surficial materials to erosion.

Mitigation Measures

Mitigation measures for geologic impacts are described in Table 3-29.

Table 3-29
Mitigation for Geological Resources

Direct Impact	Mitigation Measures
Swelling soils, surficial material, and bedrock	Deep foundation systems, specialized piers and footings, subsurface drainage systems, over-excavation with backfill controlled for composition, texture, moisture, and compaction
Corrosive soils	Coated resistant steel and concrete
Soils exhibiting frost action	Excavation, appropriately engineered fills, subsurface drainage systems
Differential compaction and/or low strength in soils and surficial materials	Excavation, appropriately engineered fills, geogrids, geotextiles
Shallow groundwater	Dewatering systems, engineered fills
Shallow depth to bedrock	Engineered fills, additional mitigation measures as described herein to address particular issues associated with the bedrock
Slope stability	Design slope cuts to engineering guidelines for slope stability, shore excavations and slope cuts
Susceptibility to erosion in soils or surficial materials	Slope design, drainage systems, cover during construction; appropriate and prompt revegetation
Permeability in surficial materials	Engineered fills, subsurface drainage systems
Seismic risk	Design and construction in accordance with engineering guidelines for stability in seismic events of expected magnitude

Source: Rocksol Consulting Group, Inc, 2006.

3.25 Cumulative Impacts Analysis

Cumulative impacts are defined as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions" (40 CFR 1508.7). The purpose of this analysis is to assess the combined impact of the Build Alternative and other projects that may occur within a one-mile radius of the study area. These projects include past, present and future actions, regardless of whether the project is a public or private project.

Information and data used for this analysis were based on available data sources for the cumulative study area. The *Valley Highway Draft Environmental Impact Statement* was the primary data source with respect to past, present and proposed future developments, along with information provided by CCD.

The methodology for the cumulative impact analysis is summarized as follows:

- Define the geographic and temporal limits of the analysis;
- Determine resources affected by the projects;
- Identify past, present, and reasonably foreseeable future actions (projects); and
- Assess the cumulative impact of the projects.

3.25.1 Area of Influence and Timeframe

Geographic boundaries were established based on the area within which the project could affect travel patterns and land use.

The east-west and north-south boundaries for the analysis were defined as I-25 and Perry Street (east-west) and Colfax Avenue and Mississippi Avenue (north-south), respectively. The cumulative impact study area (area of influence) is shown in Figure 3-13.

The temporal starting point for the analysis is approximately 1940 – before the construction of the Valley Highway and during the construction of 6th Avenue (U.S. 6), which affected the area in regard to land use. The future horizon year is 2030, which is based on the DRCOG 2030 Regional Transportation Plan.

3.25.2 Affected Resources and Methodology

Environmental resources analyzed in the cumulative impact analysis are those that are expected to be directly impacted by the Build Alternative or other identified projects. Oftentimes, impacts from past projects are not documented or known and must therefore be assessed qualitatively. Impacts for future projects are evaluated in general terms, with near term projects having some specifics, though the analysis is still qualitative. Other future projects that are farther out in time have less specific information on which to make an assessment and are therefore generally discussed. Table 3-30 provides the resource areas that could be affected along with a summary of the methodology used to assess effects.

Table 3-30
Cumulative Analysis - Resource Areas and Descriptions

Resource Areas	Abbreviation (used in Table 3-18)	Description
Land Use Changes	LU	Land use changes from one urban or suburban land use to another are considered "neutral" or having no impact, since the change(s) conform to current zoning. These changes are noted in Table 3-31 simply to recognize that land use change did/may occur.
Social/EJ	S	A beneficial community effect would be one that is considered to improve the quality of life for residents in the area of influence. An adverse community effect would be one that separates neighborhoods or removes an important cultural facility used by a segment of the community.
Traffic	T	A beneficial traffic impact would be the separation of two at-grade roadways to improve traffic flow and congestion. A negative traffic impact could be the location of a large retail business or residential development with uncontrolled access or new access to an already congested roadway.
Historic Structures	H	A beneficial effect to historic properties would occur if a project enhances and is compatible with the historic resource(s). An adverse effect would occur if the project detracts from the qualities of the historic resource(s) such as the construction of a modern glass and metal structure next to a historic building.

Source: PB, 2004.

Cumulative Impact Study Area

Federal Boulevard Environmental Assessment — Figure 3-13

3.25.3 Cumulative Analysis by Timeframe

Information for each category of projects (past, present, and future) is shown on the following page in Table 3-31. The list of past, present, and future projects, both public and private, were obtained from the *Valley Highway Draft Environmental Impact Statement*, various published resources, and information provided by the CCD.

Past Projects

Past projects include many changes in land use in the area of influence. The following is a summary of major land use changes from 1940 to 2002. The data were obtained from aerial photo interpretation. Table 3-31 also shows specific past projects and how they affected the area. The primary transportation projects that influenced the character and development of the area include 6th Avenue and Valley Highway (I-25).

Generally, the impacts from past projects have resulted in changes in land use. However, the cumulative effect has been an improvement in the quality of life, as well as the addition of business and employment opportunities for local residents. The business, office and commercial areas that resulted have also improved the area's economy, creating jobs and increased tax revenues for the CCD. The addition of greenways along the South Platte River provides natural settings in the City. The improvement of the Rude Recreation Center created an additional amenity to the surrounding communities that use the recreation center.

The construction and widening of major arterials and highways, such as Federal Boulevard and Valley Highway, has had a negative effect on the cohesiveness of the community by dividing and fragmenting neighborhoods. Neighborhoods such as Barnum and Villa Park, which is located just North of Barnum, are now divided by Valley Highway/6th Avenue. The following section details major events and activities that occurred in the cumulative study area from 1940 to the present.

Pre-1940

Prior to 1940, Federal Boulevard was within a working-class neighborhood with modest homes. Many of the properties along major arterials such as Federal Boulevard were developed for residential use. Very little growth occurred during the Great Depression era between 1930 and 1940.

1940-1945

During World War II, the 6th Avenue Freeway was constructed to provide quick auto and truck access from central Denver to the newly-built Remington Arms Ordnance Plant in Lakewood. (Since the war, this facility has been known as the Federal Center). Numerous residents of Barnum, Valverde, and other surrounding neighborhoods became employees of the Ordnance Plant. The 6th Avenue Freeway project not only changed area traffic patterns but also bisected neighborhoods to the north and south of 6th Avenue. The project itself involved the removal of a swath of residences along its length as 6th Avenue was widened into a highway.

Table 3-31
Cumulative Analysis - Projects Considered and Resources Affected

Project	Location	Description	Status of Project	Resources & Affects	
				Neutral or Beneficial	Adverse
Transportation Projects					
"H" Ramp and "A" Ramp	Colfax Avenue and 6th Avenue, respectively	Ramp Improvements	Past Project	T	
Federal Boulevard	Alameda to 6th Avenue	Roadway Widening and Median Installation	Future Project	T, LU*	
Federal Boulevard	Federal and Lakewood Gulch	Bridge Replacement/ Widening	Future Project	T	
West Corridor LRT	South of Colfax Avenue	LRT from Denver to Golden	Future Project	T	H
Valley Highway (I-25)	I-25 between Logan and 6th Avenue	Highway Improvements	Future Project	T	S, H
Alameda Avenue	From Knox Court to I-25	Widening	Possible Future Project	T	S
Mississippi Avenue/Santa Fe Drive Intersection	Mississippi Avenue/Santa Fe Drive Intersection	Reconstruction/ Improvements	Possible Future Project	T	
Development Projects					
Rude Recreation Center	2855 West Holden Place	Expand and rebuild portions of existing recreation center	Past Project	S	T
South Platte River channel improvements	North of 8th Avenue	Installation of drop structure upstream of 8th Ave. and lowering of channel downstream of 8th Ave.	Current Project	N/A	N/A
UniCal Facility	14th Avenue and Eliot Street	Contaminated site remediation- potential for redevelopment	Current/Future Project	LU	
Alameda Square Shopping Center	Alameda Avenue and Zuni	Redevelopment of shopping center	Possible Future Project	LU, S	T
West Corridor Transit Oriented Development (TOD)	14th Avenue and Decatur Street	TOD near proposed West Corridor LRT stop	Current/Future Project	LU, S	T
Cherokee Denver Redevelopment (TOD)	West side of I-25 and Broadway	TOD near Southeast Corridor LRT stop	Current Project	LU	H

Source: Valley Highway EIS, CDOT, PB, 2006.
T=Traffic; S=Social/EJ; LU=Land Use; H=Historic, N/A=Does not affect Traffic, Social/EJ, Lane Use, or Historic
*Land will be available for redevelopment following the acquisition of 22 properties for the Federal Boulevard transportation project.

This broad, high-speed route disrupted the previous sense of connection among the adjacent residential areas. In addition, the increase in auto and bus traffic during the war sparked a shift in property uses along Federal Boulevard and Alameda Avenue. Over time, the greater flow of traffic caused these previously residential thoroughfares to become more heavily commercial as properties fronting onto them were developed and redeveloped.

1948-1958

During this decade-long period, the Valley Highway (Interstate 25) was completed and opened through Denver. Combined with the 6th Avenue Freeway, the Valley Highway project facilitated high-speed access around the growing Denver metropolitan area. The intersection of these two highways, centered within the Cumulative Impact Study Area, contributed to neighborhood growth and the continued redevelopment of properties along Federal Boulevard and Alameda Avenue for commercial use. Barnum Park was also expanded and improved during the decade.

1960-Present

During the postwar period, the highway projects of the 1940s and 1950s resulted in an increase in vehicle traffic through the study area as the city continued to grow and spread into the surrounding countryside. The increase in traffic along Federal Boulevard and Alameda Avenue necessitated their widening and improvement. Commercial pressure brought on by the increasing number of residents and volume of passing traffic resulted in the demolition of numerous historic buildings along these major thoroughfares. Yet while properties along Federal Boulevard and Alameda Avenue were experiencing commercial redevelopment, the residential neighborhoods off the main streets continued to exist largely unchanged except for the periodic remodeling of individual homes. While some historic buildings remain along the major streets today, a greater number are concentrated within the adjacent neighborhoods.

Present Projects

Projects in this group are projects that are currently under construction or consideration, including land use plans. These projects represent the CCD's ongoing progress in city-wide planning in regard to pedestrian safety, infrastructure, and water quality. Continued implementation of the *Pedestrian Master Plan* will have an overall positive effect to the community, improving pedestrian mobility and safety in the area. Although water quality is not discussed as a cumulative resource, the *Stormwater Quality Master Plan* and improvements to the South Platte River would improve water quality in the area and the latter would have wetland impacts that will be mitigated.

There are also three small redevelopment projects currently under review in the area at 139 S. Federal Boulevard, 203 S. Federal Boulevard, and 412-438 Federal Boulevard. These redevelopments include a retail store, convenience store with a gas station, and a retail center.

Future Projects

Projects in this group are anticipated to be constructed between 2006 and 2016. Major projects that will affect the cumulative study area are:

- I-25 Valley Highway EIS improvements
- West Corridor LRT and Transit-Oriented Development
- Several small roadway and bridge improvement projects
- Alameda Square Shopping Center redevelopment

The combined effect of the future West Corridor LRT and TOD, the Valley Highway improvements, the Build Alternative, and other smaller transportation improvement projects would have a substantial positive benefit to the community, the economy, to the mix of transportation modes offered, and improved mobility.

Planning Documents

The CCD has also completed or is working on several plans that include portions of the cumulative study area such as:

- *Comprehensive Plan 2000*
- *Bicycle Master Plan*, 1993; *Bicycle Master Plan Update*, 2001
- *Blueprint Denver*, 2002
- *Game Plan*, 2003
- *Pedestrian Master Plan*, 2004
- *West Colfax Plan*, 2005
- *Strategic Transportation Plan*, expected completion in 2007
- *Greenprint Denver*, 2006
- *Colfax Design Guidelines* (Draft), 2006
- *Transit-Oriented Development (TOD) Strategic Plan*, 2006

The following neighborhood plans were also completed by CCD:

- *Athmar Park Neighborhood Perimeter Plan*, 2000
- *Barnum/Barnum West Plan*, 1986
- *Valverde Plan*, 1991
- *Barnum Park Master Plan*, expected completion in 2007.

3.25.4 Cumulative Analysis by Resource Area

This section provides a summary of effects by resource area that would result from the past, present and future projects considered. The resources evaluated include land use, social/environmental justice, traffic and historic. These resources were selected at the onset of the project since they are resources of concern.

Land Use Changes

Most of the past projects have affected land use. Some projects have converted land from agricultural purposes to commercial use. While relocation impacts have occurred from these projects, the land use changes for these projects are considered positive and an improvement to the area.

The Build Alternative is not altering the land use directly. However, indirect effects may occur over time as newly created vacant parcels become available for commercial or mixed-use redevelopment. The vitality of the area will be strengthened by the transportation improvements including the introduction of LRT (West Corridor) and transit stations near the study area. The area continues to benefit from proximity to downtown.

Social/Environmental Justice

Within the CCD in 2000, 13 neighborhoods were considered “poor”, meaning that over 25 percent of the residents lived in poverty. An additional 10 neighborhoods were considered “at-risk” (The Piton Foundation, 2004). In 2000, 21 neighborhoods had a greater than 50 percent Latino population. This includes both the Barnum and Valverde neighborhoods. The Build Alternative would require relocation of minority-owned businesses. However, replacement properties within the cumulative study area may exist to relocate businesses.

Federal Boulevard serves as a primary transportation linkage within the metro region. Minority and low-income populations use Federal Boulevard via car, bus, walking and bicycling. The Build Alternative would improve the Federal Boulevard facility, making it safer and more efficient for the entire community, including low-income and minority populations.

Traffic

The Build Alternative would improve both traffic flow and safety on Federal Boulevard. There are no foreseen impacts to traffic volumes on parallel north-south roadways.

The construction of the West Corridor LRT would reduce the number of vehicle miles traveled, would likely increase transit demand, improve connections to existing transit along Federal Boulevard, and may improve traffic flow in the cumulative study area.

Historic Resources

The Build Alternative would not adversely impact historic properties eligible for the National Register of Historic Places and would have no adverse impact upon the remaining historic resources in the area. Many of the individual historic properties along the area’s major arterials have been demolished or altered in the past fifty years. Because of these changes, few properties along the major arterials appear to be individually eligible for designation and district designation.

The residential neighborhoods off the major arterials, some of which may be eligible for district designation, are separated geographically from Federal Boulevard and would not be impacted directly by the project. As properties along Federal Boulevard are redeveloped over time, the residential neighborhoods and historic structures

within these neighborhoods may be pressured to redevelop. This would qualify as an indirect effect from the project, but cannot be attributed to the project alone. Many transportation projects are ongoing or planned in the area and would contribute to market pressure for redevelopment and change.

3.26 Permits Required

3.26.1 Stormwater Permits

Because the Build Alternative would involve the disturbance of more than one acre of land, stormwater permitting would be required during the construction phase. Nationally, USEPA requires stormwater permits for this type of activity under its National Pollutant Discharge Elimination System (NPDES) permit system. In the State of Colorado, CDPHE has the authority to administer this program under its L (CDPS) Regulations. As part of the CDPS, the CCD has been issued a MS4 permit. CDOT also has a MS4 permit that would impose requirements on the project. The construction stormwater permit for the Build Alternative would be issued by CDPHE.

The CCD may impose requirements related to its MS4 permit during the plan review and approval process and through its bi-weekly inspection program. Similarly, CDOT may impose requirements related to its MS4 permit during the plan review and approval process, through the contracting process, and through inspections. The requirements of the CDPS, the Denver MS4 permit, and the CDOT MS4 permit have been considered during project design and in writing this document, and coordination of requirements would be taken into account during evaluation and selection of BMPs.

3.26.2 Access Permit

In the final design, accesses would be identified in a formal access control plan prepared by CDOT that would indicate items such as access location, width, and layout. All accesses would be constructed in accordance with CCD and ADA standards. Access changes that are part of development would require a Form 137 Access Permit application.

3.27 Summary of Impacts and Mitigation

Table 3-32, found at the end of this chapter, summarizes impacts and proposed mitigation measures.

Table 3-32
Summary of Impacts and Mitigation Measures

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Land Use	None	Business property values may increase. Safer environment for residents from construction of median and crosswalks.	None	None	None
Social Characteristics	Increased traffic and congestion, creating difficulties for pedestrians, bicyclists, and emergency service vehicles.	Safety for pedestrians, bicyclists, transit passengers, and motorists would improve. Pedestrian, bicycle, and motorist connections across Federal, to transit stops, adjoining neighborhoods and civic attractions i.e. schools, libraries etc, wood improve due to wider sidewalks, an additional traffic signal, and a raised median.	See mitigation measures for "Environmental Justice" below.	Residents, businesses, and visitors would experience increased levels of dust, particulates, noise, light, and glare. Mobility would be temporarily impaired for both vehicular and pedestrian traffic with construction-related traffic, detours, and changes in pedestrian routes. Access to businesses would be temporarily altered, depending on the phasing of construction. The exact number of temporary and/or permanent access changes would be determined during final design.	• Construction updates, website(s), and contact information will be distributed to the public. • Residents and businesses will be provided with courtesy/traffic signage, traffic circulation plans, construction schedules and activities. Construction phasing to minimize the impacts of construction duration will be implemented. • Marketing Assistance will be provided in the form of business promotion, partnership with other organizations, encouraging contractors and others to patronize businesses during construction, and/or creating a business handbook and location maps.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Environmental Justice	Increased traffic congestion and travel time delays, which would hinder access to housing, community facilities and provision of emergency services to minority and low-income populations.	Relocation of 43 businesses, at least 17 of which are minority owned. Relocation of two residential properties. Vehicular congestion would be reduced, pedestrian mobility would be improved through wider sidewalks and curb ramps, and the raised median would provide refuge at crosswalks, thus improving pedestrian safety. The relocation of bus stops would also improve access and safety for boardings and deboardings.	All property acquisition will adhere to federal and state guidelines regarding acquisition policies and relocation assistance, including the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and applicable Colorado statutes. Additional mitigation measures will be confirmed during final design, in cooperation with CCD and CDOT. These measures will include: • Prior to making each displacee eligible for relocation benefits, CDOT and CCD will hold at least two business/construction outreach forums with affected property owners and businesses to determine the assistance needed and general resources available. • Business Assistance Programs: Site selection assistance, technical and regulatory assistance, workforce development and financing assistance will be provided. • CCD will recommend sources of financing for small businesses needing funding	None	None

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Environmental Justice (continued)			above and beyond their relocation benefits. • Neighborhoods in the region with similar demographic profiles to the displaced businesses will be identified to determine whether these areas will be suitable for relocation.		
Economic	Study area would continue to be economically distressed. Residential property values would continue to decrease. Businesses would be impacted by future congestion.	Twenty-one total parcel acquisitions would potentially cause the city, county, and state to lose the ability to collect property taxes totaling $123,495 per year. Forty-three businesses that collect sales tax would be displaced. CCD would lose the ability to collect approximately $84,570 per year in sales tax from these businesses if they were to cease operation entirely. There would be approximately 228 jobs potentially lost resulting in approximately $1,296,321 in lost wages. However, businesses would relocate and continue to operate in another area. Creation of temporary jobs related to construction of the project.	See the mitigation for "Environmental Justice" for further details.	Construction would create inconveniences for businesses and customers, including the presence of construction workers, equipment, and materials along with traffic diversion, changes to property access, and dust, noise, and vibration from construction activity. Construction would negatively affect employment levels, sales/economic activity, and sales tax revenues.	Where appropriate and feasible: • Maintain traffic flow through the study area so that customers and goods can move to and from businesses. • Coordinate the construction schedule to avoid major construction activities during the prime shopping times to the extent reasonable and prudent. • Provide ample notice of utility shut offs, construction schedule, and detours to businesses and residents. • Schedule utility shut offs for low-use times. • Maintain reasonable access to businesses by minimizing navigational obstructions or delays to and from businesses.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Economic (continued)		Future sale and redevelopment of these properties, however, would likely offset the losses in property and sales tax. Property values would increase in the future due to roadway improvements. Residential property values would continue to decline during construction, but would increase after project completion from the roadway improvements.			• Provide ample signage indicating access points to businesses and residences. • Maintain pedestrian connectivity throughout the study area and provide obvious and consistent pedestrian access to businesses and residences.
Right-of-Way and Relocations	None	4.9 acres of property would be acquired, from 75 property acquisitions, 54 of which are partial acquisitions and 21 are full acquisitions. Six outdoor signs would be acquired and one personal property will be relocated. 43 businesses, including 2 residences, would be displaced.	• Acquisitions and relocations will comply fully with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and applicable Colorado statutes. • The CCD will work closely with businesses that are dependent on their current location to identify a suitable site for their relocation. See the mitigation for "Environmental Justice" for details.	None	None

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Transportation	Delays are anticipated to increase at many of the study area intersections. Existing safety issues are expected to stay the same or worsen due to the forecast increase in vehicles. The number of accidents and the higher accident types would remain higher than expected frequencies compared to similar roadways in Colorado.	Travel patterns from surrounding neighborhoods would change due to the median. Higher use of Bayaud is expected due to the proposed additional signal. Improved roadway capacity and LOS at most intersections, with the exception of 5th Avenue and 1st Avenue (south). Safety would be improved through the elimination of approach turn and broadside accidents and a decrease in pedestrian, head-on, and sideswipe accidents. There would be accidents at median openings due to higher traffic volumes and wider roadway.	None	Construction would encroach on privately owned properties along Federal Boulevard, as described in "Right-of-way and Relocations".	• Construction impacts to adjacent roadways will be minimized through appropriate traffic detouring and signing. • Business access will be cut off for short periods of time for fast track concrete to cure. The contractor will work with business/property owners to minimize impacts during construction. • The CCD on-street bike route will be appropriately signed and detoured during construction in accordance with the CCD Bicycle Coordinator. • The construction will be phased to allow two lanes of traffic in both directions on Federal Boulevard at all times. • The sidewalks will need to be closed intermittently due to construction; however one side of the street will be open for pedestrian use. • Street lights will be maintained during construction. • Signalized intersections will remain open during construction.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Transportation (continued)					• Emergency service providers will make use of the detour(s) and will not be affected by construction.
Bus Service	None	Buses would continue to stop along curbside lanes and would be located on the farside of the intersection. Reduced vehicular traffic disruptions and delays due to added capacity.	None	None	None
Pedestrians and Bicyclists	None	Sidewalks and buffer zone would be widened. Safety for pedestrians, bicyclists, transit passengers and motorists would be improved both north/south and east/west.	None	Sidewalks would be closed intermittently due to construction. Bike route may be detoured during construction.	• Bike route will be appropriately signed during construction. • One side of the street will be open for pedestrian use.
Air Quality	Predicted levels do not exceed the applicable standards. The highest estimated 8-hour CO concentrations (8.6 ppm in 2010 and 6.4 in 2030) would occur near the intersection of Federal Boulevard and Alameda Avenue	Predicted levels do not exceed the applicable standards. The highest estimated 1-hour and 8-hour CO concentrations (12.4 ppm/8.0 ppm in 2010 and 9.5 ppm/6.0 in 2030) would occur near the intersection of Federal Boulevard and Alameda Avenue. Project would not cause or contribute to a new violation of the PM_{10} NAAQS. There would be no appreciable difference in	None	Construction related effects of the project would be limited to short-term increased fugitive dust and mobile source emissions during construction.	Site Preparation will: • Minimize land disturbance; • Use watering trucks to minimize dust; • Cover trucks when hauling dirt; • Stabilize the surface of dirt piles if not removed within a reasonable amount of time; • Limit vehicular paths and stabilize these temporary roads; and • Stabilize construction entrance per CDOT M-208-1 requirements.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Air Quality (continued)		overall MSAT emissions generated by vehicles in study area.			Construction • Cover trucks when transferring materials; • Use dust suppressants on traveled paths which are not paved; • Minimize unnecessary vehicular and machinery activities; and • Minimize dirt track-out by washing or cleaning trucks before leaving the construction site (alternative to this strategy is to pave a few hundred feet of the exit road, just before entering the public road). Post Construction • Re-vegetate any disturbed land not used; • Remove unused material; • Remove dirt piles; and • Re-vegetate all vehicular paths created during construction to avoid future off-road vehicular activities.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Noise	Noise levels at four locations (Receptors 7, 8, 10, and 11) are predicted to meet or exceed the NAC in 2030. Noise levels at Receptor 7 would exceed the severe impact level of 75 dBA. Thirty-four homes and 13 apartments would be affected by noise levels that meet or exceed the NAC.	Traffic noise levels would increase from 0 to 2 dBA relative to existing conditions. The same 34 homes and 13 apartments would be affected by noise levels that meet or exceed the NAC. Receptors 7 and 8 are predicted to remain at existing noise levels due to the modeled locations moving further from Federal Boulevard. Outdoor noise levels at commercial buildings bordering Federal Boulevard are expected to range between 60 and 70 dBA. None of the commercial sites are expected to meet or exceed the noise abatement criteria for commercial activities of 71 dBA.	Due to property access constraints, no mitigation was deemed feasible or reasonable where noise levels meet or exceed the NAC. The modeled noise barrier did not provide the necessary 5 dBA noise reduction. Mitigation is therefore not recommended.	Noise levels would be bothersome to adjacent businesses and the few residences along Federal Boulevard. Construction noise would be intermittent, occurring during an approximate 12-month construction period at various locations in the study area. Construction noise types would depend on the type, amount, and location of construction activities. Maximum noise levels from construction equipment generally ranges from about 65 to 105 dBA at 50 feet. Construction noise at residences farther away would decrease at a rate of 3 to 4 dBA per doubling of distance from the source. The number of occurrences of the L_{max} noise peaks would increase during construction.	• Limiting construction near residences to between 7 a.m. and 10 p.m. • Equipping equipment engines with muffles, silencers, and engine enclosures. • Requiring contractors to use OSHA-approved sound-level sensing backup alarms • Turning off equipment during prolonged periods on nonuse. • Locating stationary equipment away from receiving properties. • Constructing a solid, temporary barrier.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Vegetation	None	Twenty-nine ornamental deciduous tress, four ornamental conifer trees, 42 evergreen shrubs, and 15 deciduous shrubs would be impacted by roadway widening. Species of trees impacted include: green ash, Siberian elm, crabapple, and Russian olive.	• Impacted landscaped trees would be replaced following CDOT R6's tree replacement policy. • Revegetation for erosion and noxious weed control would be done with vegetation including grasses and forbs to provide natural habitats and displace potential noxious weed invasions.	None	None
Wildlife	None	Tree removal in ROW could impact nesting birds.	Trees will be removed outside of the nesting season of April 1st through August 31st. If this is unavoidable, a nesting bird survey will be accomplished no earlier than one week prior to the removal of trees. Any active nests will be avoided until the chicks are able to fly.	None	None
Farmlands	None	None	None	None	None
Noxious Weeds	None	Roadway widening would produce positive effects in regard to noxious weed impacts in landscaped planters and beds where removal or renovation of the areas would eliminate the existing few and small infestations. See construction impacts for additional impacts.	None- see construction impacts.	Potential to spread noxious weeds due to excavation, land clearing, and vegetation and soil disturbance.	• Native grasses and forbs will be used on all CDOT right-of-way for re-vegetative purposes. Transplanting and purchasing of native plant material will be encouraged whenever feasible. • All mulch materials will be inspected and regulated by the Weed Free Forage Act, Title 35, Article 27.5, CRS.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Noxious Weeds (continued)					• Importing topsoil onto the project site will not be allowed. • Contractor's vehicles will be inspected before they are used for construction to ensure that they are free of soil and debris capable of transporting noxious weed seeds or roots. • Noxious weeds observed in and near the construction area will be treated with herbicides or physically removed. • Disturbed areas will be seeded in phases throughout construction. • Fertilizer will not be used in seeded area.
Threatened and Endangered Species	None	None	None	None	None
Historic Properties	None	Indirect impacts to the surveyed buildings one row behind the buildings on Federal Boulevard that would primarily involve temporary changes in visual and noise impacts until they are redeveloped.	None	None.	None.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Archaeological Resources	None	None	None	None	If buried archeological remains are exposed during any phase of construction, the CDOT Senior Staff Archaeologist will be contacted to evaluate the discovery and facilitate any necessary consultation with the SHPO and other agencies or entities, as appropriate.
Paleontology	None	None	None	None	If fossils are uncovered during construction, the CDOT paleontologist will be contacted to evaluate the significance of the fossils. CDOT paleontologist will also review final design plans.
Section 6(f) Resources	None	None	None	None	None
Visual	None	Depending on the impacts to structures along the corridor, landscaping, and parking, the magnitude of change would vary. The affected properties' average score for magnitude of change is 3.1, which means there would be some noticeable visual impacts, especially where acquired structures are completely removed. This change would affect land use, noise, circulation, night lighting, and aesthetics in the area.	• Modifications to structures that remain in place should be visually consistent with the existing structure and its surroundings. • In locations where buildings are removed, the remaining site should be blended into surrounding grades and lines. New development should meet CCD design guidelines.	Temporary impact due to construction staging area, trailers, and storage materials.	None

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Parks and Recreation	None	None	None	None	None
Water Resources	None	Because the Build Alternative has a paved area similar to existing conditions, no changes in runoff quantities, rates or patterns would occur.	• CDOT's Erosion Control and Stormwater Quality Guide (CDOT, 2002), section 107.25 and 208 of the specifications for the Standard Specifications for Road and Bridge Construction (CDOT, 2005) • Provide permanent BMPs in the form of Extended Detention Basins or In-line filters to attempt to capture 100% of the WQCV or 80% of the TSS.	Possible disruption to existing drainage patterns. Possible impacts to water quality, including: • Increased TSS in stormwater runoff. • Discharges of chemicals into stormwater runoff, from spills or regular construction activities.	• Storm drain inlets along Federal Boulevard will be relocated as quickly as possible to limit ponding. • A Stormwater Management Plan will be prepared and implemented to minimize impacts to water quality due to construction. • Temporary Best Management Practices (BMPs) will be incorporated into construction activities.
Wetlands	None	None	None	None	None
Floodplains	None	None	None	None	None
Hazardous Materials	None	Would likely encounter low level petroleum contamination in the shallow soils (0-10 feet bgs) at multiple locations, particularly at 5, 188, and 201 Federal Boulevard. Target analytes from the Phase II SI are below USEPA's Region 9 Preliminary Remediation Goals (PRGs) for soil. Threat to human health and the environment is therefore	• A properly trained environmental professional will be present at 5, 188, and 201 Federal Boulevard for initial excavation phase of construction. The initial screening will be performed both visually and using a PID to record headspace readings for excavated soils. • Consideration will be given to screening excavated soils at all the potential REC sites.	Potential exposure of workers to contaminated soils during excavation activities. Likelihood of encountering low level petroleum contamination in shallow site soils (0-10 bgs) is significant.	• Visual observation and soil screening during construction. • CDOT's Environmental Health and Safety Management Specifications, Section 250 will be used, concerning the transportation, handling, monitoring and disposal of any hazardous or potentially hazardous solid waste materials encountered during construction.

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Hazardous Materials (continued)		considered minimal. Low level groundwater contamination was also identified in multiple monitoring wells within the study area. Unlikely that the proposed Build Alternative would come in contact with contaminated groundwater.	• Structures built prior to 1975 that are scheduled for demolition as part of the road improvement activities will be inspected and sampled for lead-based paint (LBP) and asbestos building materials (ABM) prior to being demolished. The comprehensive pre-demolition inspections will be performed according to Colorado Regulations 8 and 19 and applicable Occupational Safety and Health Administration (OSHA) regulations. Abatement (removal) of friable (easily crumbled or pulverized) ABM or non-friable ABM, which may be rendered friable during demolition, will be required prior to demolition. A state-licensed asbestos inspector must be present if these materials are encountered during excavation. Asbestos in soil must also be abated per CDPHE regulations. • Prior to and during construction, CDOT Standard Specification, Section 250 will be used. • If deemed necessary, a materials management plan will be prepared regarding the		

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Hazardous Materials (continued)			removal and disposal of contaminated soils and/or groundwater. • A Health and Safety Plan will be developed to protect workers during construction.		
Utilities	None	Six utilities would need to be relocated before construction begins, including: • Telephone and Communications • Electrical and Gas • Water and Sanitary	Close coordination with utility owners. Owner companies are responsible for relocating utilities for a public improvement project. If a publicly held utility must be relocated, it is the project's responsibility. Relocations will be avoided where feasible by making minor adjustments to the design or by placing encasement for protection over a buried utility.	Minor utility relocations should take place during construction.	Coordination with the utility owners will be done to minimize disruptions and construction will be scheduled during low use periods when possible.
Geology	None	• None	• None	• Swelling soils, surficial material, and bedrock • Corrosive soils • Soils exhibiting frost action • Differential compaction and/or low strength in soils and surficial materials • Shallow groundwater • Shallow depth to bedrock • Slope stability • Susceptibility to erosion in soils or surficial materials	• Deep foundation systems, specialized piers and footings, subsurface drainage systems, overexcavation with backfill controlled for composition, texture, moisture, and compaction • Coated resistant steel and concrete • Excavation, appropriately engineering fills, subsurface drainage systems • Excavation, appropriately engineered fills, geogrids, geotextiles

Table 3-32
Summary of Impacts and Mitigation Measures (continued)

Resource Area	No Action Alternative Impacts	Build Alternative			
		Permanent Impacts of Improvements		Temporary Impacts of Construction	
		Impacts	Mitigation	Impacts	Mitigation
Geology (continued)				• Permeability in surficial materials • Seismic risk	• Dewatering systems, engineered fills • Engineered fills, additional mitigation measures as described herein to address particular issues associated with the bedrock • Design slope cuts to engineering guidelines for slope stability, shore excavations and slope cuts • Slope design, drainage systems, cover during construction; appropriate and prompt revegetation • Engineered fills, subsurface drainage systems • Design and construction in accordance with engineering guidelines for stability in seismic events of expected magnitude.

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4.0 COMMENTS AND COORDINATION

This section briefly describes the public outreach methods, the purpose and type of public meetings held, and comments received from the public and agencies at these meetings. Special outreach approaches, including one-on-one meetings with businesses and distribution of bilingual meeting materials, were taken to reach the predominantly Hispanic community along Federal Boulevard to encourage their involvement in the project and to understand their concerns about the proposed improvements and perspective on proposed solutions. The activities and events that were conducted as part of this EA are summarized below, including a summary of comments, concerns, and ideas.

4.1 Communication Methods

As described in Chapter 3, the study corridor has a large Hispanic population, many of which speak English as a second language. For this reason, all materials available to the public were bilingual. In addition, interpreters/translators were provided at all meetings with the public. Headphones also were provided to Spanish-speaking individuals that provided real-time translation of meeting discussions. The methods used for communicating with the public included advertisements, a project website, newsletters, public meetings, public workshops, and one-on-one meetings with business owners. Copies of public outreach materials distributed can be found in Appendix B.

4.1.1 Advertisements

Advertisements for the October 2005 and June 2006 public meetings were placed in three newspapers that serve the corridor: La Voz (Spanish newspaper), the Southwest Daily Herald, and the Chinese American Post. In addition, an ad was also placed in Dat Viet (Vietnamese newspaper) for the October 2005 meeting. These announcements were placed approximately three weeks before each meeting. For the October 2006 meetings, ads were placed in La Voz, the Southwest Daily Herald and DeHecho (Spanish newspaper) approximately one week before the meetings. These newspapers also ran meeting announcements at the same time as the advertisements.

4.1.2 Project Website

A website was created to provide project information and updates, access to the newsletters, information from the public meetings, announcements of upcoming meetings, and summaries of past meetings. The website also provides a comment page that allows the public to submit comments online regarding the project. This EA will also be posted on the website to provide an opportunity for the public to read and provide comments. The website can be found at: http://www.dot.state.co.us/ federalblvd /index.asp.

4.1.3 Mailing List

Approximately 720 residents, business owners, and organizations such as neighborhood associations, libraries, schools, churches, and community facilities populated the mailing list for the project. This list was compiled from information obtained from the CCD and census records and was updated from site visits in the field and information obtained from sign-in sheets from the public meetings held during the study. The mailing list was used to inform the public of upcoming public meetings, meeting outcomes, and to provide project updates.

4.1.4 Newsletters

Three newsletters were mailed to the mailing list described above. The first newsletter was mailed in September 2005; the second newsletter in May 2006; and the third will be mailed in Fall 2007. A postcard invitation was sent to announce the June 2006 and October 2006 public meetings. The newsletters contained information and updates on the project, such as the results of the draft traffic and safety reports completed for the corridor and the purpose of and need for the project. All materials mailed out were bilingual (English/Spanish).

4.1.5 Public Scoping Meetings

Two public scoping meetings were held on October 19th and 20th, 2005, from 5:30 to 7:30 p.m. at the Barnum Park Recreation Center. The purpose of the scoping meetings was to gather public input on the issues in the corridor and to gather comments on preliminary alternatives. Approximately 95 people attended the meetings. The meeting provided information to the public on:

- The study area
- Scope of the project
- Agencies involved
- Study issues
- Preliminary alternatives under consideration
- Project contact information

Community Member Attending Scoping Meeting

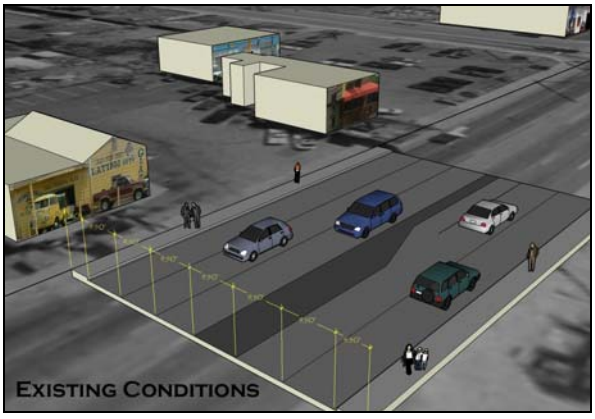
In addition, poster-sized notepaper and an aerial map of the study area were made available for community members to write-in their comments, note areas of concerns along the study area, and to identify the location of their respective businesses and residences. Slide presentations were given at each meeting to discuss the topics listed above. Four written comments were received, which are summarized in Section 4.2. Verbal comments received are summarized below:

- One attendee suggested a bus express lane be added in the middle (of the road) that could be used as light rail in the future.

- There were several comments regarding medians: medians would slow down the fire department's response time, medians would negatively impact businesses, trees along medians would cause accidents.
- High speed traffic is not safe.
- The speed limit should be reduced to 30 mph.
- The intersection at Federal Boulevard and First Avenue is dangerous and must be improved.
- Drivers take risks because they are tired of waiting for a break in traffic and therefore pull out into traffic.
- Streetlights should be added to improve pedestrian safety.
- More pedestrian crossings are needed.
- Construction detours will divert traffic into neighborhoods.
- A stoplight is needed at 3rd Avenue.
- A longer light at Alameda Avenue is needed for pedestrians.
- Sidewalks should be improved.
- The general aesthetics of the area should be improved.
- Widening the road will negatively affect businesses.
- Improvements are needed but money is an issue.
- More parking is needed.
- Bus pull-outs should be added.

4.1.6 Public Workshops: Alternatives Development

Two workshops were held on June 15th and 17th, 2006 in order to provide a forum to obtain meaningful comments and opinions from the public on proposed typical sections. A total of 50 residents and business owners attended the workshops. A project video (in both English and Spanish), display boards and a real-time bird's eye view of the study area provided different methods for participation and communication of potential improvements to Federal Boulevard. CDOT Right-of-Way personnel were available to provide information and answer questions regarding acquisition and relocation assistance. The video and display boards provided information to the public on:



"SketchUp" Computer Program Simulation Improvement on Federal Boulevard

- The study area
- Purpose and need for the project
- Median studies
- Access management
- Traffic and safety issues
- Pedestrian issues
- Bus impact on traffic and pedestrians

Because of the interactive nature of the workshops, the public had an opportunity to effectively communicate with the project team. To have the public participate in an interactive presentation, a moderator led the meeting. Before the computer demonstration began, the moderator engaged the public in developing a list of problems that currently exist on Federal Boulevard, along with possible solutions to these problems. Once this discussion had progressed, the computer program "*SketchUp*" was used to show the public a 3-D aerial view of the study area and local businesses. Photographs of business frontages were superimposed on the structures contained in the aerial photo in order to help the public find their property on the screen. The public was encouraged to suggest, and the moderator also helped suggest, different improvements that could occur to the roadway. The computer program also helped the community to visibly "see" what effect the proposed improvements would have on their respective properties.

The following comments were received during the discussion at the workshop:

- Federal Boulevard is an unsafe street for motorists and pedestrians.
- The lanes are too narrow.
- Improvements in capacity are needed due to current congestion.
- Improvements should take as few buildings, businesses, and right-of-way as possible.
- Buses cause back-ups, especially northbound.
- Federal Boulevard is not an attractive street.

Community Members Participating in Interactive Workshop

- Center turn lanes provide unlimited access to businesses on both sides of Federal Boulevard.
- A raised median will cause a loss of customers and downturn in business.
- Trees in the median will prevent travelers from seeing businesses.

- Grass and trees next to the sidewalk are not maintained and too expensive for the property owners to maintain.
- Hardscape next to the sidewalk is a better solution than trees and grass.

4.1.7 August Small Group Meeting

Once the preliminary alternatives were developed and initial Level 1 and Level 2 screening were complete, invitations to a small group meeting were sent out to local citizens and businesses that attended the June 2006 workshops. Seven business/property owners attended the meeting. The purpose of this meeting was to gather feedback on the screening criteria, preliminary alternatives, and screening process from people that attended the June workshops. It was expected that these community members would serve as representatives for their respective neighborhoods or business groups and would communicate back to their community.

The feedback from the small group meeting is summarized below:

- Several of the business owners at the meeting expressed their opposition to a raised median because they believe it will prevent customers from coming to their businesses. They also believe a raised median would take up usable roadway and therefore cause more building impacts.
- Several business owners expressed concern about their parking being impacted.
- There was a question as to why the study team was proposing anything larger than the minimum required sidewalk width since few pedestrians use the sidewalks other than to walk to bus stops.
- A suggestion was made to install a stoplight between 1st Avenue and Alameda Avenue to slow traffic down and provide a crosswalk for pedestrians.

4.1.8 One-on-One Meetings with Businesses

During August and September 2006, individual meetings were held with businesses in the study area. Where possible, appointments were made with business/property owners to ensure their availability to meet. The purpose of these meetings was to conduct access management questions and collect general information about the businesses, such as type of business, how long they had been located in the study area, customer base, etc. Questions were also asked concerning employees. These interviews also provided an opportunity for the business owners to ask questions and learn more about the project. The study team was able to meet with over 50 percent of the businesses, which included a combination of business and property owners, along the corridor. Some businesses, however, were not interested in meeting, and others could not be contacted.

4.1.9 Meeting with Impacted Property and Business Owners

On October 25, 2006, a meeting was held at the Barnum Recreation Center with the property and business owners that were anticipated to be affected by full property acquisition at the time. Of the 13 business owners and 7 property owners were invited to the meeting, 5 business owners and 3 property owners attended the

meeting. At the time, a more detailed level of engineering had not yet been completed, which is why the number of affected property and business owners differs from the impacts discussed in Chapter 3. A right-of-way representative from CDOT explained the *Uniform Act* and described the benefits that would be available to those owners and tenants affected by the full acquisitions. A Spanish interpreter was available during the meeting.

A second meeting with potentially affected property owners and businesses will be held on November 19, 2007. Letter invitations will be mailed in advance of the meeting to property owners and businesses that may be affected by full acquisition of their property. Similar to the October 2006 meeting, information will be provided to attendees on the right-of-way process and benefits of the *Uniform Act.* A Spanish interpreter will be available to translate information provided and to answer questions.

4.1.10 Public Meetings: Screening Process and Build Alternative

Presentation at Public Meeting

Public meetings were held on October 26th and 28th, 2006 in order to receive feedback on the preliminary alternatives, the screening process and results of Level 3 Screening, and the Build Alternative to be evaluated in the EA. The meetings were held at the Barnum Recreation Center and were set up as an open-house format, followed by a brief presentation on the screening process and description of the Build Alternative. A Spanish interpreter was available at the meetings both during the open house and the presentation. CDOT Right-of-Way personnel were available to provide information and answer questions regarding acquisition and relocation assistance. Thirteen people signed in at the public meetings. Two written comments were received at the meeting and one was mailed in later, all which are summarized in Section 4.2.

Verbal comments made by meeting attendees are summarized below:

- Loss of frontage, including parking.
- Traffic signal at Bayaud Avenue will improve safety.
- Safety concern with side street closures due to potential gang activity.
- Suggested pedestrian amenities are viewed as excessive.

4.1.11 CDOT Scoping Meetings

Two scoping meetings were held with CDOT officials to discuss potential resource issues and concerns regarding the project as well as provide guidance on technical reports and the EA document. A scoping meeting was held with CDOT Region 6 officials on August 29, 2005 and another meeting was held with the CDOT Environmental Programs Branch on September 29, 2005.

4.1.12 Agency Meetings

A scoping meeting was held with resource and regulatory agencies on October 11, 2005. The purpose of the meeting was to inform the agencies about the project and solicit agencies' concerns and information in their areas of expertise or regulatory authority. This information was used as the environmental analysis progressed. The agency meeting included discussion of the following topics:

- The CCD Department of Parks and Recreation prefer broad tree lawns. The CCD has a Tree Planting Policy that should be referred to for this project.
- USEPA noted that if buildings were acquired along Federal Boulevard, the homes directly behind those buildings would be exposed and would require an evaluation of impacts.
- The Army Corps of Engineers stated that they will not be involved in the project as there are no aquatic resources.
- DRCOG commented that pedestrian and bicycle safety are big concerns.
- The SHPO's office suggested that NEPA and Section 106 processes be merged for this project. It was also noted that there may be properties eligible for the NRHP along Federal Boulevard.
- It was noted that a community impact assessment may need to be completed due to the high low-income and minority communities along the corridor.

Individual meetings were also held with various agencies during the course of the environmental investigations.

4.1.13 Project Contacts

Study team members were available to answer questions from the public throughout the project. They were available through telephone, e-mail, fax, and in person. The main contacts are:

Paul Jesaitis, P.E.
Project Manager
Colorado Department of Transportation
Region 6 Central Engineering
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961
Fax: (720) 497-6951
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Judy Aranda
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Fax: (303) 832-9096
E-mail: aranda@pbworld.com

4.2 Public Comments Received

Written comments received to date are summarized as follows:

- A homeowner would like the project to address "cruising" and the traffic on Cinco de Mayo.
- One person thought the workshops engaged business owners and residents in conversation and thought the video at the June 2006 workshops was helpful. This person would also like to see more invitations to the non-business community members such as community organizations.
- A business owner would like to see specific plans for best results in the future. She also thought the plan wasn't specific enough and CDOT shouldn't make major changes for one or two people.
- A resident thought the workshops were helpful and that people were allowed to share and receive information. She would like to see restrictions in the area against "adult" businesses.
- A resident thought the Build Alternative looked like a good plan. It (the plan) allows good traffic flow and minimizes building impacts.
- A property owner is concerned about losing frontage on his property where his tenant sells cars. He also wants customers to be able to make left turns out of his property.

4.3 Outreach to Low-Income and Minority Populations

Outreach to low-income and minority populations was an integral part of the public involvement activities, methods, and events held for the project. All materials sent to individuals, businesses and residents on the mailing list, including meeting announcements, updates and invitations, as well as the project website, were translated into Spanish. At the public meetings and workshops, which were held on weekdays and on Saturdays, Spanish interpreters were available to translate public meeting boards and to explain the project. During presentations given at the public meetings, headsets were available for the attendees to listen to the presentation in real-time Spanish interpretation. Public meeting boards, handouts, and the project video were translated into Spanish. Restaurants along the corridor were invited to provide food for the June 2006 meetings and were compensated for this effort. In addition, door-to-door interviews held with business owners along the corridor were conducted by both English and Spanish speakers. Lastly, the Executive Summary of this EA has been translated into Spanish and will be distributed upon request. The Spanish version of the Executive Summary will also be posed on the project's website.

The intent of the outreach to low-income and minority populations was to be inclusive of all residents, business owners and interested citizens in the community. The project team created a variety of avenues of communication and opportunities for the public to participate in the project. Communication with affected business owners and the larger community will continue through the final design and construction phases of the project.

4.4 Future Public Involvement

4.4.1 Planned Public Hearing

A public hearing will be held on December 4, 2007, from 5:00 p.m. to 7:00 p.m., at the Barnum Recreation Center and will be advertised in La Voz, the Southwest Daily Herald, and the Denver Post. A meeting notice will be published at least fifteen days in advance of the hearing. The purpose of the hearing is to obtain official comments from the public on the project and the results of the EA. A Spanish interpreter and court reporter will be available at the hearing to record proceedings and comments from the public. In addition, the Executive Summary of the EA will be translated in Spanish, will be posted on the project website, and will be made available upon request.

4.4.2 Final Design Meeting

A meeting will be held with the public during final design of the project. The purpose of the meeting will be to inform the public of the planned aesthetics and other detailed aspects of the design.

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GLOSSARY OF TERMS

Average speed	The average velocity of a vehicle from a stop to the next stop.
Curb and gutter	The curb is the raised edge built along street and it connects with the gutter, which is the low area that carries water to the sewer.
dBA	Abbreviation for decibels of sound pressure, as read on the "A" scale.
Emissions	Particulate, gaseous, noise or electromagnetic by-products of the transit system or a vehicle.
Environmental Assessment	A study analyzing the potential effects of an action (e.g., improving a roadway) on the surrounding area. Elements of the environment typically include noise and vibration levels, air and water quality, community disruptions, and construction impacts.
Ldn	Unit of measurement used to describe the average noise level over a 24-hour period. Used in evaluating project noise impacts.
Leq	Energy equivalent hour. Used in measuring noise levels.
Level of Service (LOS)	An industry-accepted standard for measuring the efficiency of traffic conditions. The *Highway Capacity Manual* identifies operating conditions ranging from A for best traffic operations (low volume, high speed) to F for worst conditions.
MS4 - Municipal Separate Storm Sewer	A municipal separate storm sewer system is a conveyance or system of conveyances (roads with drainage systems, municipal streets, catch basins, curbs, gutters, ditches, man-made channels, storm drains) that is designed or used for collecting or conveying stormwater and is not a combined sewer or part of a publicly owned treatment works.
No Action Alternative	The baseline alternative of not making any changes to the existing (roadway) network, except for changes already programmed in the region's long range transportation plan. Used as a baseline against which the other proposed alternatives are compared.
Peak Hour	The hour of the day when the maximum demand for service is experienced.
Peak Period	A specified time period when the traffic volume is greater than during any other similar periods (i.e., peak hour).
Principle Arterial	The main movement or distribution of traffic emphasized by the high level of mobility for through movement of the highest congestion and many safety issues.

GLOSSARY OF TERMS (CONT'D)

Right-of-Way (ROW)	The horizontal and vertical space occupied by the transportation way, over which the transportation agency (e.g., CDOT) has control either through outright ownership, lease agreement or an easement.
Route	The course followed by a transit vehicle as part of the transit system.
Scoping	A study process designed to inform the public, interest groups, and involved agencies about the project and to present the proposed actions, alternatives and issues for public and agency review.

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

As Constructed	FEDERAL BOULEVARD (6TH AVE TO ALAMEDA AVE) PLAN LAYOUT	C010-068/13810
No Revisions:		
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Void:	Detailer: JMG	Sheet Number 1
	Sheet Subset:	Subset Sheet:

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N

FEDERAL HEATING
175 S. FEDERAL

RESIDENTAL/
COMMERCIAL
161 S. FEDERAL

GUNN AUTOMOTIVE
145 S. FEDERAL

VACANT
141 S. FEDERAL

VACANT
139 S. FEDERAL

SIERRA
AUTO SALES
119 S. FEDERAL

NICK MART 2
109 S. FEDERAL

METRO AIR
SALES & SERVICE
101 S. FEDERAL

PUERTO VALLARTA
RESTAURANT
75 S. FEDERAL

Cedar Ave.

Bayaud Ave.

PERSONAL PROPERTY IMPACT

PERSONAL PROPERTY IMPACT

PERSONAL PROPERTY IMPACT

Federal Blvd.

N0°26'16"W 750.00'

PC 10+35.45

PT 11+63.51

CURVE BAYAUD 1
R = 400.00'
DELTA = 17°38'51" LT
L = 28.06'
e = NC

ONE PROPERY OWNER

EMBROIDERY BOULEVARD
82 S. FEDERAL

VACANT/COMMERCIAL/
RESIDENCE
180 S. FEDERAL

LOS GARCIA'S
AUTO BODY
176 S. FEDERAL

MOOSE LODGE
158 S. FEDERAL

VACANT/COMMERCIAL
130 S. FEDERAL

VACANT/COMMERCIAL
120 S. FEDERAL

VACANT/COMMERCIAL
106-108 S. FEDERAL

APTS.
100 S. FEDERAL

UNIQUE AUTO
SALES
82 S. FEDERAL

MEYAS
BEAUTY SALON
80 S. FEDERAL

MATCHLINE - SEE SHEET 01

MATCHLINE - SEE SHEET 03

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EXISTING BUILDING
EXISTING BACK OF SIDEWALK
PROPOSED CURB
PROPOSED BACK OF SIDEWALK
PROPOSED AQUISITION OF TOTAL PROPERTY
PROPOSED AQUISITION OF BUILDING ONLY
ELIGIBLE HISTORIC BUILDING

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425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

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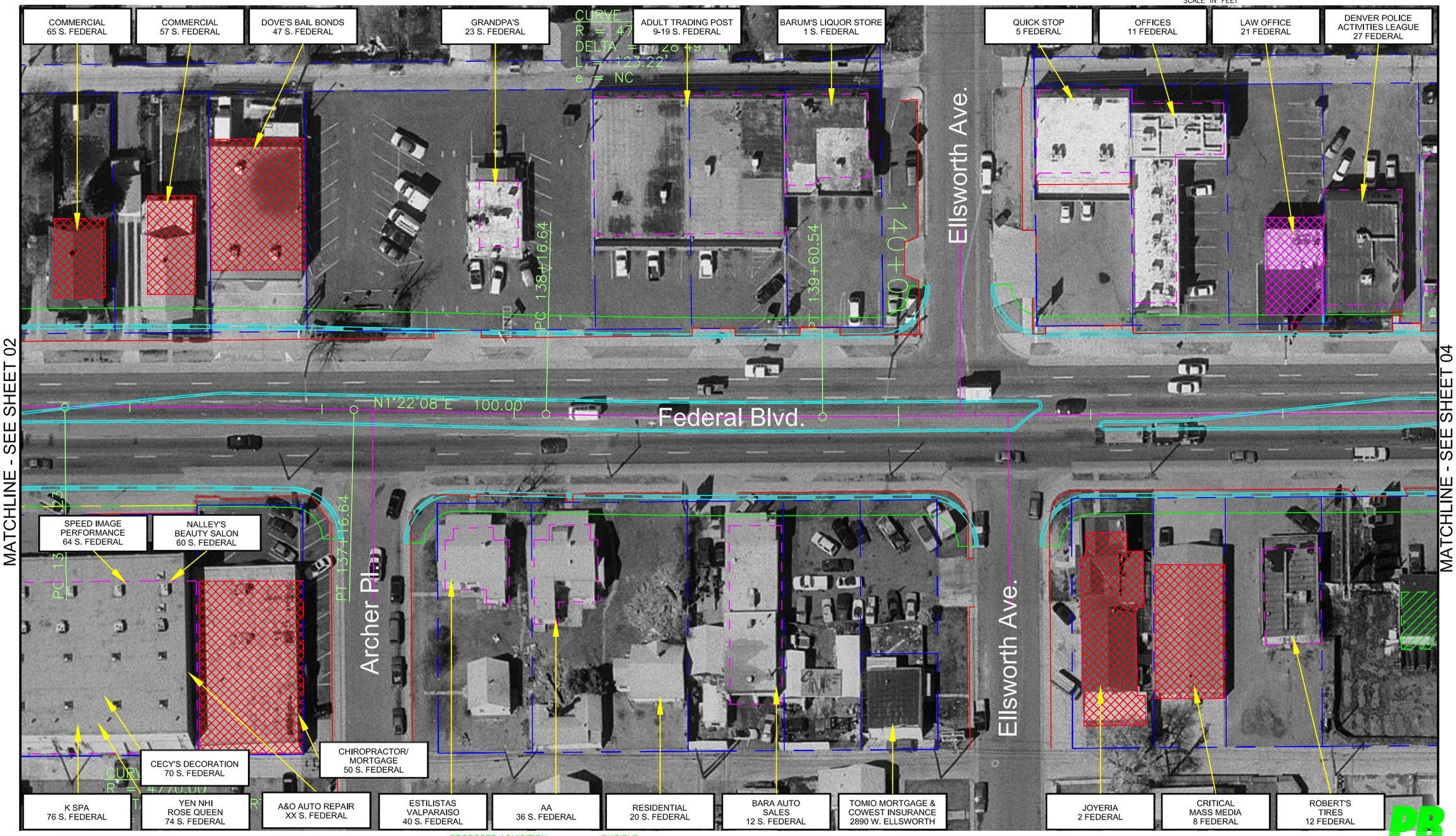

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

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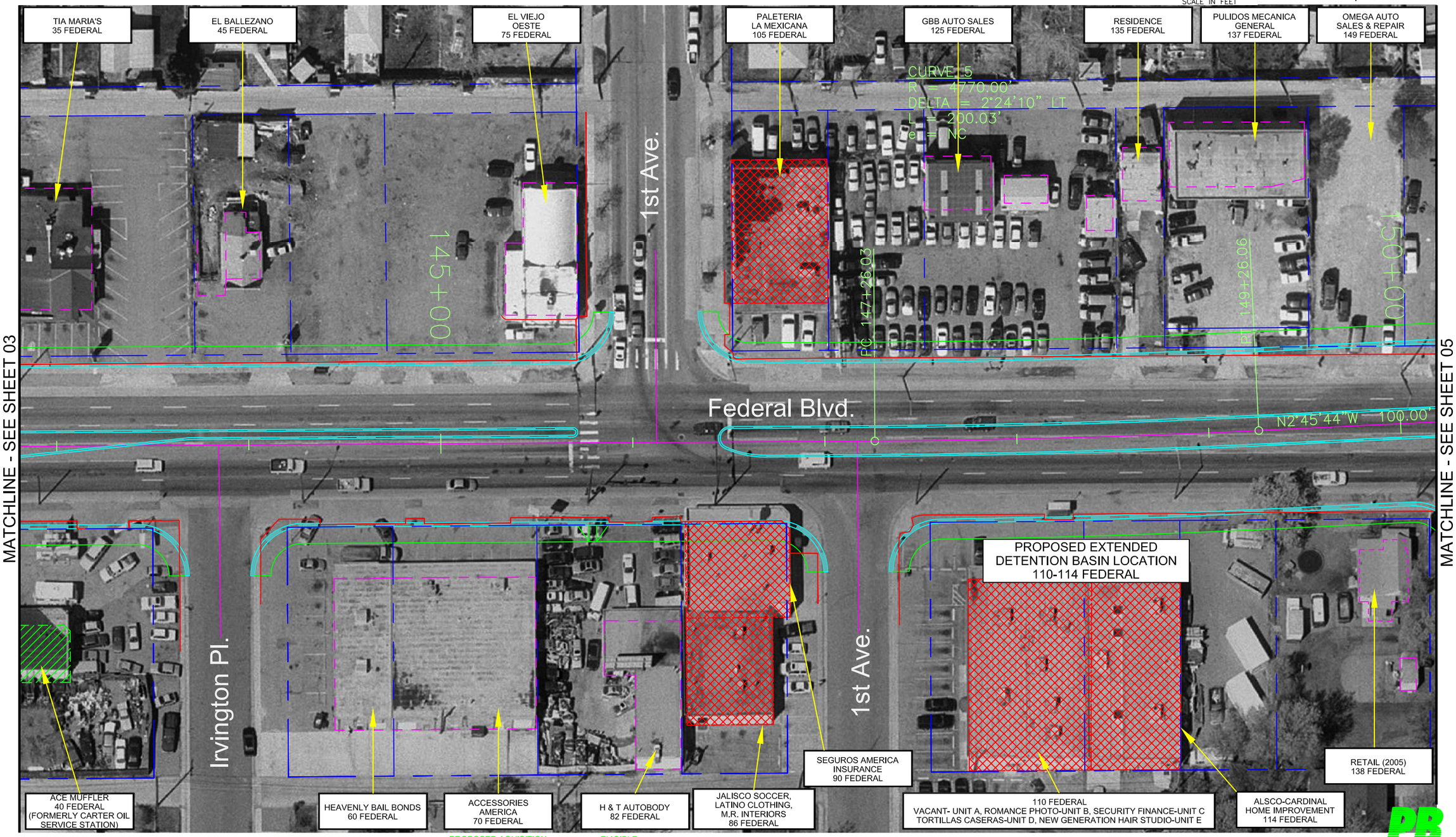

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Colorado Department of Transportation
DOT DEPARTMENT OF TRANSPORTATION
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

As Constructed	FEDERAL BOULEVARD (6TH AVE TO ALAMEDA AVE) PLAN LAYOUT		C010-068/13810
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Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

As Constructed
No Revisions:
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FEDERAL BOULEVARD
(6TH AVE TO ALAMEDA AVE)
PLAN LAYOUT

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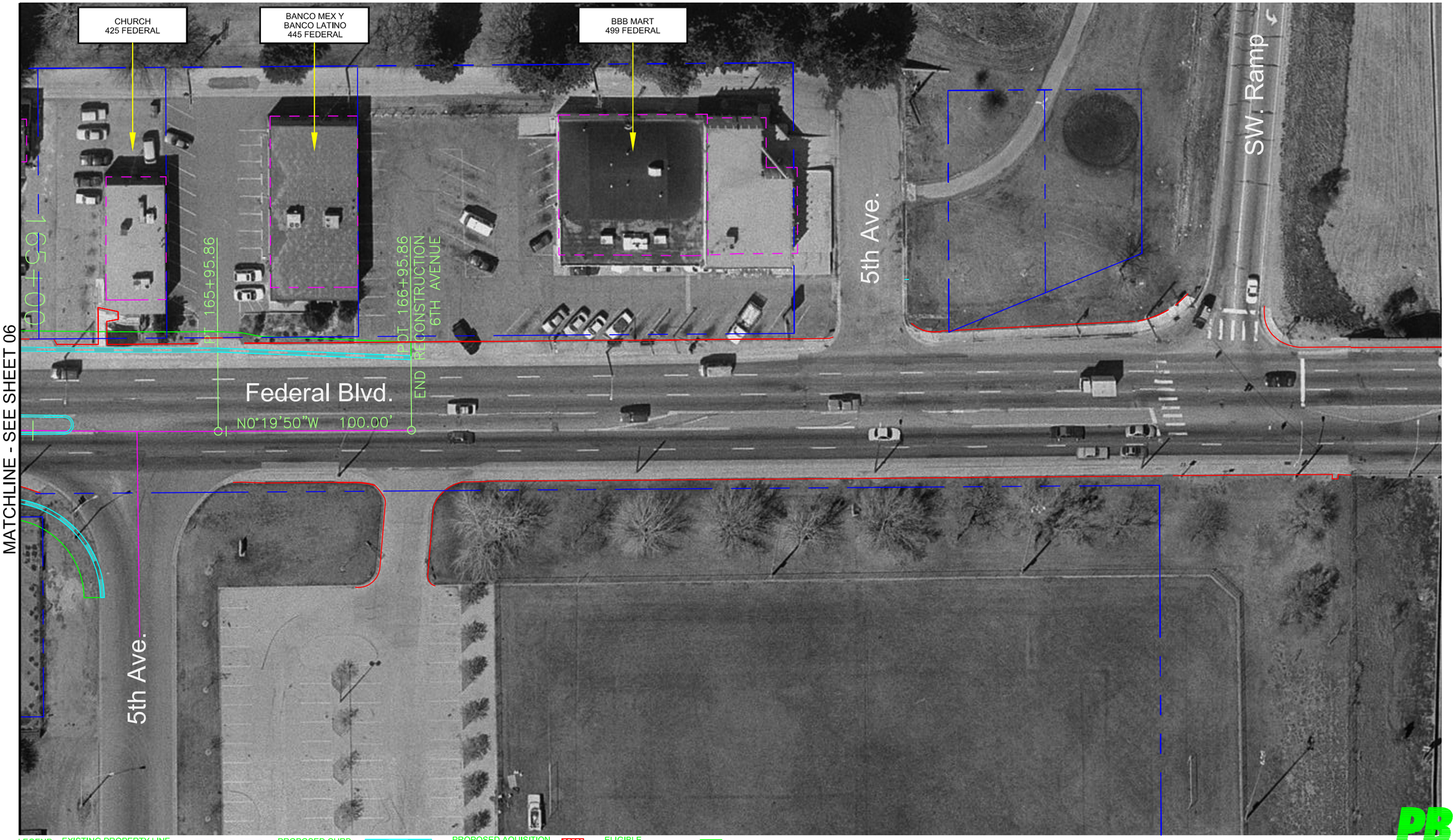

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Colorado Department of Transportation
DEPARTMENT OF TRANSPORTATION
425 B Corporate Circle
Golden, CO 80401
Phone: (720) 497-6961 FAX: (720) 497-6951
Region 6 – North Engineering PJ

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Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

DOT

October 1, 2005

Colorado Department of Transportation
Region 6 Engineering - Central Program
425 B Corporate Circle
Golden, CO 80401

Residents of first two rows of homes and
Businesses along Federal Boulevard – Alameda to Sixth Avenue

Subject: Federal Boulevard Environmental Assessment
Public Meeting Announcement

Dear:

The Colorado Department of Transportation (CDOT) along with the City and County of Denver are currently reviewing the possibility of making roadway improvements to Federal Boulevard between West Alameda Avenue and Sixth Avenue.

You are invited to attend one of two public information meetings to give your opinion on the improvements that are needed. The date, location and time of these meetings are shown below.

DATE:	Wednesday, October 19, 2005 or Thursday, October 20, 2005
LOCATION:	Barnum Park Recreation Center 360 Hooker St., Denver, CO 80219
TIME:	5:30 - 7:30 P.M. - Open House 6:30 P.M. - Presentation and Questions and Answers

If you have additional questions, please contact Ed Romero at 303-860-9055. Persons with disabilities or with hearing impairments may also call Mr. Romero to arrange for special services 48 hours in advance of the meeting.

We look forward to seeing you on October 19th or 20th.

Sincerely,

Colorado Department of Transportation

Paul Jesaitis, P.E.
CDOT Project Manager

Mailed June 1, 2006

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

You're Invited!

Join us at a public workshop to help work out possible solutions to traffic problems on Federal Boulevard. If you operate a business or live on Federal Boulevard, here is your chance to work directly with CDOT and the project study team. There will be one workshop for the north segment of the study corridor and one for the south segment.

North Segment

June 15th 4pm – 8pm
Businesses and Residents between Alameda and Ellsworth

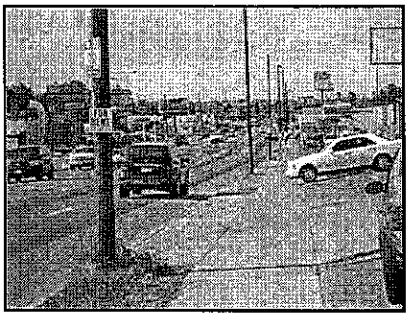
South Segment

June 17th 12pm - 4pm
Businesses and Residents between Ellsworth and 6th Avenue

Please attend the workshop where your business or residence is located. Please arrive at the times given above. If you cannot attend your designated meeting, please contact Ed Romero at 303-860-9055

Residents in the Barnum and Valverde neighborhoods may attend either meeting.

Location: Barnum Recreation Center, Third Avenue and Hooker Street



¡Está invitado!

Venga a participar con nosotros en un taller abierto al público para ayudar a encontrar posibles soluciones a los problemas del tráfico en el Bulevar Federal. Si tiene un negocio o vive en Federal Boulevard, ésta es su posibilidad de trabajar directamente con CDOT y el equipo de investigación del proyecto. Habrá un taller para el segmento norte y uno para el segmento sur.

Segmento norte

15 de junio: 4pm – 8pm
Comercios y residentes entre Alameda y Ellsworth

Segmento sur

17 de junio 12pm - 4pm
Comercios y residentes entre Ellsworth y 6th Avenue

Por favor, asista al taller donde su negocio o residencia estya ubicado. Le rogamos que llegue a la hora indicada arriba. En caso de no poder asistir a la reunión designada, póngase en contacto con Ed Romero, al número 303-860-9055

Los residentes de los vecindarios de Barnum y Valverde pueden asistir a cualquiera de las dos reuniones.

Ubicación: Barnum Recreation Center, Tercera Avenida y Hooker Street

Mailed June 8, 2006

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

REMINDER

PUBLIC WORKSHOP

NORTH SEGMENT - June 15th 4pm – 8pm
Businesses and Residents
between Ellsworth & 6th Avenue*

SOUTH SEGMENT - June 17th 12pm - 4pm
Businesses and Residents
between Alameda & Ellsworth*

Barnum Recreation Center, Third Avenue and Hooker Street

Please attend the workshop where your business or residence is located. Residents in the Barnum and Valverde neighborhoods may attend either meeting.
For more information, please call Ed Romero 303-860-9055.

Street information was inadvertently reversed in the previous announcement.

AVISO

TALLER PÚBLICO

SEGMENTO NORTE - 15 de junio 4pm – 8pm
Comercios y residentes
entre Ellsworth y 6th Avenue*

SEGMENTO SUR - 17 de junio 12pm - 4pm
Comercios y residentes
entre Alameda y Ellsworth*

Barnum Recreation Center, Tercera Avenida y Hooker Street

Por favor, asista al taller donde su negocio o residencia estya ubicado. Los residentes de los vecindarios de Barnum y Valverde pueden asistir a cualquiera de las dos reuniones. Para mayor información, por favor llame a Ed Romero al 303-860-9055.

La información de la calle fue invertida inadvertidamente en el anuncio anterior.

Posted in La Voz on May 31, 2006

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

REUNIÓN PÚBLICA

Venga a participar con nosotros en un taller abierto al público para ayudar a encontrar posibles soluciones a los problemas del tráfico en el Bulevar Federal. Si tiene un negocio o vive en Federal Boulevard, ésta es su posibilidad de trabajar directamente con CDOT y el equipo de investigación del proyecto. Habrá un taller para el segmento norte y uno para el segmento sur.

Segmento norte
15 de junio: 4pm – 8pm
Comercios y residentes
entre Alameda y Ellsworth

Segmento sur
17 de junio 12pm - 4pm
Comercios y residentes
entre Ellsworth y 6thAvenue

Por favor, asista al taller donde su negocio o residencia estya ubicado. Le rogamos que llegue a la hora indicada arriba. En caso de no poder asistir a la reunión designada, póngase en contacto con Ed Romero, al número 303-860-9055

Los residentes de los vecindarios de Barnum y Valverde pueden asistir a cualquiera de las dos reuniones.

Ubicación: Barnum Recreation Center, Tercera Avenida y Hooker Street

Posted in Chinese American Post on June 2, 2006

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

公共座談會

請加入我們的公共座談會,幫助市政府解決Federal Blvd.(聯邦街,從Alameda到6th Ave)的塞車問題。假如你有公司、店面,或住在這一段路上的人,請加入我們的工作小組,幫助我們解決這一段路的塞車問題。我們將會組織兩次座談會,一次在南區,一次在北區。

北區

6月15日4pm-8pm

公司或住宅

位於Alameda至Ellsworth中間

南區

6月17日12noon-4pm

公司或住宅

位於Ellsworth至6th Ave之間

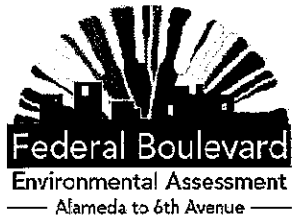
請參加我們的座談會,以上所訂的是我們座談會的時間。
如果你不克前來參加,請通知Ed Romaro先生
電話: 303-860-9055

位於Barnum和Valverde附近的住家居民,也請參加此座談會。

地點: Barnum活動中心,位於Third Ave和Hooker St.

Mailed August 10, 2006

Citizen Group Meetings



Reuniones de Grupos de Ciudadanos

Based on the feedback and opinions learned at the June 2006 Workshops, preliminary alternatives for Federal Boulevard have been developed by the study team.

We are looking for residents and business owners to meet with us the evening of August 24, 2006 for a small group meeting. You are receiving this post card because you attended the June workshops.

The purpose of the small group meeting is to provide initial feedback to the study team on the preliminary alternatives. The preliminary alternatives will then be revised and presented at public meetings in October.

If you have already volunteered, you need not contact us. If you are interested in being a representative for your area, please call Kara Swanson at 303-728-3006.

Basados en las reacciones y opiniones obtenidas en los talleres de junio de 2006, el equipo de estudio ha elaborado la alternativas preliminares referentes a Federal Boulevard

Queremos reunirnos con residentes y dueños de comercios en la tarde del 24 de agosto de 2006 en una pequeña reunión de grupo. Usted acaba de recibir esta tarjeta por haber asistido a los talleres de junio.

El objetivo de la pequeña reunión de grupo es proporcionar la reacción inicial de las alternativas preliminares al equipo de estudio. Las alternativas preliminares serán revisadas en tal momento y presentadas en las reuniones públicas en octubre. Si ha trabajado como voluntario previamente, deberá ponerse en contacto con nosotros.

Si está interesado en convertirse en representante de su área, por favor llame a Kara Swanson, al número 303-728-3006.

Mailed on October 11, 2006
Posted in La Voz and De Hocho on October 18, 2006; Southwest Daily Herald on October 19, 2006

You're Invited!

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

Based on comments received at the June public workshops and the August small group meeting, the study team came up with seven improvement alternatives for Federal Boulevard.

We would like your comments on our evaluation of the different improvements and how well you feel they address safety and traffic concerns on Federal Boulevard.

Business owners and residents may attend either meeting.

Thursday, October 26th
5:00-7:00 pm
Presentation at 6:00 pm

Saturday, October 28th
12 noon- 3 pm
Presentation at 1:00 pm

Location: Barnum Recreation Center, Third Avenue and Hooker Street

¡Está invitado!

Basados en los comentarios obtenidos en los talleres públicos de junio y las reuniones de grupos pequeños de agosto, el equipo de estudio ha elaborado siete alternativas de mejora para Federal Boulevard.

Nos gustaría escuchar sus comentarios acerca de nuestra evaluación de las diversas mejoras y lo bien que las mismas abarcan las preocupaciones de seguridad y tráfico en Federal Boulevard.

Los propietarios de negocios y residentes pueden asistir a cualquiera de las reuniones siguientes.

Jueves, 26 de octubre
5:00-7:00 p.m.
Presentación a las 6:00 p.m.

Sábado, 28 de octubre
12 del mediodía a 3 p.m.
Presentación a la 1:00 p.m.

Ubicación: Barnum Recreation Center, Tercera Avenida y Calle Hooker

Federal Boulevard EA- Business Questionnaire

BUSINESS:_____

APPROXIMATE ADDRESS:_____

TODAY'S DATE:_____

THE BUSINESS

What is the business address and telephone number? (make sure we write down exact address, including suite number)

Address:_____

Telephone or any other contact info:

_____

What is the type of business? (auto repair, restaurant, etc)_____.
(Make sure we understand if the product or service is endemic to a particular culture; for example, a kosher deli or a Hispanic grocery with Spanish-speaking employees. Should also be able to determine if certain groups of people rely on this business because they can't reach another similar business due to transportation constraints.)

How long has your business been located at this address?
Years: _____ (If less then 5 years, find out previous business)

Do you own the property or do you lease_____

Are there apartments (living quarters) located on-site (*check one*)? (People who may have moved here from other cultures don't necessarily use the phrase "apartments" for living spaces.) If so, how many? How many people live here? Employees? Families with children?

Yes_____ No_____

EMPLOYEES

Approximately how many full-time and part-time employees do you currently have working for the company?

Full-Time _____

Part-Time _____

Internally: Approximately % that are minority or Hispanic? (do not ask, do a visual inspection). [Maybe not if the type of jobs at the business could be minimum wage.]
_____

Where do the majority of your employees live:
Barnum_____

Valverde_____

Neighborhoods North of 6th Avenue_____

Other areas of Denver _____

How do the majority of your employees get to work *(check one*)? Have any of your employees indicated they have trouble getting to work? (Miss the bus, no car available.)

Walk_____
Bike_____
Bus_____
Drive_____
Dropped Off_____

Where do you believe most of your customers live?
Barnum_____

Valverde_____

Neighborhoods North of 6th Avenue_____

Other areas of Denver _____

How do the majority of your customers get to your business (check one)?

Walk _____
Bike_____
Bus _____
Drive _____

Additional Notes/Comments:
_____

_____

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

BUSINESS OWNERS AND TENANT MEETING

November 6, 2007

Business Owner/Tenant Name
Address
City,

Attention Federal Boulevard Business Owners, Tenants, Residents, and Billboard Owners:

You are requested to attend a small group meeting of property owners and tenants along Federal Boulevard (between Alameda Avenue and 6th Avenue) to discuss potential right-of-way and construction impacts to your property. These potential impacts have been identified through the ongoing environmental assessment being conducted for the Federal Highway Administration by the Colorado Department of Transportation (CDOT) in partnership with the City and County of Denver.

The meeting date and place is as follows:

Date:	November 19, 2007
Time:	5:00 P.M. to 7:00 PM
Place:	Barnum Recreation Center 360 Hooker Street Denver, CO

The purpose of this meeting is to describe federal guidelines regarding property acquisition and relocation assistance, in conformance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and applicable Colorado statutes. CDOT staff will be available at this meeting to answer questions regarding the property acquisition and relocation process. Also, informational material will be available for you to read and take home.

This information will also be presented at an upcoming public hearing, which is planned for early December 2007.

Please call Kara Swanson at 303/728-3006 or Ed Romero at 303/803-2941 to let us know if you can attend this meeting. If you are unable to attend, other arrangements will be made to provide you with this information.

I look forward to meeting you.

Sincerely,

Judy A. Aranda
Consultant Project Manager

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

REUNIÓN DE PROPIETARIOS DE NEGOCIOS E INQUILINOS

6 de noviembre de 2007

Nombre del propietario de negocio/inquilino
Dirección
Ciudad

Atención propietarios de negocios, inquilinos, residentes y propietarios de vallas publicitarias de Federal Boulevard:

Se solicita su asistencia a la reunión de un grupo pequeño de propietarios de inmuebles e inquilinos de Federal Boulevard (entre Alameda Avenue y 6th Avenue) para hablar de los posibles impactos del derecho de paso y construcción en su propiedad. Estos posibles impactos se han identificado por medio de la evaluación ambiental en curso que el Departamento de Transporte de Colorado (CDOT), en asociación con la Ciudad y Condado de Denver, está llevando a cabo para la Administración Federal de Carreteras.

La fecha y lugar de la reunión son los siguientes:

Fecha:	19 de noviembre de 2007
Hora:	De 5:00 a 7:00 de la tarde
Lugar:	Barnum Recreation Center 360 Hooker Street Denver, CO

El propósito de esta reunión es explicar las directrices federales referentes a la adquisición de inmuebles y la ayuda para reubicación, de conformidad con lo previsto en la Ley de Políticas Uniformes de Asistencia para Reubicación y Adquisición de Bienes Inmuebles (Uniform Relocation Assistance and Real Property Acquisition Policies Act) de 1970 y sus reformas, así como en los estatutos aplicables del Estado de Colorado. En esta reunión estará presente el personal del CDOT para responder preguntas sobre el proceso de adquisición de inmuebles y reubicación. Además, habrá material informativo a su disposición para que se lo lleve a casa y lo lea.

Esta información también se presentará en una próxima audiencia pública, que está planeada para principios de diciembre de 2007.

Le agradeceremos llamar a Kara Swanson al 303/728-3006 o a Ed Romero al 303/803-2941 para avisarnos si podrá asistir a esta reunión. Si por algún motivo no puede asistir, se harán los arreglos pertinentes para proporcionarle esta información.

Espero que nos veamos en la reunión.

Atentamente,

Judy A. Aranda
Gerente Consultora del Proyecto

Mailed on November 16, 2007

Federal Boulevard Environmental Assessment Public Hearing

What: A presentation/public hearing to hear the results of the Environmental Assessment being prepared for the proposed improvements to Federal Boulevard between Alameda Avenue and 6th Avenue.

When: December 4, 2007, 5:00 p.m. to 7:00 p.m. (Presentation will begin promptly at 5:30)

Where: Barnum Recreation Center, 360 Hooker Street, Denver, Colorado

The Environmental Assessment document is available for public review and comment on the project website, http://www.dot.state.co.us/FederalBlvd/index.asp or any of the following locations:

CDOT Region 6
Central Engineering
425 B Corporate Circle
Golden, CO 80401
(720) 497-6961

City and County of Denver
Clerk and Recorder Office
201 W. Colfax Avenue
Department 101
Denver, CO 80202
(720) 865-8400

Denver Public Library
Ross-Barnum
3570 W. First Avenue
Denver, CO 80219
(303) 935-1891

FHWA
Colorado Division Office
12300 West Dakota Avenue
Suite 180
Lakewood, CO 80228
(720) 963-3007

CDOT Region 6 Office
2000 South Holly Street
Denver, CO 80222
(303) 757-9372

A Spanish interpreter will be available during the public hearing.
Accommodations for the hearing impaired will be provided with 72 hours notice.

If you have any questions, please contact:
Kara Swanson at 303-378-9237 or Ed Romero at 303-803-2941

Audiencia Pública sobre la Evaluación Ambiental del proyecto de Federal Boulevard

Qué: Una presentación y audiencia pública para dar a conocer los resultados de la Evaluación Ambiental que se está preparando para las mejoras propuestas a Federal Boulevard entre Alameda Avenue y 6th Avenue.

Cuándo: 4 de diciembre de 2007, de 5:00 a 7:00 de la tarde. (La presentación empezará puntualmente a las 5:30)

Dónde: Barnum Recreation Center, 360 Hooker Street, Denver, Colorado

El documento de Evaluación Ambiental está a la disposición del público para revisión y comentarios en el sitio Web del proyecto en http://www.dot.state.co.us/FederalBlvd/index.asp o en cualquiera de los siguientes lugares:

Región 6 CDOT
Central Engineering
425 B Corporate Circle
Golden, CO 80401
(720) 497-6961

Ciudad y Condado de Denver
Clerk and Recorder Office
201 W. Colfax Avenue
Departamento 101
Denver, CO 80202
(720) 865-8400

Biblioteca Pública de Denver
Ross-Barnum
3570 W. First Avenue
Denver, CO 80219
(303) 935-1891

FHWA
Colorado Division Office
12300 West Dakota Avenue
Suite 180
Lakewood, CO 80228
(720) 963-3007

Oficina Región 6 CDOT
2000 South Holly Street
Denver, CO 80222
(303) 757-9372

Habrá un intérprete de español durante la audiencia pública.
Se proporcionará apoyo a personas con problemas de audición si recibimos aviso con 72 horas de anticipación.

Si tiene alguna pregunta, comuníquese con:
Kara Swanson al 303-378-9237 o Ed Romero al 303-803-2941

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

September 12, 2005

Colorado Department of Transportation
Region 6 Central Program
425B Corporate Circle
Golden, CO 80401

«AddressBlock»

Subject: Invitation to Attend the Federal Boulevard Environmental Assessment Scoping Meeting – October 11, 2005

Dear «GreetingLine»

The Colorado Department of Transportation (CDOT) and the City and County of Denver (CCD), in cooperation with the Federal Highway Administration, have initiated a study for improvements to Federal Boulevard between Alameda and 6th Avenue. You are invited to attend a joint CDOT and CCD scoping meeting for resource and other agency representatives. The meeting will consist of a short office meeting with continental breakfast, followed by a field trip of the project area. We will then reconvene to discuss issues relevant to the scoping process. Meeting specifics are provided below:

Tuesday, October 11, 2005, 9:00 AM – 12:00 PM
Ross-Barnum Public Library
3570 West 1st Avenue
Denver, CO 80219

Attached are an agenda, study area map, brief description of the project, and a summary of the existing conditions within the study area.

We would also like to take this opportunity to request any information that your agency may have on file for this segment of Federal Boulevard. This information can be sent electronically to Patty Lorence of Parsons Brinckerhoff at lorence@pbworld.com or you may bring along any hard copy information to the meeting. Responses regarding your attendance can also be sent to Patty by e-mail or by calling 303-390-5834.

We look forward to seeing you on October 11th.

Sincerely,

Paul Jesaitis, P.E.
CDOT Project Manager

Attachment
cc: w/att

Jim Paulmeno - CDOT
Deb Sakaguchi - CDOT Hqtrs
Jeff Peterson - CDOT
Steve Hersey - CDOT
Cynthia Adornetto, CDOT
Jake Kononov - CDOT
Marcee Allen - FHWA
Mike Vanderhoof - FHWA
Judy Aranda - Parsons Brinckerhoff

bcc: w/att Cynthia Bailey; Gia Pham

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DEPARTMENT OF TRANSPORTATION

May 1, 2006

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Reconnaissance Survey Submittal, Project STU C010-068, Federal Boulevard, Alameda to 6th Avenue, City and County of Denver

Dear Ms. Contiguglia:

Enclosed is a reconnaissance-level survey of potential historic properties along Federal Boulevard (State Highway 88) between Alameda and 6th Avenues in Denver. The survey identified and recorded, at the reconnaissance level of documentation, existing cultural features that provide evidence of the project area's history and surviving historic identity.

Description of the Proposed Action

The Colorado Department of Transportation (CDOT) and the City and County of Denver are currently planning to improve pedestrian and vehicular traffic along Federal Boulevard between West Alameda and Sixth Avenues. The anticipated need for these improvements results from safety concerns such as continuous unrestricted turning lanes and substandard lane widths.

Section 106 Consultation

On November 9, 2005, CDOT historians Lisa Schoch and Robert Autobee met with historical consultant Ron Sladek of Tatanka Historical Associates, Inc., Cindy Adornetto of CDOT's Region 6 Environmental Office, and Amy Pallante of your staff to discuss a preliminary study area and survey methodology. The preliminary study area encompasses buildings on both sides of Federal Boulevard bounded by West Alameda Avenue on the south, West Fifth Avenue on the north, South Hazel Court to the west and South Decatur Street to the east. The reconnaissance survey identified 91 primary buildings, with only a single commercial property at 314 Federal Blvd. evaluated as potentially eligible for listing on the National Register of Historic Places (NRHP). Please note that the Area of Potential Effects (APE) and survey results for the intensive-level survey may differ from the reconnaissance-level survey. In addition, official determinations of eligibility will be made based on the results of the intensive-level survey. The enclosed report is for informational purposes only.

We request that you acknowledge receipt of the reconnaissance survey, and also state if you agree with its methodology and findings. If you require additional information, please contact Senior Staff Historian Lisa Schoch at (303) 512-4258.

Very truly yours,

Brad Beckham, Manager
Environmental Programs Branch

Enclosure: reconnaissance survey

NOV 1 4 2006

U.S. Department
of Transportation
Federal Highway
Administration

12300 W. Dakota Ave., Ste. 180
Lakewood, CO 80228

April 24, 2006

Colorado Federal Aid Division

Mr. Nathan Tselee, Chairman
Apache Tribe of Oklahoma
P.O. Box 1220
Anadarko, OK 73005

Dear Mr. Tselee:

Subject: Request for Section 106 Consultation; Federal Boulevard, Alameda to 6th Avenue Environmental Assessment, City and County of Denver, Colorado

The Federal Highway Administration (FHWA) and Colorado Department of Transportation (CDOT) are preparing an Environmental Assessment (EA) that will address the effects of proposed improvements to an approximately one-mile segment of Federal Boulevard in the city and county of Denver, Colorado. Significant upgrades to this principal arterial roadway are necessary to correct substandard lane widths and a continuous unrestricted turning lane, and to address congestion and safety issues resulting from a high percentage of truck and bus traffic. Pursuant to the National Environmental Policy Act (NEPA) of 1969 and the Council on Environmental Quality (CEQ) implementing regulations (40 CFR 1500-1508), FHWA and CDOT are documenting the potential social, economic and environmental consequences of this action. Please refer to the enclosed map for specific locational information.

FHWA will serve as the lead agency for this undertaking and CDOT staff will facilitate the tribal consultation process. The agencies are seeking the participation of regional Native American tribal governments in cultural resources consultation for the undertaking, as described in Section 106 of the National Historic Preservation Act and implementing regulations 36 CFR 800 et seq. As a consulting party, you are offered the opportunity to identify concerns about cultural resources and comment on how the project might affect them. Further, if it is found that the project will impact cultural resources that are eligible for inclusion on the National Register of Historic Places and are of religious or cultural significance to your tribe, your role in the consultation process would include participation in resolving how best to avoid, minimize, or mitigate those impacts. It is our hope that by describing the proposed undertaking we can be more effective in protecting areas important to American Indian people. If you have interest in this undertaking and in cultural resources that may be of religious or cultural significance to your tribe, we invite you to be a consulting party.

As shown on the enclosed map, the project corridor is located in a heavily urbanized section of metropolitan Denver; no areas exist that have not been extensively disturbed for many decades by residential and commercial development. The Preliminary Study Area as shown on the map extends two city blocks on either side of Federal Boulevard; however, this boundary does not necessarily reflect the Area of Potential Effect (APE) to be developed for cultural resource studies, as defined by 36 CFR 800.16(d). A comprehensive survey and assessment of historic properties in the APE will be conducted as part of the environmental documentation. Tribes that elect to become consulting parties for the undertaking will be notified of the results of the survey and asked to comment on our eligibility and effects determinations. Any information you may have regarding places or sites important to your tribe that are located within or near the project area, would assist us in our efforts to comprehensively identify and evaluate cultural resources.

The Denver metropolitan area is home to a number of American Indian people. If you are aware of members of your tribe living in proximity to the study area who would be interested in participating in the NEPA consultation process on some level, please notify us so that we may facilitate that interaction.

We are committed to ensuring that tribal governments are informed of and involved in decisions that may impact places with cultural significance. If you are interested in becoming a consulting party for the Federal Boulevard EA, please complete and return the enclosed Consultation Interest Response Form to CDOT Native American consultation liaison Dan Jepson within 60 days at the address or facsimile number listed at the bottom of that sheet. Mr. Jepson can also be reached via Email at daniel.jepson@dot.state.co.us or by telephone at (303)757-9631. The 60-day period has been established to encourage your participation at this early stage in project development. Failure to respond within this time frame will not prevent your tribe from becoming a consulting party at a later date. However, studies and decision-making will proceed and it may become difficult to reconsider previous determinations or findings, unless significant new information is introduced.

Thank you for considering this request for consultation.

Sincerely yours,

David A. Nicol, P.E.
Division Administrator

Enclosures

cc: H. Motah, Tribal NAGPRA Rep.
P. Lorence, Parsons Brinckerhoff
C. Adornetto, CDOT Region 6
D. Jepson, CDOT Env. Programs
M. Allen, FHWA

MR. NATHAN TSELEE, CHAIRMAN
APACHE TRIBE OF OKLAHOMA
P.O. BOX 1220
ANADARKO, OK 73005

MR. BILL BLIND, VICE-CHAIRMAN
CHEYENNE & ARAPAHO BUS. COMM
CHEYENNE & ARAPAHO TRIBES OF OK
P.O. BOX 38
CONCHO, OK 73022

MR. RICHARD BRANNAN, CHAIRMAN
NORTHERN ARAPAHO BUSINESS COUNCIL
P.O. BOX 396
FORT WASHAKIE, WY 82514

MR. EUGENE LITTLE COYOTE
CHAIRMAN
NORTHERN CHEYENNE TRIBE
P.O. BOX 128
LAME DEER, MT 59043

MR. HAROLD C. FRAZIER
CHAIRMAN, CHEYENNE RIVER SIOUX
TRIBAL COUNCIL
P.O. BOX 590
EAGLE BUTTE, SD 57625

MR. BILLY EVANS HORSE, CHAIRMAN
KIOWA TRIBE OF OKLAHOMA
P.O. BOX 369
CARNEGIE, OK 73015

MR. WALLACE COFFEY
CHAIRMAN, COMANCHE TRIBAL
BUSINESS COMMITTEE
P. O. BOX 908
LAWTON, OK 73502

MR. CHARLES W. MURPHY
CHAIRMAN, STANDING
ROCK SIOUX TRIBAL COUNCIL
P.O. BOX D
FORT YATES, ND 58538

MR. CHARLES COLOMBE, PRESIDENT
ROSEBUD SIOUX TRIBE
P.O. BOX 430
ROSEBUD, SD 57570

MR. GEORGE E. HOWELL
PRESIDENT
PAWNEE NATION OF OKLAHOMA
811 LITTLE LEE DRIVE
PAWNEE, OK 74058

MR. DUANE BIG EAGLE, SR., CHAIRMAN
CROW CREEK SIOUX TRIBAL COUNCIL
P.O. BOX 658
FORT THOMPSON, SD 57325

MS. CECILIA FIRE THUNDER, PRES
OGLALA SIOUX TRIBAL COUNCIL
P.O. BOX H
PINE RIDGE, SD 57770

Original Letters Mailes
to all of the above

MR. HAMMOND MOTAH, DIRECTOR
ENVIRONMENTAL PROGRAM
APACHE TRIBE OF OKLAHOMA
P.O. BOX 1220
ANADARKO, OK 73005

MR WILLIAM C'HAIR
LANGUAGE & CULTURE COMM
NORTHERN ARAPAHOE TRIBE
PO BOX 9184
ARAPAHOE WY 82510

REVEREND GEORGE DAINGKAU
NAGPRA REPRESENTATIVE
KIOWA TRIBE OF OKLAHOMA
118 N STEPHENS
HOBART OK 73015

MR. TERRY GRAY, NAGPRA COORD
ROSEBUD SIOUX TRIBE
SINTE GLESKA UNIVERSITY
P.O. BOX 105
MISSION, SD 57555

MR ALONZO SANKEY
NAGPRA REPRESENTATIVE
CHEYENNE & ARAPAHOE TRIBES/OKLA
P. O. BOX 836
CANTON, OK 73724

MR. CONRAD FISHER
TRIBAL HISTORIC PRESERVATION OFFICER
NORTHERN CHEYENNE TRIBE
P.O. BOX 128
LAME DEER, MT 59043

MR. FRED NAWOOKSY, NAGPRA
COORDINATOR
COMANCHE NATION OF OKLAHOMA
P.O. BOX 908
LAWTON, OK 73502

MR. FRANCIS MORRIS, NAGPRA
COORDINATOR
PAWNEE TRIBE OF OKLAHOMA
881 LITTLE LEE DRIVE
PAWNEE, OK 74058

MR GORDON YELLOWMAN
NHPA/TRANSPORTATION PLANNER
CHEYENNE & ARAPAHO TRIBES/OKLA
ROADS CONSTRUCTION PROGRAM
PO BOX 137
CONCHO OK 73022

MS. DONNA PETERSON
CULTURAL PRESERVATION
ADMINISTRATOR
CHEYENNE RIVER SIOUX TRIBE
P.O. BOX 590
EAGLE BUTTE, SD 57625

MR. TIM MENTZ, SR.
TRIBAL HISTORIC PRESERVATION OFFICER
STANDING ROCK SIOUX TRIBE
P.O. BOX D
FT. YATES, ND 58538

FEDERAL HIGHWAY ADMINISTRATION/COLORADO DEPARTMENT OF TRANSPORTATION
SECTION 106 TRIBAL CONSULTATION INTEREST RESPONSE FORM

PROJECT: Federal Blvd., Alameda to 6th Ave. Environmental Assessment

The _____ Tribe [**is / is not**] (*circle one*) interested in becoming a consulting party for the Colorado Department of Transportation project referenced above, for the purpose of complying with Section 106 of the National Historic Preservation Act and its implementing regulations (36 CFR 800). If your tribe will be a consulting party, please answer the questions below.

Signed: Daniel Harrod THPO Ponca Nation of Oklahoma
Name and Title

CONSULTING PARTY STATUS [36 CFR §800.2(c)(3)]
Do you know of any specific sites or places to which your tribe attaches religious and cultural significance that may be affected by this project?

Yes (No) If yes, please explain the general nature of these places and how or why they are significant (use additional pages if necessary). Locational information is not required.

SCOPE OF IDENTIFICATION EFFORTS [36 CFR §800.4(a)(4)]
Do you have information you can provide us that will assist us in identifying sites or places that may be of religious or cultural significance to your tribe?

Yes (No) If yes, please explain.
We have no interests in that area of Colorado.

CONFIDENTIALITY OF INFORMATION [36 CFR §800.11(c)]
Is there any information you have provided here, or may provide in the future, that you wish to remain confidential?

Yes (No) If yes, please explain.

Please complete and return this form within 60 days via US Mail or fax to:

Dan Jepson, Section 106 Native American Liaison
Colorado Department of Transportation
Environmental Programs Branch
4201 E. Arkansas Ave.
Denver, CO 80222
FAX: (303)757-9445

COMANCHE TRIBE
NAGPRA

May 22, 2006

David Nicol, Division Administrator
US Department of Transportation
Federal Highway Administration
Colorado Federal Aid Division
12300 W Dakota Ave, Ste 180
Lakewood, CO 80228

Re: Request for consultation: Federal Boulevard, Alameda to 6th Avenue Environmental Assessment, City and County of Denver, CO

Dear Mr. Nicol:

Thank you for your letter of April 24th regarding the above referenced project.

At this time, the Comanche Nation has no immediate concerns or issues regarding the project; however, please keep us informed of the project progress. We also would like to receive any archaeological reports and findings for the project area.

If in the process of the project human remains or archaeological items are discovered, we request that you immediately cease the project work and notify us so that we may discuss appropriate disposition with you and the other Tribal Nations that may be affected by such discoveries.

We look forward to your reports as activities proceed.

Sincerely,

Fred Nahwooksy

Fred Nahwooksy, NAGPRA Coordinator

P.O. Box 908 • Lawton, Oklahoma 73502 • (580) 492-3754 • (580) 492-3733 FAX

Cheyenne River Sioux Tribe
Cultural Preservation Office
P.O. Box 590
Eagle Butte, SD 57625

MNICOUJOU ITAZIPCO

SIHA SAPA OOHENUMPA

May 23, 2006

US Department of Transportation
Federal Highway Administration
Colorado Federal Aid division
David A. Nicol, P.E. – Division Administrator
12300 W. Dakota Ave., Suite 180
Lakewood, CO 80228

RE: Alameda to 6th Avenue Environmental Assessment, City and County of Denver Colorado

Mr. Nicol:

Thank you for your letter dated April 24, 2006 asking for Cheyenne River Sioux Tribe (CRST) involvement in the Alameda to 6th Avenue Environmental Assessment, City and County of Denver Colorado Project.

At this time the CRST has no comment regarding the proposed project but would like to be kept informed of project activities and or issues.

This letter does not waive consultation obligations with the CRST or other appropriate parties; the right to comment on future project activities under Section 106 of the National Historic Preservation Act (as amended) is reserved by the CRST.

If you have any questions or concerns, please contact our office at 605-964-7554 between the hours of 8:00am and 5:00pm Mountain time.

Respectfully,

Albert M. LeBeau III
CRST Tribal Historic Preservation Officer

cc: File

Telephone: 605-964-7553 605-964-7554 Fax: 605-964-7552

DEC 13 2006

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DEPARTMENT OF TRANSPORTATION

December 7, 2006

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Area of Potential Effects and Survey Methodology, Project STU C010-068, Federal Boulevard Environmental Assessment, Alameda to 6th Avenue, City and County of Denver

Dear Ms. Contiguglia:

This letter and the attached documentation constitute the Colorado Department of Transportation's (CDOT) request for your review of the Area of Potential Effects (APE) and historic survey methodology associated with the project referenced above. Since the initiation of the project in late 2005, CDOT has coordinated with your office periodically regarding the APE, and we are now requesting your final review.

The proposed improvements address safety concerns for pedestrian and vehicular traffic along Federal Boulevard between West Alameda and Sixth Avenues in Denver. These improvements will introduce continuous unrestricted turning lanes, install medians and widen the current substandard traffic lanes.

Survey Methodology and Establishing the APE

On May 11, 2006, your office reviewed a reconnaissance survey of the Federal Boulevard corridor produced by Ron Sladek of Tatanka Historical Associates, Inc. Mr. Sladek is currently conducting an intensive-level survey of historic resources along the project corridor for inclusion in the Federal Boulevard Environmental Assessment (EA).

In a November 2006 meeting discussing the project APE, Amy Pallante of your staff requested an analysis of the neighborhoods adjacent to the study area to determine their potential as historic districts. Mr. Sladek subsequently examined two neighborhoods – Valverde to the east and Barnum to the west. The housing stock in the Valverde neighborhood dates from the 1920s to 1960s and many homes appear to have a good level of integrity. However, due to a lack of architectural merit or significant cohesive context, we have determined that the buildings in the Valverde neighborhood are not good candidates to comprise a historic district.

Located west of Federal Boulevard, the Barnum neighborhood contains a number of private residences built between the 1880s to the 1960s that display good integrity. Judging by the similarity of the age, style and type of housing stock, the Barnum neighborhood clearly did not extend west of Tennyson Street. It historically extended to the north of 6th Avenue, but the construction of the 6th

Avenue Freeway bisected the neighborhood in the 1940s. The eastern boundary (Federal Boulevard) and the southern boundary (West Alameda Avenue) are long-established Denver streets and recognized as the historic limits of the Barnum neighborhood. Barnum has a well-documented history and intact housing stock. While outside the scope of the current project, it appears likely that the portion of Barnum adjacent to the Federal Boulevard. study area has the potential to become one of the city's historic districts in the future.

In September and November 2006, representatives from CDOT, project contractor Parsons Brinckerhoff, subcontractor Tatanka and your staff met to discuss the APE for this project. Based on those discussions, we have identified the APE on the enclosed map as follows:

On the north: Along 6th Avenue (following the south side of the freeway, to include Barnum Park and nearby houses)

On the south: The rear property lines of the commercial buildings facing onto West Alameda Avenue (this could follow Cedar Avenue)

On the east: The rear property lines of the commercial buildings that face onto Federal Boulevard

On the west: The north-south line of Tennyson Street (as it would extend south of 6th Avenue)

We request your review of and agreement with the APE and survey methodology discussed above and represented on the enclosed maps. Thank you in advance for your prompt attention to this matter. If you require additional information, please contact Acting CDOT Staff Historian Robert Autobee at (303) 757-9758.

Very truly yours,

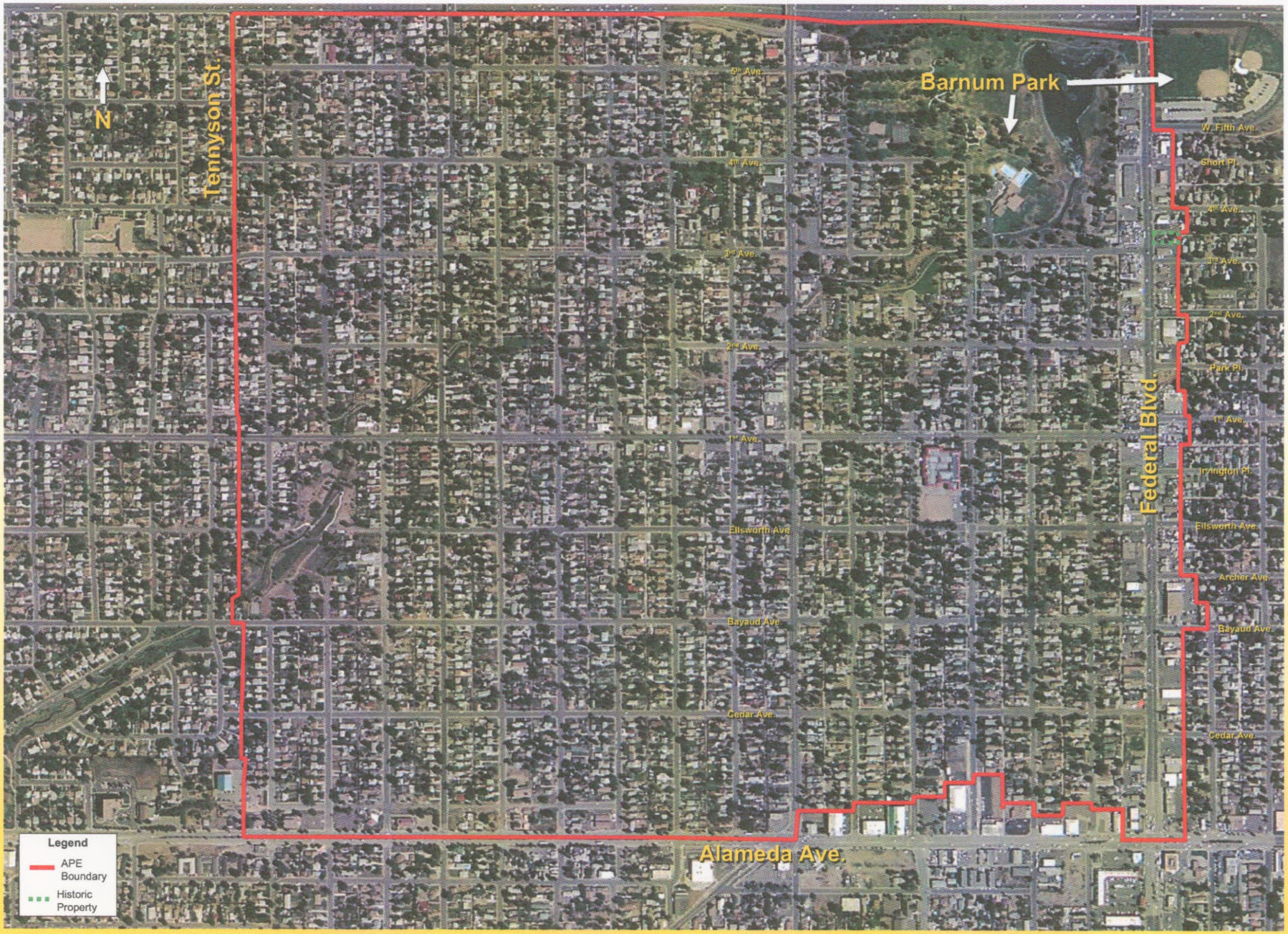
Brad Beckham, Manager
Environmental Programs Branch

Enclosure: APE map

cc: Chuck Attardo, CDOT-Region 6
Judy Aranda, Parsons Brinckerhoff
Marcee Allen, FHWA
File

Federal Boulevard
Environmental Assessment
Alameda to 6th Avenue

Area of Potential Effect (APE)



STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION
Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

December 27, 2006

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Negative Archaeological Survey Report, Project STU C010-068, Federal Boulevard, Alameda to 6th Avenue Environmental Assessment, City and County of Denver

Dear Ms. Contiguglia:

Enclosed for your files is a copy of the archaeological resources survey report for the Environmental Assessment (EA) project referenced above. The EA will address the effects of proposed improvements to an approximately one-mile segment of Federal Boulevard between Alameda Avenue on the south and 6th Avenue on the north. Significant upgrades to this principal arterial roadway are necessary to correct substandard lane widths and a continuous unrestricted turning lane, and to address congestion and safety issues resulting from a high percentage of truck and bus traffic. RMC Consultants, Inc. conducted the survey and authored the report under contract to Parsons-Brinckerhoff, on behalf of CDOT and the Federal Highway Administration.

The entire project corridor and corresponding Area of Potential Effect is urbanized and, as such, has been severely impacted by commercial and residential development for over 100 years. Although archival research indicated that several historic linear features (such as rail grades and pipelines) were known to have bisected the project APE at one time, none remain extant and no other archaeological resources were identified during the field inventory; the archaeological potential of the study area is considered very low. CDOT concurs with the survey methodology employed and the results obtained, and finds that no historic properties will be affected by the project. Under the terms of the 1989 Memorandum of Understanding between our respective agencies regarding cultural resource investigations, no actions from your office in the form of a response are requested.

Please contact CDOT Senior Staff Archaeologist Dan Jepson at (303)757-9631 if you have questions regarding either the survey or report.

Very truly yours,

for Brad Beckham, Manager
Environmental Programs Branch

Enclosure

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

December 28, 2006

Brad Beckham
Manager, Environmental Programs Branch
Colorado Department of Transportation
Environmental Programs Branch
4201 East Arkansas Avenue
Denver, CO 80222

Re: Area of Potential Effects and Survey Methodology, Project STU C010-068, Federal Boulevard Environmental Assessment, Alameda to 6th Avenue, Denver. (CHS #46354)

Dear Mr. Beckham,

Thank you for your correspondence dated December 7, 2006 and received by our office on December 13, 2006 regarding the above-mentioned project

After review of the submitted information, we agree with the proposed boundary for the Area of Potential Effects and survey methodology. We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

for Georgianna Contiguglia
State Historic Preservation Officer

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9632
FAX (303) 757-9445

DATE: January 18, 2007

TO: Chuck Attardo

FROM: Steven M. Wallace SM Wallace

SUBJECT: Paleontological assessment for the project STU C010-068, Federal Boulevard: Alameda to 6th Environmental Assessment

Thank you for forwarding me a copy of the paleontological assessment report for the project STU C010-068, Federal Boulevard: Alameda to 6th Environmental Assessment (EA), submitted September, 2006 by Dr. Paul C. Murphey and David Daitch for RMC Consultants, Inc.. I have read the report and found it acceptable. As a result of the findings in their report, I am recommending paleontological clearance for any construction project(s) permitted by approval of the Federal Boulevard: Alameda to 6th EA with the attached mitigation stipulation that any significant construction excavation(s) into Denver Formation outcrop will be monitored by a qualified paleontologist.

Once final design plans are available, I will examine them in order to estimate the size and location(s) of likely construction impacts to Denver Formation outcrop and the scope of paleontological monitoring work, if any, that will be required. If paleontological resources should be uncovered during project construction outside any designated monitoring area(s) or in any area(s) designated for construction monitoring at any such time as the CDOT construction monitor is not onsite, I should be notified immediately.

SMW:smw
cc: CF, Wallace

MAR 26 2007

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DEPARTMENT OF TRANSPORTATION

March 19, 2007

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Determinations of Eligibility and Effects, Project STU C010-068, Federal Boulevard, Alameda to 6th Ave. Environmental Assessment, City & County of Denver

Dear Ms. Contiguglia:

This letter and the enclosed materials constitute a request for concurrence on Determinations of Eligibility and Effects regarding the project referenced above. The undertaking proposes the following improvements to Federal Boulevard between Alameda and 6th Avenues:

- Addition of a third northbound lane
- Widening of existing lanes to 11 feet
- Construction of a 16-foot raised median
- Widening of the pedestrian zone to 8 feet (5-foot sidewalk plus 3-foot amenity zone). Where possible, the pedestrian zone will be widened two feet as long as additional building impacts can be avoided.
- Realignment of Bayaud Avenue
- Installation of a stoplight at Bayaud Avenue
- Sidewalks and curb ramps improved to Americans with Disabilities Act (ADA) standards.

METHODOLOGY AND SURVEY RESULTS

Over the past year, Ron Sladek of Tatanka Historical Associates Inc., surveyed the project area to identify historic properties. This involved fieldwork and the completion of research in the Office of Archaeology and Historic Preservation (OAHP) Compass database and other archival sources, such as the Denver Public Library's Western History Collection and City & County of Denver Assessor Records and Building Permits. The project resulted in the intensive-level recordation of 54 historic proprieties along Federal Blvd. and another 16 on adjacent side streets. Of these, only one property is recommended as eligible for the National Register of Historic Places (5DV10347, the Barnum News Building at 312-318 Federal Blvd.). Refer to the enclosed inventory report and site forms for additional information on the recorded sites.

ELIGIBILITY DETERMINATION

Barnum News Building (5DV10347): During the 1920s, this property was occupied by a small residence that was later incorporated into the present building. In 1934, the southern two-thirds of the building were constructed for an estimated cost of $1,900 by Charles J. Foster as the front of the home,

and also appears to have housed an auto repair shop for a short time. By 1938 its new owner, publisher Joseph Rosenberg, added room for his printing plant on the north side. That year a barbershop, the Barnum News, and a small restaurant occupied the property.

At various times between the 1940s and 1970s, the Rosenberg family expanded within the building's footprint to add on to the composing room and provide additional storage space. These changes left the original building intact and did not significantly diminish its historic integrity.

CDOT recommends that 5DV10347 is *eligible* to the National Register of Historic Places under Criterion A because of its association with the development of communications in the form of suburban newspapers in the early to mid-1900s. It is also eligible under Criterion B for its association with publisher and community booster Joseph Rosenberg in the area of community planning and development. Finally, the property is eligible under Criterion C as it embodies the distinctive characteristics of the commercial style of architecture of the early 1900s.

EFFECTS DETERMINATION

Construction will not alter Federal Blvd.'s alignment in front of 5DV10347 and will not encroach on the building's historic boundary. Because the current urban environment will remain unchanged in terms of traffic and use (and hence any indirect effects such as noise), CDOT has determined that *no historic properties will be affected* as a result of the project. Please refer to the enclosed project plans for additional information.

We request your concurrence with the Determinations of Eligibility and Effects outlined herein. Your response is necessary for the Federal Highway Administration's compliance with Section 106 of the National Historic Preservation Act (as amended) and with the Advisory Council on Historic Preservation's regulations. This information has been forwarded to the City and County of Denver for review and comment; we will send you the city's response when received.

If you have questions or require additional information in order to complete your review, please contact Acting CDOT Staff Historian Robert Autobee at (303) 757-9758.

Very truly yours,

for Brad Beckham, Manager
Environmental Programs Branch

Enclosures

cc: Chuck Attardo, CDOT Region 6
Judy Aranda, Parsons Brinckerhoff

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

DOT
DEPARTMENT OF TRANSPORTATION

March 19, 2007

Mr. Robert Atkinson, Planning Assistant
Denver Landmark
Preservation Commission
Denver Planning Services, Dept. 209
201 W. Colfax Avenue
Denver, CO 80202

SUBJECT: Determinations of Eligibility and Effects, Project STU C010-068, Federal Boulevard, Alameda to 6th Ave. Environmental Assessment, City & County of Denver

Dear Mr. Atkinson:

This letter and the enclosed materials constitute a request for comment on Determinations of Eligibility and Effects regarding the project referenced above. The undertaking proposes the following improvements to Federal Boulevard between Alameda and 6th Avenues:

- Addition of a third northbound lane
- Widening of existing lanes to 11 feet
- Construction of a 16-foot raised median
- Widening of the pedestrian zone to 8 feet (5-foot sidewalk plus 3-foot amenity zone). Where possible, the pedestrian zone will be widened two feet as long as additional building impacts can be avoided.
- Realignment of Bayaud Avenue
- Installation of a stoplight at Bayaud Avenue
- Sidewalks and curb ramps improved to Americans with Disabilities Act (ADA) standards.

METHODOLOGY AND SURVEY RESULTS

Over the past year, Ron Sladek of Tatanka Historical Associates Inc., surveyed the project area to identify historic properties. This involved fieldwork and the completion of research in the Office of Archaeology and Historic Preservation (OAHP) Compass database and other archival sources, such as the Denver Public Library's Western History Collection and City & County of Denver Assessor Records and Building Permits. The project resulted in the intensive-level recordation of 54 historic proprieties along Federal Blvd. and another 16 on adjacent side streets. Of these, only one property is recommended as eligible for the National Register of Historic Places (5DV10347, the Barnum News Building at 312-318 Federal Blvd.). Refer to the enclosed inventory report and site forms for additional information on the recorded sites.

ELIGIBILITY DETERMINATION

Barnum News Building (5DV10347): During the 1920s, this property was occupied by a small residence that was later incorporated into the present building. In 1934, the southern two-thirds of the

building were constructed for an estimated cost of $1,900 by Charles J. Foster as the front of the home, and also appears to have housed an auto repair shop for a short time. By 1938 its new owner, publisher Joseph Rosenberg, added room for his printing plant on the north side. That year a barbershop, the Barnum News, and a small restaurant occupied the property.

At various times between the 1940s and 1970s, the Rosenberg family expanded within the building's footprint to add on to the composing room and provide additional storage space. These changes left the original building intact and did not significantly diminish its historic integrity.

CDOT recommends that 5DV10347 is *eligible* to the National Register of Historic Places under Criterion A because of its association with the development of communications in the form of suburban newspapers in the early to mid-1900s. It is also eligible under Criterion B for its association with publisher and community booster Joseph Rosenberg in the area of community planning and development. Finally, the property is eligible under Criterion C as it embodies the distinctive characteristics of the commercial style of architecture of the early 1900s.

EFFECTS DETERMINATION

Construction will not alter Federal Blvd.'s alignment in front of 5DV10347 and will not encroach on the building's historic boundary. Because the current urban environment will remain unchanged in terms of traffic and use (and hence any indirect effects such as noise), CDOT has determined that *no historic properties will be affected* as a result of the project. Please refer to the enclosed project plans for additional information.

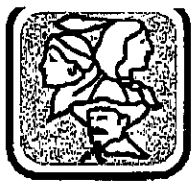
As a local governmental authority with a potential interest in this project, we welcome your comments regarding our determination of eligibility and effects. Should you elect to respond, we request that you do so within 30 days of receipt of this letter. If you have questions or require additional information, please contact CDOT Assistant Staff Historian Robert Autobee at (303) 757-9758.

Very truly yours,

for Brad Beckham, Manager
Environmental Programs Branch

Enclosures

cc: Chuck Attardo, CDOT Region 6
Judy Aranda, Parsons Brinckerhoff



COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

March 29, 2007

Brad Beckham
Manager, Environmental Programs Branch
Colorado Department of Transportation
Environmental Programs Branch
4201 East Arkansas Avenue
Denver, CO 80222

Re: CDOT Project STU C010-068, Federal Blvd., Alameda to 6th Ave. (CHS #46354)

Dear Mr. Beckham,

Thank you for your correspondence dated March 19, 2007 and received by our office on March 20, 2007 regarding the above-mentioned project.

After review of the provided information, we concur with the finding of not eligible for the National Register of Historic Places (NRHP) for the resources listed below.

- 5DV.10324
- 5DV.10326
- 5DV.10327
- 5DV.10329
- 5DV.10330
- 5DV.10331
- 5DV.10332
- 5DV.10333
- 5DV.10334
- 5DV.10335
- 5DV.10336
- 5DV.10338
- 5DV.10339
- 5DV.10340
- 5DV.10341
- 5DV.10342
- 5DV.10343
- 5DV.10344
- 5DV.10345
- 5DV.10346
- 5DV.10348
- 5DV.10349
- 5DV.10350
- 5DV.10351
- 5DV.10352
- 5DV.10353
- 5DV.10297
- 5DV.10298
- 5DV.10300
- 5DV.10301
- 5DV.10302
- 5DV.10303
- 5DV.10304
- 5DV.10305
- 5DV.10306
- 5DV.10307
- 5DV.10308
- 5DV.10309
- 5DV.10310
- 5DV.10311
- 5DV.10312
- 5DV.10313
- 5DV.10314
- 5DV.10315
- 5DV.10316
- 5DV.10317
- 5DV.10318
- 5DV.10319
- 5DV.10320
- 5DV.10321
- 5DV.10322
- 5DV.10323
- 5DV.10371
- 5DV.10373
- 5DV.10374
- 5DV.10376
- 5DV.10377
- 5DV.10379
- 5DV.10369
- 5DV.10370

After review of the provided information, we concur with the finding of individually eligible to the NRHP for the resource listed below.

- 5DV.10347/Barnum News Building

The resources listed below were identified on the survey forms as well as in the survey report as being contributing to a potentially eligible Barnum Neighborhood Historic District. However, the survey forms do not mark an applicable National Register Criteria (item 38) for the properties below in regards to the historic district. The narratives included in item 42 of the survey forms also state that the resources below are not significant. Please clarify the status of these resources.

- 5DV.10372/Mountain View Missionary Baptist Church
- 5DV.10375/Smith House
- 5DV.10378/Tobias House
- 5DV.10380/Fegan House
- 5DV.10381/Buckanan-Genner House
- 5DV.10382
- 5DV.10383/Wilson House

If these resources do contribute to a potentially eligible Barnum Neighborhood Historic District, then the historic district should be evaluated under 36 CFR 800.5/Assessment of Adverse Effect.

In regards to 5DV.10328/Carter Oil Co. Service Station, we do not concur with the finding that the property is not eligible for the NRHP. In our opinion, resource 5DV.10328 is significant at the local level of significance under National Register Criterion C as a good example of the Oblong Box Gas Station type (please see attachment). The character-defining features of this type include a rectangular plan, flat roof, lack of ornamentation, corner office, two service bays, and flat hard surface landscape. This resource retains a good degree of integrity buy strongly conveying the above-referenced character-defining features. We also believe the resource is significant under National Register Criterion A at the local level of significance in the area of Transportation. Federal Boulevard historically functioned as a major transportation corridor. The history included in the survey report (pages 14-15) as well as other historic contexts regarding Federal Boulevard clearly establish the transportation significance of Federal Boulevard. Resource 5DV.10328 represents the transition of Federal Boulevard from residential to commercial as well as the important function of Federal Boulevard as a significant transportation corridor in Denver during mid-20th century for automobile travel.

After review of the Assessment of Adverse Effect for resource 5DV.10347, we are not able to concur with the finding of *no historic properties affected*. The project letter states that construction would not alter the alignment of Federal Boulevard and that noise levels would not be increased. However, an additional northbound lane will be added as well as widening of travel lanes and sidewalks directly in front of the property. In our opinion, the project will have an effect on this property. We recommend a finding of *no adverse effect* under Section 106 for this property.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other

consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

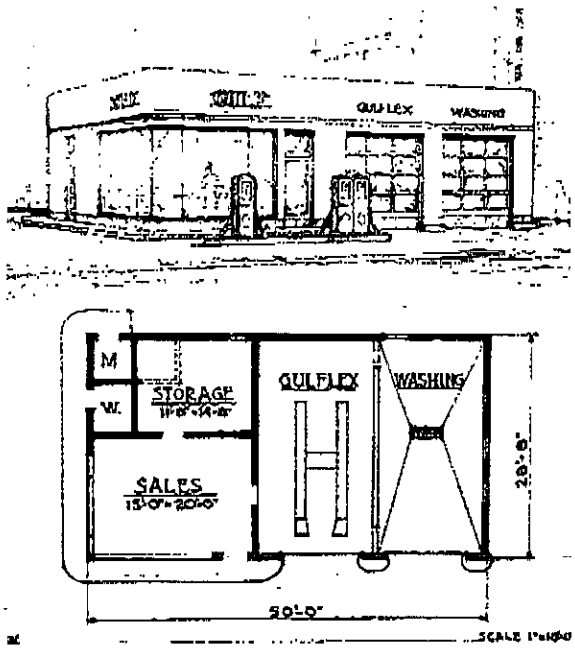
If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

Georgianna Contiguglia

Georgianna Contiguglia
State Historic Preservation Officer

Oblong Box Gas Station



The operational shift from "gas station" to "service station" marks an important corporate, consumer and architectural milestone in the marketing of gasoline. In its first decade of operation, the gas station was a roadside facility dispensing gasoline, other petroleum products, and a limited line of automobile parts and accessories. As growing numbers of automobile owners sought the services of someone skilled in mechanical maintenance and repair, the gas station increasingly assumed the role. Early repairs and maintenance were often accomplished in an open area beside the station. A subterranean service pit or short ramp or lift gave the mechanic easier access to the underside of autos. Rain, snow and intense sunshine often made these outdoor service areas unusable. Owners of early house-with-canopy or cottage-type gas stations sometimes built detached and later attached garages to accommodate year-round automobile service and repair. Thus was born the gasoline service station.

In the mid-1930s, petroleum corporation executives, with their architects and industrial designers, began rethinking the function and organization of the service station. This was the period when modern architectural styles such as Art Deco and Moderne (sometimes referred to as Streamline Moderne) surged to popularity. The minimalist concepts of the International style also began to permeate the offices of American architects. These architectural movements corresponded with the rise of "industrial design," improving the aesthetics and usability of products through such considerations as overall shape, location of details, colors, texture, sounds, and product ergonomics. Additional aspects concern the production process, choice of materials and consumer point of sale presentation. All these design and architectural philosophies influenced the reshaping of the service station and yielded what is most often known as the oblong box-type station. Walter Teague produced a series of designs for Texaco that inspired similar designs throughout the industry. The above 1940 architectural plan and rendering of a Gulf service station epitomize the defining design characteristics.

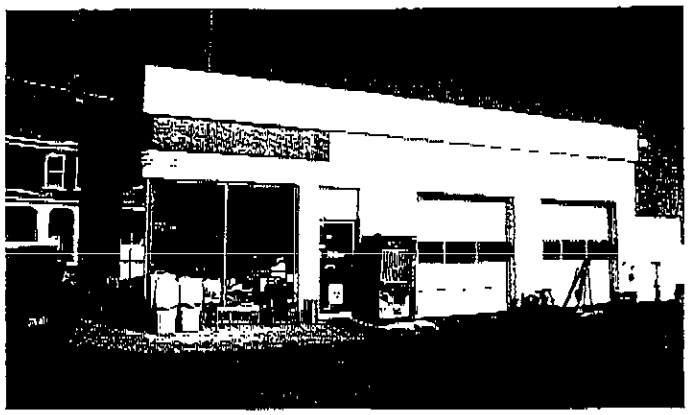
All the functions of the station, except the actual pumping of gas, are accommodated in a simple rectangular plan building. The office/sales area occupies the prominent corner, facing the adjacent road intersection in street corner stations. Attached to the office are the service bays with roll-down glazed doors. Two-bay models predominate. Occasional single-bay versions may be found in small communities. Stations with three or more bays appear at busy roadside locations that emphasized auto service. Sometimes an original two-bay oblong box expanded to accommodate growing business by the construction of additional service bays.

Common elements:

1. rectangular plan
2. flat roof
3. lack of ornamentation
4. corner office
5. two service bays
6. flat hard surface landscape

Each bay of the two-bay station serves a specific purpose. One bay contains a hydraulic lift to raise cars for the servicing of tires, lubrication, and underside parts. A central in-floor drain to catch water runoff during car washes characterizes the second bay. A small storage area behind the office and adjacent to the first bay holds equipment and parts. Each station also contains a men's and women's restroom. The restrooms are usually accessed by

exterior doors on the station's side or rear elevations. In some stations, the women's area opens from the station interior for the added protection of its users.



Oblong box-type stations generally employ flat roofs, but occasional butterfly (V-shaped), shed, front gable, and neo-mansard examples may be found. Early Art Deco and Moderne styles sometimes included a rooftop pylon, prominently lighted at night, to attract the attention of passing motorists.

Art Deco/Moderne stations might include rounded corners, narrow cantilevered projections below the parapet, and porthole windows. International style stations featured almost no ornamentation other than narrow bands of color or slightly protruding belt courses wrapping the building above the door and window lintels.

Station designers of the period often took advantage of a new external surfacing material for oblong box-type stations–porcelain enameled steel. Produced in panels, the material was bolted to an underlying wood or metal frame, or to a concrete block structure. The smooth shinny surfaces were low maintenance and generally well wearing. The reflective qualities of the surface allowed the buildings to glow at night for increased visibility. Oblong-box stations were also made of painted concrete block or occasionally of brick.

Canopies extending over the pump islands were much more common on Art Deco/Moderne stations than the International style versions. Some stations, a prominent example being the Phillips 66 standard design of the 1960s, used inclined wedge-shaped or delta winged canopies each supported by a steel frame pylon rising above the roof to hold the prominent corporate sign.

Variations of the rectangular plan are common, most often with the office area projecting or being setback from the service bays. In some corner facing stations, service bays positioned along each side of the station intersect at the rear corner forming a square building plan.

Due to the nature of its heavy automobile traffic, landscaping generally consists of little more than a surrounding surface of concrete or asphalt paving. Lighting is most often accomplished by the use of tall pole lights at the property corners.

Oblong box stations continued to be built into the early 1970s, and they remain common along streets and highways, though most now serve non-automotive functions. As petroleum companies gradually surrendered automobile service to dealers and specialty service providers, the need for service bays diminished. The gas station-convenience store type currently dominates the industry. Retired oblong-box stations, minus gas pumps, now function as automobile service centers, florists, barber shops, travel agencies, coffee shops, and restaurants (the Quizno's sandwich chain opened and continues to operate its first outlet in a former two-bay oblong box station in Denver).

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

April 24, 2007

Ms. Georgianna Contiguglia
State Historic Preservation Officer
Colorado Historical Society
1300 Broadway
Denver, CO 80203

SUBJECT: Additional Information and Notification of 4(f) *de minimis*, Federal Blvd. Environmental Assessment (EA), CDOT Project STU C010-068, City and County of Denver (CHS #46354)

Dear Ms. Contiguglia:

Thank you for your March 29, 2007 correspondence regarding the intensive-level survey of historic buildings along Federal Boulevard between Alameda Avenue to Sixth Avenue. The following is our response to concerns raised by your office in that letter.

Revised Determinations of Eligibility and Effects

5DV10328/Carter Oil Co. Service Station: This office agrees with your finding that 5DV10328 is eligible to the National Register of Historic Places (NRHP) under Criterion A for the building's association with Federal Boulevard's historic role as one of Denver's major transportation corridors and under Criterion C as a good example of the Oblong Box Gas Station type. Included with this submission is a revised site form reflecting those changes in eligibility. The project will require 8.5 feet of existing sidewalk, but this encroachment will not directly affect the station, but the addition of a lane and widening of Federal Boulevard will result in secondary impacts to 5DV10328. Therefore, CDOT has determined there will be *no adverse effect* to the Carter Oil Co. Service Station. Please refer to the plans included with the original submission for a further illustration of effects.

5DV10347/Barnum News Building: We concur with your finding of *no adverse effect* to 5DV10347 resulting from the widening of Federal Boulevard and the addition of sidewalks.

5DV10372/Mountain View Missionary Baptist Church; 5DV10375/Smith House; 5DV10378/Tobias House; 5DV10380/Fegan House; 5DV10381/Buckanan-Genner House; 5DV10382, and 5DV10383/Wilson House: Your March 29 letter asked that our office re-evaluate the properties listed above for their potential to contribute to a potential Barnum Neighborhood Historic District. These seven properties share a common context, architectural style and type and period of significance. The project's historical sub-contractor, Tatanka Historical Associates Inc., re-evaluated each site and found each eligible for listing to the NRHP under Criteria C as representative examples of vernacular working-class residences from early 20th century Denver.

Your office also asked if these sites would contribute to a potentially eligible Barnum Neighborhood District. The neighborhood was not intensively surveyed as a district as it was beyond the scope of the present project. As a result, only seven structures recorded for this project were evaluated for their potential to contribute to a potential Barnum Neighborhood District. CDOT believes these structures would contribute to a potential Barnum Neighborhood District, but this potential district would extend

beyond the limits of the current project APE boundary. Enclosed are seven revised site forms with new eligibility information for each structure.

These seven sites are located along Grove Street; one block west of Federal Boulevard. The project will widen existing lanes, construct a raised median and add sidewalks and Americans with Disabilities Act (ADA) ramps along Federal Boulevard. Construction along Federal Boulevard will not a have permanent or temporary impact on these seven properties on Grove Street and CDOT believes there will be *no historic properties affected.*

Notification of Section 4(f) De Minimis Determination

This project has been determined to result in *no adverse effect* to 5DV10347 and 5DV10328. Based on this finding, FHWA may make a *de minimis* finding for the Section 4(f) requirements for this historic site.

We request your concurrence with the Determinations of Eligibility and Effects outlined herein, and acknowledgement of the 4(f) *de minimis* finding. Your response is necessary for the Federal Highway Administration's compliance with Section 106 of the National Historic Preservation Act (as amended) and with the Advisory Council on Historic Preservation's regulations.

We have forwarded this request to the City and County of Denver Landmark Preservation Commission for comment; we will send their response to you when received.

If you have questions or require additional information in order to complete your review, please contact CDOT Staff Historian Robert Autobee at 303-757-9758.

Sincerely,

FOR Brad Beckham
Environmental Programs Branch

cc: Chuck Attardo, CDOT Region 6
Judy Aranda, P-B

Transmittal

Parsons Brinckerhoff
1660 Lincoln Street, Suite 2100
Denver, Colorado 80264
303-832-9091
Fax: 303-832-9096

To: Fred Nahwooksy, NAGPRA Coordinator
Comanche Tribe- NAGPRA
P.O. Box 908
Lawton, Oklahoma 73502

from Kara Swanson
Date April 24, 2007
project Federal Blvd. EA
project number 31485A

via:	***for your:***	***the following:***		
☒ *mail*	☒ *information/use*	☐ *shop drawings*	☐ *change order*	☐ *specifications*
☐ *messenger*	☐ *approval*	☐ *copy of letter*	☐ *plans*	☐ *other* Sub.
☐ *fedex*	☐ *review/comment*	☐ *prints*	☐ *samples*	☐ Agreement

drawing	***rev. no.***	***description***	***copies***	***date***
		Archaeological Resources Assessment of the Federal Boulevard Improvement Project	1	April 2006

If enclosures are not as noted, kindly notify us at once.

comments Enclosed is a copy of the Archeaological Resources Assessment for the Federal Boulevard Environmental Assessment project in Denver, Colorado. Please call if you have any questions or require additional information.

copies to file

signature: Kara Swanson

Transmittal

Parsons Brinckerhoff
1660 Lincoln Street, Suite 2100
Denver, Colorado 80264
303-832-9091
Fax: 303-832-9096

To: Albert M LeBeau III
Cheyenne River Sioux Tribe
P.O. Box 590
Eagle Butte, SD 57625

from Kara Swanson
Date April 24, 2007
project Federal Blvd. EA
project number 31485A

via:
☒ mail
☐ messenger
☐ fedex

for your:
☒ information/use
☐ approval
☐ review/comment

the following:
☐ shop drawings
☐ copy of letter
☐ prints
☐ change order
☐ plans
☐ samples
☐ specifications
☐ other Sub.
☐ Agreement

drawing	rev. no.	description	copies	date
		Archaeological Resources Assessment of the Federal Boulevard Improvement Project	1	April 2006

If enclosures are not as noted, kindly notify us at once.

comments Enclosed is a copy of the Archeaological Resources Assessment for the Federal Boulevard Environmental Assessment project in Denver, Colorado. Please call if you have any questions or require additional information.

copies to file

signature: Kara Swanson

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9259

April 25, 2007

Mr. Robert Atkinson, Planning Assistant
Denver Landmark
Preservation Commission
Denver Planning Services, Dept. 209
201 W. Colfax Avenue
Denver, CO 80202

SUBJECT: Additional Information and Notification of 4(f) *de minimis*, Federal Blvd. Environmental Assessment (EA), CDOT Project STU C010-068, City and County of Denver (CHS #46354)

Dear Mr. Atkinson:

The following is a response to the March 29, 2007 correspondence from the Colorado Office of Archaeology and Historic Preservation (OAHP) regarding the intensive-level survey of historic buildings along Federal Boulevard between Alameda Avenue to Sixth Avenue.

Revised Determinations of Eligibility and Effects

5DV10328/Carter Oil Co. Service Station: This office agrees with your finding that 5DV10328 is eligible to the National Register of Historic Places (NRHP) under Criterion A for the building's association with Federal Boulevard's historic role as one of Denver's major transportation corridors and under Criterion C as a good example of the Oblong Box Gas Station type. Included with this submission is a revised site form reflecting those changes in eligibility. The project will require 8.5 feet of existing sidewalk, but this encroachment will not directly affect the station, but the addition of a lane and widening of Federal Boulevard will result in secondary impacts to 5DV10328. Therefore, CDOT has determined there will be *no adverse effect* to the Carter Oil Co. Service Station. Please refer to the plans included with the original submission for a further illustration of effects.

5DV10347/Barnum News Building: We concur with your finding of *no adverse effect* to 5DV10347 resulting from the widening of Federal Boulevard and the addition of sidewalks.

5DV10372/Mountain View Missionary Baptist Church; 5DV10375/Smith House; 5DV10378/Tobias House; 5DV10380/Fegan House; 5DV10381/Buckanan-Genner House; 5DV10382, and 5DV10383/Wilson House: Your March 29 letter asked that our office re-evaluate the properties listed above for their potential to contribute to a potential Barnum Neighborhood Historic District. These seven properties share a common context, architectural style and type and period of significance. The project's historical sub-contractor, Tatanka Historical Associates Inc., re-evaluated each site and found each eligible for listing to the NRHP under Criteria C as representative examples of vernacular working-class residences from early 20th century Denver.

Your office also asked if these sites would contribute to a potentially eligible Barnum Neighborhood District. The neighborhood was not intensively surveyed as a district as it was beyond the scope of the present project. As a result, only seven structures recorded for this project were evaluated for their potential to contribute to a potential Barnum Neighborhood District. CDOT believes these structures

would contribute to a potential Barnum Neighborhood District, but this potential district would extend beyond the limits of the current project APE boundary. Enclosed are seven revised site forms with new eligibility information for each structure.

These seven sites are located along Grove Street; one block west of Federal Boulevard. The project will widen existing lanes, construct a raised median and add sidewalks and Americans with Disabilities Act (ADA) ramps along Federal Boulevard. Construction along Federal Boulevard will not a have permanent or temporary impact on these seven properties on Grove Street and CDOT believes there will be *no historic properties affected.*

Notification of Section 4(f) De Minimis Determination

This project has been determined to result in *no adverse effect* to 5DV10347 and 5DV10328. Based on this finding, FHWA may make a *de minimis* finding for the Section 4(f) requirements for this historic site.

We request your concurrence with the Determinations of Eligibility and Effects outlined herein, and acknowledgement of the 4(f) *de minimis* finding. Your response is necessary for the Federal Highway Administration's compliance with Section 106 of the National Historic Preservation Act (as amended) and with the Advisory Council on Historic Preservation's regulations.

As a local governmental authority with a potential interest in this project, we welcome your comments regarding our determination of eligibility and effects. Should you elect to respond, we request that you do so within 30 days of receipt of this letter. If you have questions or require additional information, please contact CDOT Assistant Staff Historian Robert Autobee at (303) 757-9758.

Sincerely,

FOR Brad Beckham
Environmental Programs Branch

cc: Chuck Attardo, CDOT Region 6
Judy Aranda, P-B

COLORADO
HISTORICAL
SOCIETY

The Colorado History Museum 1300 Broadway Denver, Colorado 80203-2137

May 7, 2007

Brad Beckham
Manager, Environmental Programs Branch
Colorado Department of Transportation
Environmental Programs Branch
4201 East Arkansas Avenue
Denver, CO 80222

Re: CDOT Project STU C010-068, Federal Blvd., EA (CHS #46354)

Dear Mr. Beckham,

Thank you for your additional information correspondence dated May 24, 2007 and received by our office on May 26, 2007 regarding the above-mentioned project.

After review of the provided information, we concur with the revised site forms regarding National Register eligibility. We concur with the finding of *no adverse effect* under Section 106 of the National Historic Preservation Act (Section 106) for resource 5DV.10328/Carter Oil Co. Service Station and resource 5DV.10347/Barnum News Building. We also concur with the finding of *no historic properties affected* under Section 106 for resource the resources listed below.

- 5DV.10372
- 5DV.10375
- 5DV.10378
- 5DV.10380
- 5DV.10381
- 5DV.10382
- 5DV.10383

We acknowledge the use of Section 4(f) *de minimis* finding for resources 5DV.10328 and 5DV.10347.

If unidentified archaeological resources are discovered during construction, work must be interrupted until the resources have been evaluated in terms of the National Register criteria, 36 CRF 60.4, in consultation with this office.

We request being involved in the consultation process with the local government, which as stipulated in 36 CFR 800.3 is required to be notified of the undertaking, and with other consulting parties. Additional information provided by the local government or consulting parties might cause our office to re-evaluate our eligibility and potential effect findings.

Please note that our compliance letter does not end the 30-day review period provided to other consulting parties.

If we may be of further assistance, please contact Amy Pallante, our Section 106 Compliance Coordinator, at (303) 866-4678.

Sincerely,

for Georgianna Contiguglia
State Historic Preservation Officer

U.S.Department of Transportation
Federal Highway Administration

Colorado Federal Aid Division

12300 W. Dakota Ave.
Suite 180
Lakewood, CO 80228

May 8, 2007

Mr. Russell George
Executive Director
Colorado Department of Transportation
4201 East Arkansas Avenue
Denver, Colorado 80222-3400

ATTN: Mr. Randy Jensen
Region 6 Transportation Director

Dear Mr. George:

Subject: Federal Boulevard: Alameda to 6th Avenue Environmental Assessment

We would like to begin by commending CDOT for the leadership they have provided on the above mentioned project throughout the NEPA process. We believe the alternatives development and screening process was thorough and is sound. The engineering design team did an excellent job of balancing the need to incorporate design standards for lane widths, median width and sidewalk widths with minimizing right-of-way impacts and impacts to an historic property by adding subtle horizontal curves to the alignment. The alternative selection process identified a prudent and feasible alternative that avoids the historic property on the corridor. Also, CDOT employed an innovative context sensitive solutions approach to the public outreach and involvement process that changed public skepticism into acceptance and support for this project.

There are two key issues, project scope and project cost, that we would like to emphasize and ask for your assistance to identify a solution. These issues are adversely influencing the NEPA process and, if unresolved, have the potential to affect FHWA's ability to endorse a NEPA decision document. In order to facilitate needed communication and collaboration between CDOT and the city and county of Denver (CCD) to resolve these issues, we offer the following counsel.

During a recent Executive Oversight Committee (EOC) meeting, a design alternative was proposed in an effort to reduce project costs. This proposal would alter the preferred alignment, causing an unnecessary impact to the historic property and requiring a full 4(f) evaluation. The benefits of this exercise would be minimal, if any, and more time would be lost in the process. We feel very strongly that this option would not resolve the funding shortfall and does not warrant further consideration. Instead, we believe that the CDOT and CCD should identify funding opportunities that can be leveraged in order to make this project financially viable.

MOVING THE AMERICAN ECONOMY

As you know, a great deal of time and energy has gone into developing and identifying a preferred alternative that meets the purpose and need for the corridor. The Project Management Team, along with the public, has determined through a sound NEPA process that the preferred alternative is the best solution to increase capacity, improve safety, enhance roadway geometrics, and support modal interconnectivity along the corridor. Making project scope changes at this stage would jeopardize credibility with the community and would have project cost and schedule implications. For this reason, we feel strongly that the project scope should not be modified to fit the budget.

The right-of-way acquisitions associated with the preferred alternative represent a significant portion of the overall project costs. This fact has been discussed in detail with all stakeholders throughout the process of identifying the preferred alternative. As an example, the CCD parking requirements for businesses along Federal Boulevard have a direct effect on the number of property acquisitions identified for the preferred alternative. We understand that the CCD has the authority to issue permits or variances to business owners to allow their patrons to park legally on CCD-owned property, which could translate into a significant reduction in right-of-way acquisitions and project cost.

Additional right-of-way acquisition is required for the sidewalks. During alternatives development and analysis the CDOT approached the CCD and proposed that permanent easements be obtained instead of fee simple interest ownership in order to minimize project costs; however, the proposal was denied by CCD officials. We strongly urge the CDOT to encourage the CCD to exercise their authority to minimize right-of-way impacts by relaxing preferred methods of doing business. This action could help move this project toward actual construction.

Currently, the project cost estimate is approximately $30 million dollars. The project budget is approximately $14.5 million dollars. This is a significant shortfall and unless more funding can be committed to the project the Federal Highway Administration will be unable to endorse a decision document for this Environmental Assessment.

We strongly urge the CDOT to work together with the CCD to find a solution to these issues and move toward a successful completion of the NEPA process. Please continue to work directly with Ms. Marcee Allen, Region 6 Operations Engineer, of our office. Marcee can be reached by telephone at (720) 963-3007 or e-mail at marcee.allen@fhwa.dot.gov.

Sincerely yours,

David A. Nicol, P.E.
Division Administrator

cc: Pam Hutton, Chief Engineer
Bob Marusin, Region 6 Central Program Engineer
Paul Jesaitis, Resident Engineer
Leslie Thomas, City Engineer, City and County of Denver

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Region 6
2000 South Holly Street
Denver, CO 80222
(303) 757-9459
(303) 757-9073 FAX

June 4, 2007

Mr. David A. Nicol, P.E.
Division Administrator - FHWA
12300 W. Dakota Avenue, Suite 180
Lakewood, CO 80228

Re: Federal Boulevard: Alameda to 6th Avenue Environmental Assessment
CDOT Project No. STU C010-068

Dear Mr. Nicol:

Thank you for your letter dated May 8, 2007 concerning the Federal Boulevard EA project. CDOT is also pleased with the outcome of the alternatives development and screening process. In partnership with the City and County of Denver (CCD), we agree that we have selected a Build Alternative that not only meets the requirements of the TIP application and addresses the purpose and needs of the project, but also reflects the least impact to the business community. Our Build Alternative also successfully avoids impacts to two potential historic properties. However, despite these accomplishments, the estimated costs far exceed the funding that has been set for this project. Current funding is set at $14.5 million and project costs are estimated between $28.9 million to $32.3 million.

We agree with FHWA that efforts to modify the proposed build alternative in an attempt to significantly reduce project costs would result in more time lost, additional costs and likely loss of credibility with the community. Moreover, we believe we are too far along in the project to turn back to consider other alternatives. Bottom line, we feel we have selected the best Build Alternative possible.

Assuming we stay on course, the project schedule shows the decision document will be completed in December 2007. At this point in the project, we have completed the primary project deliverables as summarized below:

- Environmental Assessment – The EA has been reviewed by FHWA, CDOT (Region 6 and the Environmental Program Branch (EPB) and CCD). Our consultant is currently responding to comments received from EPB and CCD and expects to have a revised document to CDOT by mid-June.

- Technical Reports – All 15 technical reports have been completed and submitted to CDOT.

- Public Involvement – Three public meetings, several small group meetings and one-on-one interviews with affected businesses have been held with the community over the past year and a half. One additional meeting with affected property owners is planned in addition to a public hearing later this year.

Funds budgeted for the consultant to complete this study are nearly expended. To extend the study to evaluate additional alternatives would require a contract amendment and additional budget and would likely extend the project time frame another six or more months. To change course now would indeed be costly.

As you may be aware, CCD requested that our ROW specialists identify measures that could reduce ROW costs. These measures included:

- Determining the potential resale value of potential acquisitions.
- Determining the cost difference of purchasing easements for sidewalks versus purchasing in fee simple.
- Avoiding partial property acquisitions by relaxing parking conformance requirements. This option would require CCD to allow zoning non-conformance of these properties.
- CCD to allow landowners whose building facades are required to be demolished to renovate the façade and remain in occupancy.

So far, we have estimated that between $2.1 million to $3.1 million in ROW costs could potentially be saved through the resale of potential property acquisitions. Cost savings anticipated for the other measures listed above are still being developed. However, we expect that whatever the final estimate in cost savings may be, it will still be insufficient to offset a shortfall of between $14.4 million to $17.8 million.

It appears we have three options to consider:

1. **Suspend the project until additional funds are identified.** This option would suspend all efforts and expenditures to complete the EA and obtain a decision document until adequate funds can be identified. We feel there is no point in expending additional funds if there is no hope of identifying adequate funding to continue the project to completion. This option is not favorable with CCD.

2. **Request that CCD continue to pursue additional funding.** CCD is planning a major bond election in November 2007 to fund infrastructure improvements, including street improvements. One of the projects listed is improvements to Federal Boulevard (Alameda to Sixth). Recommended funding is $15 million. CDOT to support CCD in its effort to secure this additional funding.

3. **Resubmit a TIP application for a reduced or phased project.** This option would involve making safety improvements only or consideration of a phased approach to

constructing the proposed Build Alternative. However, it should be noted that DRCOG informed CDOT early in the project that should we not follow the TIP application's project description that we would need to reapply for funds and that most likely, other projects would score higher. This option is not favorable with CCD.

We believe we have worked with CCD to try to find a solution to meet funding for this project and believe the successful passage of the City's bond election will provide the funding necessary to complete the financial plan to support the FONSI scheduled for December. We are ready to meet with FHWA and CCD to discuss these issues further.

Sincerely,

Randy L. Jensen - CDOT Region 6 Transportation Director
for Russell George – CDOT Executive Director

cc: Russell George – CDOT Executive Director
Pam Hutton – CDOT Chief Engineer
Bob Marusin - CDOT
Paul Jesaitis - CDOT
Greg Jamison - CDOT
Leslie Thomas - CCD
Marcee Allen, FHWA

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
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June 14, 2007

Mr. David A. Nicol, P.E.
Division Administrator
FHWA Colorado Division
12300 W. Dakota Avenue, Suite 180
Lakewood, CO 80228

SUBJECT: Finding of Section 4(f) *De Minimis* Impact, Project STU C010-068, Federal Blvd. EA, City and County of Denver (13810)

Dear Mr. Nicol:

This letter and the attached materials constitute a request for review and concurrence on a finding of *de minimis* impact for the project referenced above, which involves improvements to Federal Boulevard between Alameda and 6th Avenue. In correspondence dated March 29 and May 7, 2007, the Colorado State Historic Preservation Officer (SHPO) determined that the Barnum News Building (5DV10347) is eligible to the National Register of Historic Places (NRHP) under Criteria A, B and C for its significant association with the historic, economic and socio-political development of the Barnum neighborhood. The SHPO subsequently found the Carter Oil Service Station (5DV10328) was eligible under Criterion A for its association with Federal Boulevard's position as one of Denver's major transportation corridors during the mid-20th century, and under Criterion C as a good example of the Oblong Box Gas Station type.

Project Effects

Barnum News Building (5DV10347): The realignment of Federal Boulevard will require permanent acquisition of 8.4 feet of sidewalk in front of the Barnum Building and two-to-five feet for a temporary construction easement as part of the road widening and sidewalk replacement. These improvements will encroach on the building's historic property boundary, but will not directly affect 5DV10347. Since the addition of a new traffic lane and sidewalks will not alter those characteristics that make the segment eligible under Criteria A-C, we have determined there will be *no adverse effect* to 5DV10347. Please refer to the enclosed plan sheet for additional information.

Carter Oil Service Station (5DV10328): In front of 5DV10328, construction requires the permanent acquisition of 8.5 feet of sidewalk and a temporary construction easement of two-to-five feet. This encroachment will not directly affect the station, and the improvements to Federal Boulevard will not alter those characteristics that make the building eligible under Criteria A and C. CDOT has determined that these improvements will result in *no adverse effect* to 5DV10328. Please refer to the enclosed plan sheet for additional information.

Finding of *De Minimis* Impact

CDOT consulted with the SHPO regarding eligibility and effects for these sites in March and April 2007. As noted above, the SHPO subsequently concurred with our determinations. On March 19 and April 24,

2007, CDOT offered the Denver Landmark Preservation Commission the opportunity to comment on eligibility and effects via letter. We did not receive a response from the Commission to these requests within the 30-day review period. Copies of the Section 106 correspondence are attached for your review.

Based on the information presented above and in the attached documentation, the effects of the proposed improvements constitute a *de minimis* impact and the requirements of 23 USC 138 and 49 USC 303 have been satisfied. This finding is considered valid unless new information is obtained or the proposed effects change to the extent that consultation under Section 106 must be reinitiated.

If you concur with this finding, please sign below.

Very truly yours,

Brad Beckham, Manager
Environmental Programs Branch

Enclosures: Section 106 correspondence
Site forms for 5DV10347 and 5DV10328
Project plans

cc: Chuck Attardo, Region 6
File/CF

I concur: Michael E Vandehoef 6-15-07

for David A. Nicol, P.E. Date
Administrator, Colorado Division
Federal Highway Administration

STATE OF COLORADO

DEPARTMENT OF TRANSPORTATION

Environmental Programs Branch
4201 East Arkansas Avenue
Denver, Colorado 80222
(303) 757-9011

July 25, 2007

Paul Tourangeau
Director
Air Pollution Control Division
Colorado Department of Public Health and Environment
4300 Cherry Creek Drive South
Denver, CO 80222

RE: Federal Boulevard EA Project in Denver

Dear Mr. Tourangeau,

The Colorado Department of Transportation is preparing an Environmental Assessment of Federal Boulevard, Alameda to 6th Avenue. The purpose of the proposed project is threefold: to improve the safety and efficiency of Federal Boulevard; to accommodate the transportation needs of area residents and existing businesses; and to provide multi-modal travel options and connections along Federal Boulevard between Alameda and 6th Avenues. In order to determine the air quality impacts of the proposed project, CDOT analyzed all affected intersections in the project area that would operate at Level of Service D, E or F in future years, for both the No-Action and Proposed Action Alternatives to determine any potential exceedances of carbon monoxide National Ambient Air Quality Standards (NAAQS).

The highest modeled eight-hour average carbon monoxide concentrations were 8.0 ppm in 2010 and 6.0 ppm in 2030. A qualitative PM_{10} analysis predicted no exceedances of the NAAQS, as well.

The proposed action is included in the 2030 constrained Regional Transportation Plan. The project is also included in the 2007-2012 Transportation Improvement Program (TIP-ID#2001-169), although full funding has not been identified.

If you concur with the results of the air quality analysis and the conclusions regarding conformity of this project, please sign below and return this letter by August 15, 2007.

Thank you.

Very truly yours,

Bradley J. Beckham
Manager
Environmental Programs Branch

I Concur: _____ 8/14/07
Paul Tourangeau — Date