

US 6 Bridges Design Build Project

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Aesthetics and Urban Design Technical Report

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Federal Highway Administration

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List of Abbreviated Terms

ADA	Americans with Disabilities Act	LOS	level-of-service
AM	morning	LOSS	level-of-service of safety
APCD	CDPHE Air Pollution Control Division	MS4	municipal separate storm sewer system
BMP	best management practice	NAAQS	National Ambient Air Quality Standard
BNSF	Burlington Northern Santa Fe	NB	northbound
CCD	City and County of Denver	NEPA	National Environmental Policy Act
CDOT	Colorado Department of Transportation	NRHP	National Register of Historic Places
CDPHE	Colorado Department of Public Health and Environment	PM	afternoon/evening
CDPS	Colorado Discharge Permit System	PM ₁₀	particulate matter less than 10 microns in size
CEQ	Council on Environmental Quality	PUC	Public Utilities Commission
CFR	Code of Federal Regulations	RCRA	Resource Conservation and Recovery Act
CHS	Colorado Historical Society	ROD	Record of Decision
CML	Consolidated Main Line railroad	RTD	Regional Transportation District
CO	carbon monoxide	RTP	Regional Transportation Plan
DRCOG	Denver Regional Council of Governments	SB	southbound
EB	eastbound	SHPO	State Historic Preservation Officer
EIS	Environmental Impact Statement	TIP	Transportation Improvement Program
EPA	US Environmental Protection Agency	T-REX	Transportation Expansion Project
FEIS	Final Environmental Impact Statement	US 6	6 th Avenue
FHWA	Federal Highway Administration	USACE	US Army Corps of Engineers
I-25	Interstate 25	USC	US Code
IGA	intergovernmental agreement	USDOl	US Department of Interior
ITS	intelligent transportation system	USFWS	US Department of Interior Fish and Wildlife Service
		WB	westbound

Project Background

The Proposed Project includes modifications to the roadway, interchanges, and bridges along 6th Avenue (US 6) between Sheridan Boulevard and the BNSF Railway in Denver, Colorado. The Colorado Department of Transportation (CDOT) is preparing a Reevaluation and Record of Decision (ROD) to document the impacts of and mitigation for the Proposed Project.

The Valley Highway Project

The Federal Highway Administration (FHWA) and CDOT prepared a Final Environmental Impact Statement (FEIS) in 2006 and a ROD in 2007 for the Interstate 25 (I-25) Valley Highway Project, located in Denver, Colorado. The Valley Highway Project includes the reconstruction of I-25 and reconfiguration of interchanges from Logan Street to United States Highway (US) 6, US 6 from I-25 to Federal Boulevard, and the crossing of Santa Fe Drive and Kalamath Street at the Consolidated Main Line railroad. The Preferred Alternative, as described in the FEIS, includes the following elements:

- I-25 Mainline: Widening of I-25 to provide a consistent section with four through lanes plus auxiliary lanes in each direction throughout the project area
- I-25/Broadway: Tight diamond interchange
- I-25/Santa Fe Drive: Single point urban interchange with a flyover ramp for northbound Santa Fe Drive to northbound I-25
- I-25/Alameda/Santa Fe/Kalamath: Offset partial urban interchange at I-25 and Alameda Avenue; Santa Fe Drive and Kalamath Street grade separated under the railroad close to their current alignments
- US 6: Ramp improvements at the I-25/US 6 interchange; closure of the Bryant Street interchange; diamond interchange at US 6/Federal Boulevard with slip ramps to Bryant Street and a braided ramp from Federal Boulevard to eastbound US 6; reconstruction of US 6 with collector-distributor roads/auxiliary lanes throughout the project area

The Preferred Alternative of the Valley Highway Project is shown in Figure 1.

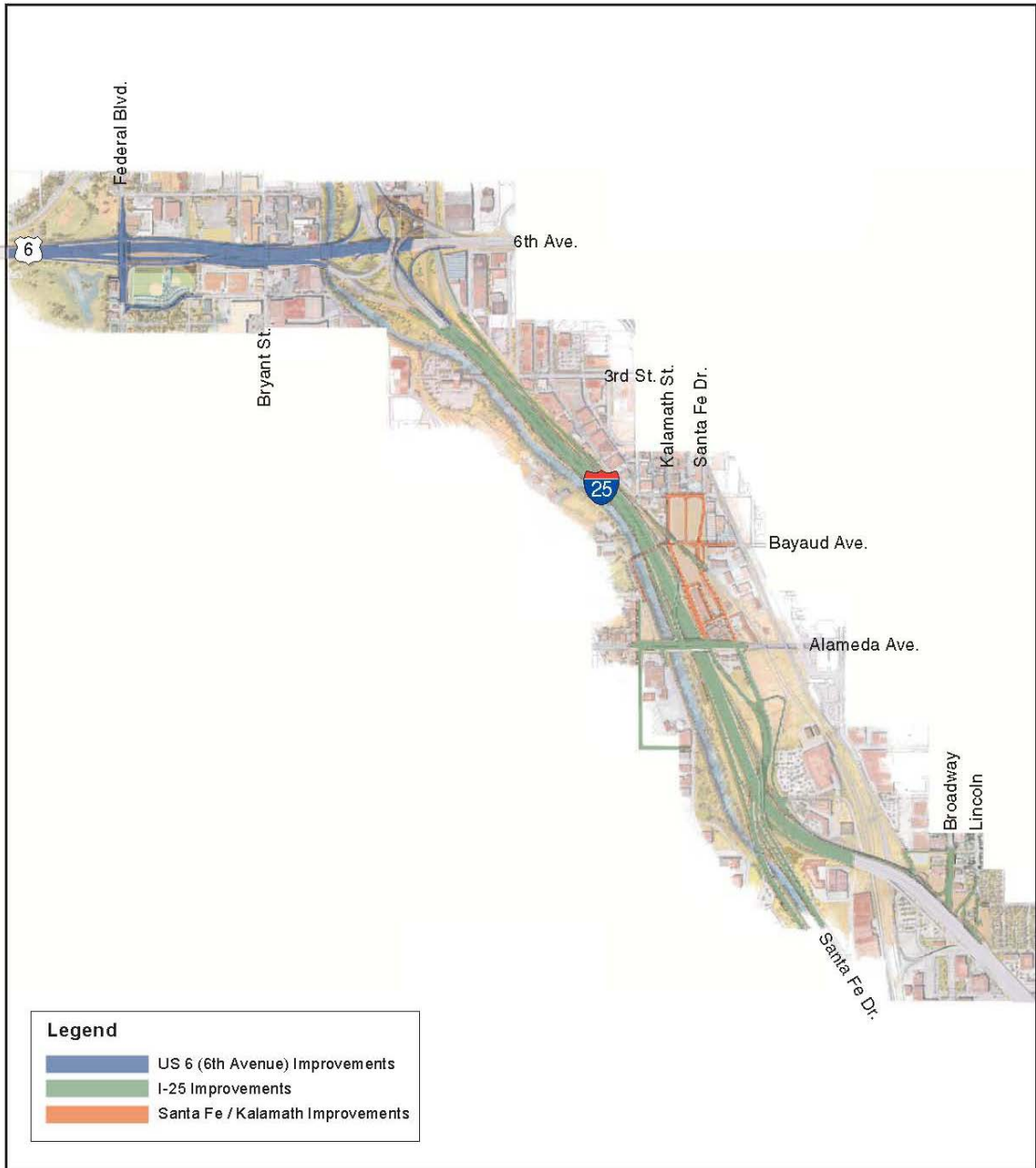


Figure 1: I-25 Valley Highway Project Preferred Alternative

US 6 Bridges Design Build Project

The Proposed Project includes the reconstruction of US 6, reconfiguration of interchanges from Federal Boulevard to I-25, and replacement of the US 6 bridges from Federal Boulevard to the bridge over the BNSF Railway. More specifically, the Proposed Project includes the following elements:

- The replacement of five bridges along US 6: Federal Boulevard, Bryant Street, South Platte River, I-25, and BNSF Railway. Three of these bridges are in poor condition and the other two are functionally obsolete. The project would also add a tunnel immediately east of I-25 under US 6 to separate traffic on northbound I-25 from traffic exiting the interstate to travel east and west on US 6.
- Ramp improvements at the I-25/US 6 interchange, closure of the westbound (WB) US 6 to Bryant Street ramp, a diamond interchange at US 6/Federal Boulevard with slip ramps to Bryant Street, and a braided ramp from Federal Boulevard to eastbound (EB) US 6.
- Reconstruction of US 6 with collector-distributor roads/auxiliary lanes from Federal Boulevard to the BNSF Railway bridge structure
- Conversion of 5th Avenue to two-way traffic from Federal Boulevard to Decatur Street
- Widening of Federal Boulevard, from five to six lanes, from 5th to 7th Avenues to accommodate current and future improvements
- Pavement resurfacing of US 6 from Knox Boulevard to Sheridan Boulevard
- In-kind replacement of impacted facilities for Barnum East Park
- A bicycle/pedestrian bridge structure over US 6, connecting Barnum North Park and Barnum Park (also known as Barnum Park South, and herein referred to as Barnum Park South)
- Upgrading portions of the South Platte River Trail to current standards

Figure 2 shows the Proposed Project.

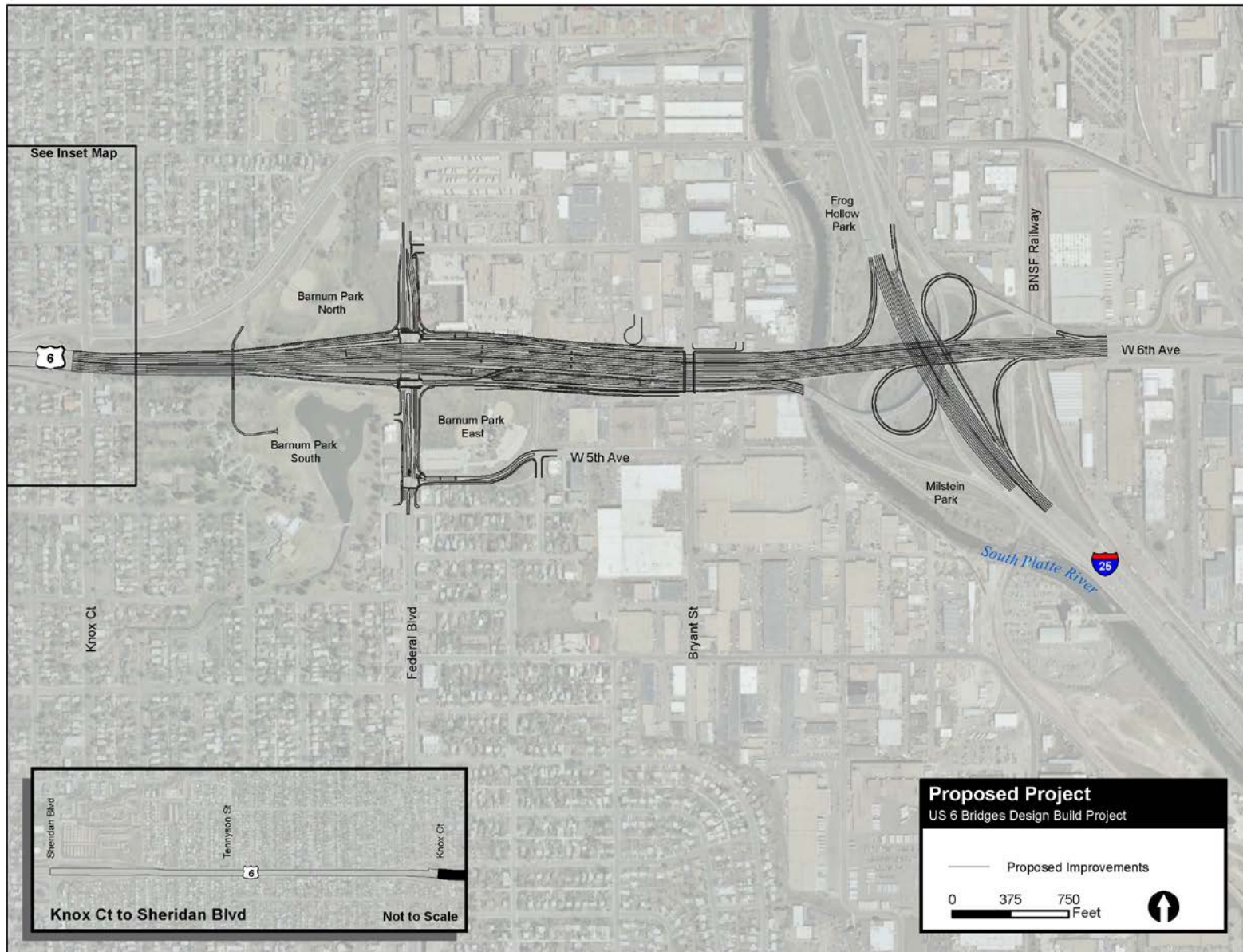


Figure 2: Proposed Project

Relationship of the Valley Highway Project and the US 6 Bridges Design Build Project

At the time of the FEIS, funding had not been identified for the entire Preferred Alternative. Although budget placeholders were included in the 2030 Regional Transportation Plan (RTP), these budgets fell short of the estimated cost of the Preferred Alternative. Therefore, FHWA and CDOT planned for a phased implementation of the Preferred Alternative. These six phases are outlined in Chapter 7 of the FEIS. The Reevaluation and ROD for the Proposed Project will reevaluate part of Phase 1 (the part including the US 6/Federal Boulevard interchange) as presented in the 2007 ROD, and provide a decision for Phase 5 of the Valley Highway Project. The Reevaluation and ROD for the Proposed Project will also address six new project elements, which were not part of the FEIS. Due to the minor environmental significance and nature of these additional components, they are included in the Reevaluation and ROD and will not affect the independent utility, logical termini, or Preferred Alternative of the Valley Highway Project.

Phasing of the FEIS Preferred Alternative

The Proposed Project includes elements of two of the six construction phases—Phase 1 and Phase 5—from the Valley Highway Project. A decision on construction Phase 1 of the Valley Highway Project, which included the US 6/Federal Boulevard bridge and ramps, excluding the braided ramp, was made in the 2007 ROD. Figure 3 shows the phases of the Valley Highway Project’s Preferred Alternative and Figure 4 shows the Proposed Project Elements and how they relate to the FEIS phasing.

Additional Project Elements in the Proposed Project

At this time, the Proposed Project includes six additional elements that were not included in the FEIS or 2007 ROD:

- Reconstruction of the southbound (SB) I-25 to EB US 6 ramp;
- A bicycle/pedestrian bridge structure over US 6, connecting Barnum North and Barnum South parks;
- Replacement of the US 6 bridge over Bryant Street;
- Replacement of the US 6 bridge over I-25;
- Replacement of the US 6 bridge over the BNSF Railway; and
- Pavement resurfacing of US 6 between Sheridan Boulevard and Knox Court

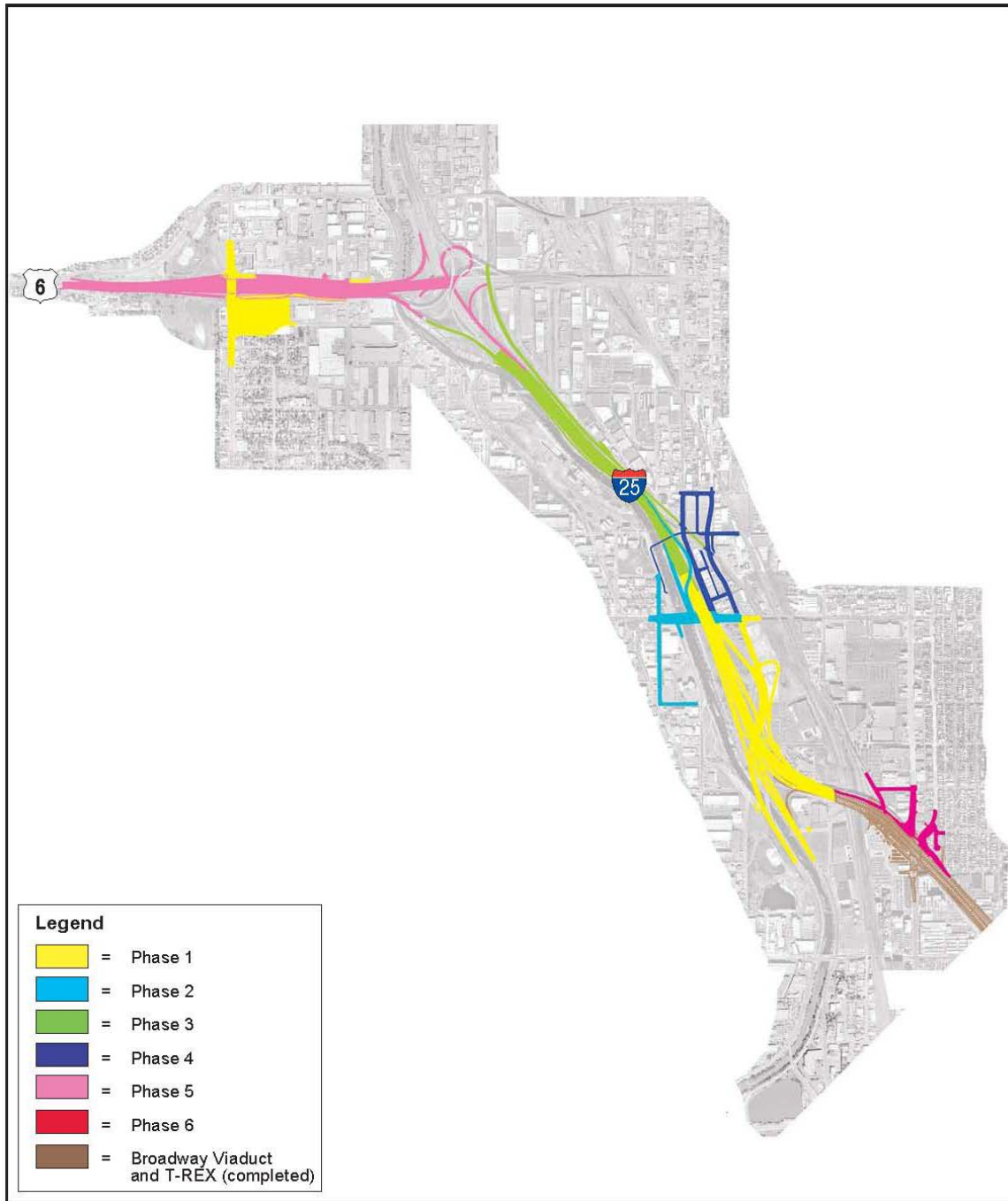


Figure 3: Valley Highway EIS Phased Implementation of the Preferred Alternative

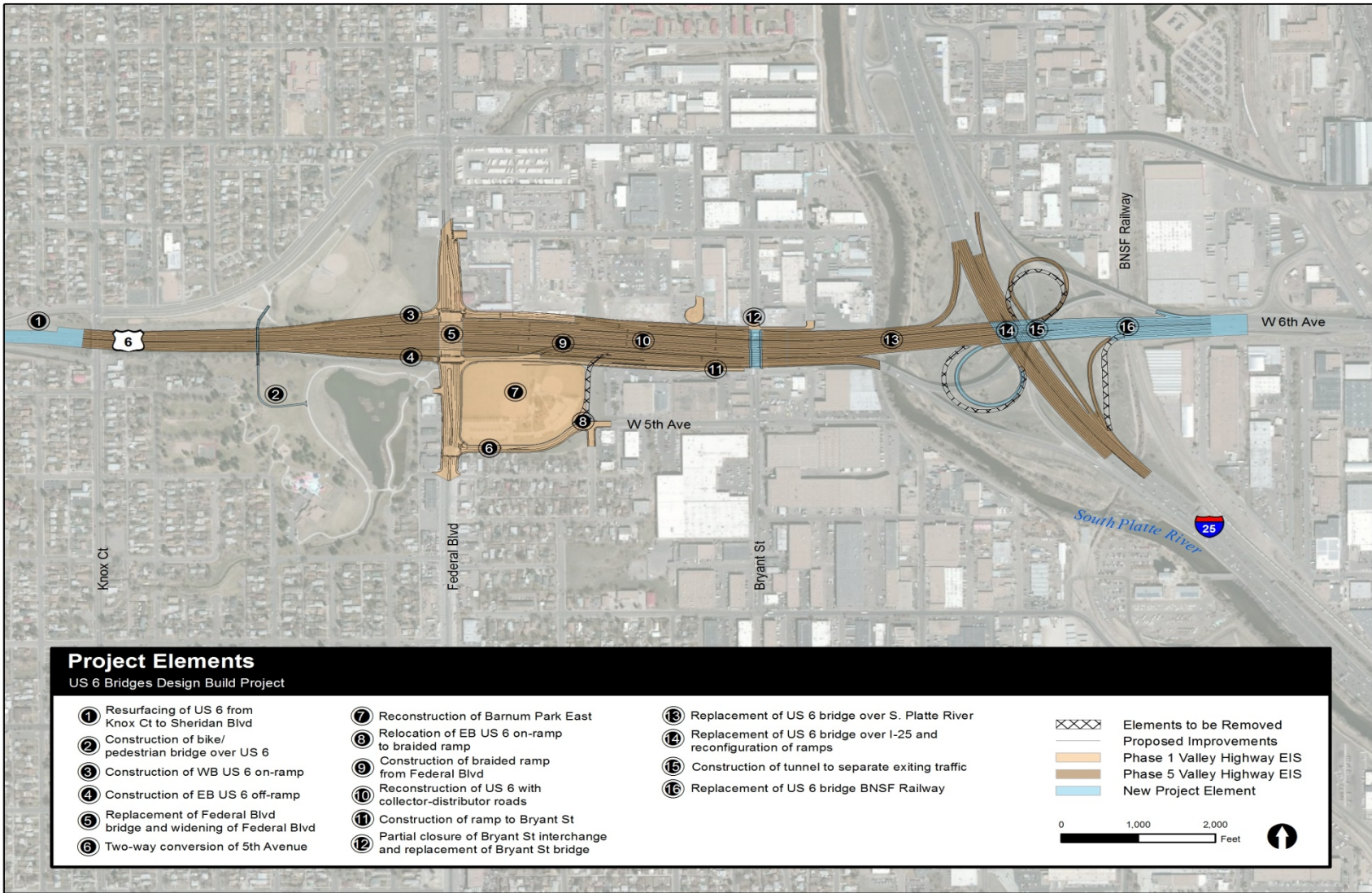


Figure 4: Proposed Project Elements

Aesthetics and Urban Design Introduction

The purpose of this technical report is to identify the impacts and associated mitigation measures related to aesthetics within the project limits. This document is intended to identify possible aesthetic and urban design elements for the various highway elements associated with the reconstruction of the US 6 Bridges Design Build Project.

Goals and Objectives

The following aesthetic goals and objectives have been developed for the US 6 Bridges Design Build Project by the design team based on the findings of the Valley Highway FEIS and observations of the project area:

- Provide a cohesive visual experience for both I-25 and US 6 corridors;
- Build off the improvements completed as part of the Valley Highway EIS;
- Highlight existing nodes at the I-25/US 6 and US 6/Federal Boulevard interchanges; and
- Match the scale of the highway improvement with roadway speed, recognizing that slower speeds require more detail.
- Provide pedestrian scaled improvements at bridge crossings and at trail tie-in locations.

Existing Conditions

The existing aesthetic character along US 6 is dominated by light industrial land uses. Numerous park and open space amenities exist as well, including three parks (Barnum East, Barnum North and Barnum), and the Platte River Trail. The three Barnum parks contain a Denver Recreation Center, a baseball field, a softball field and the Trestle Bike Park at Barnum Park North. The western portion of the study area is more residential in character than the eastern portion of the study area. Commercial uses in the study area are limited to Federal Boulevard.

Official City and County of Denver (CCD) neighborhoods found in and adjacent to the study area include: Villa Park, Barnum, Valverde and Sun Valley on the west side of I-25; and Lincoln Park and Baker east of I-25 (see Figure 5). The neighborhoods on the west side of I-25 are primarily residential in character, however portions of these neighborhoods that are immediately adjacent to the project tend to be light industrial. The neighborhoods on the east side of I-25 are also primarily residential in character with industrial uses in the study area.

The existing landscape conditions within the corridor range from landscaping consisting of generally weak wooded trees and loose shrubs with irrigated turf to areas of non-irrigated native grasses. The landscape along the Sought Platte River under US 6 and along the west side of I-25 consists of riparian trees and shrubs and a mix of weedy and invasive plants. In general, the corridor lacks an overall cohesive landscape palette and treatment.

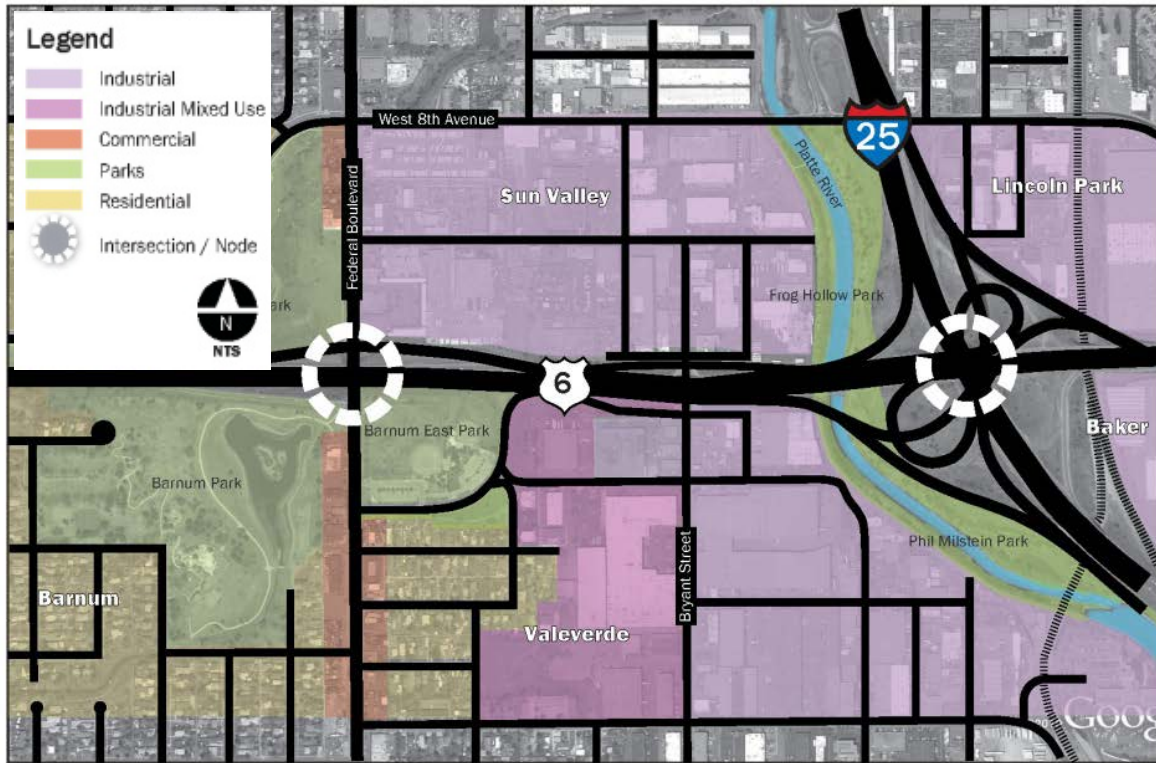


Figure 5: Existing Land Use and Circulation Map

The existing US 6 roadway and the US 6/I-25 interchange lacks a unifying identity and design aesthetic. Bridges and walls (including sound walls) in the study area lack consistent and cohesive design treatments, as shown in Figure 6.



Alameda and I-25 wall treatments



Southbound I-25 approaching US 6



Westbound US 6 at the Federal Boulevard Bridge



Looking at US 6 from Barnum East Park



Existing Federal Boulevard Bridge over US 6



Bryant Street under US 6

Figure 6: Collection of existing conditions along the corridor

Wall and aesthetic treatments south of the study area at the I-25 and Alameda interchange are currently under construction. These elements are primarily composed of form liner imprints that include images of natural elements and mechanically stabilized earth (MSE) walls and may help to influence the design aesthetic for the US 6 corridor, particularly the I-25/US 6 interchange improvements.

Primary Views

There are eight primary views that have been identified within the project area (see Figure 7). These views were selected due to their prominent location within the corridor, the number of people that would view them passing through the corridor, and their location related to adjacent viewing locations such as Barnum East Park. All of these views have the potential to change with the improvements anticipated within this project.

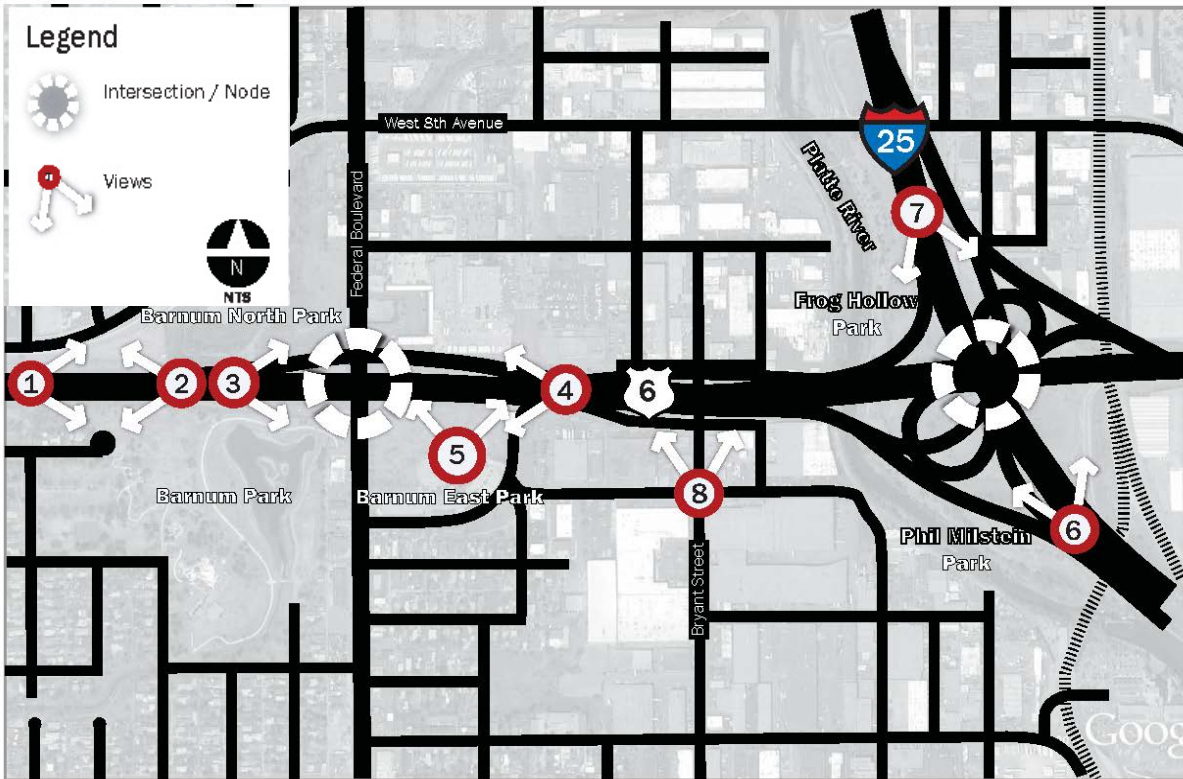


Figure 7: Views Key Map

1



- East bound US 6 at the Federal Boulevard exit (future pedestrian bridge location)

2



- Westbound US 6 approaching the Federal Boulevard bridge (future pedestrian bridge location)

3



- Eastbound US 6 approaching the Federal Boulevard bridge (new Federal Boulevard bridge replacement)

4



- On-ramp from I-25 southbound to westbound US 6 (new Federal Boulevard bridge replacement)

5



- Looking north from Barnum East Park towards US 6 (new on-ramp configuration location)

6



- Approaching the I-25/US 6 interchange from northbound I-25 (new US 6 bridge replacement)

7



- Approaching the I-25/US 6 interchange from southbound I-25 (new US 6 bridge replacement)

8



- Approaching the US 6 bridge from northbound Bryant Street (new US 6 bridge replacement)

Relevant FEIS Project Elements

The Valley Highway FEIS identifies a number of key aesthetics and urban design elements that need to be incorporated into the roadway design due to the highway improvements for increased traffic flow, increased visibility of new highway structures, and improvements to landscaped areas resulting from re-grading and reconstruction. The following mitigation measures from the Valley Highway FEIS form the basis of the design for the US 6 Bridges Design Build Project.

Table 7-4 of the Valley Highway FEIS states that the first mitigating measure for Phase 1 should use the conceptual "Kit of Parts." The Aesthetics Addendum from October 2006 contains the "Kit of Parts" and urban design guidelines for the Phase 1 and Phase 2 portions of the Valley Highway FEIS and ROD. Commitments within this document include:

- Suggestions that an overall urban design aesthetic be developed during phase 1 and then be updated as each following phase is designed
- Highway landscape should be open and expansive with clean lines
- Views should include vegetation that does not block views
- Composition of elements should include:
 - Terraced walls integrated into the landscape
 - Single species over multiple species
- Wall treatments should:
 - Be broken by wall caps and columns
 - Be terraced to mitigate scale
 - Incorporate natural materials, resists graffiti and be durable
 - Consider using vegetation to screen walls
 - Use textured relief for visual interest
 - Use themes and narratives
 - Be constructed to incorporate multiple materials, colors and patterns
 - Use pictorial elements that reflect local contextual elements
- Vehicular bridges should:
 - Be unique and strongly identifiable
 - Be open and transparent and use materials that reflect the local context
 - Have a form that reflects the purpose of the structure and responds to the scale of user
 - Incorporate distinctive colors and materials while adding lighting and signage detailing
- Pedestrian and bicycle bridges should be:
 - Scaled for pedestrian and bicycle use
 - Uniquely identifiable with distinctive forms
 - Accessible by stairs and ramps
 - Access should be enhanced by lighting and materials
 - Public art should be incorporated into structures
- Bridge piers should be:
 - Proportional and aesthetically pleasing
 - Use a composition of materials and incorporate designs that break down the scale
 - Landscaping should be incorporated to integrate the piers into the landscape

- Bridge railings should:
 - Be transparent to enhance visibility
 - Respond to the scale of users
 - Be used to separate pedestrian and bike traffic from auto traffic
 - Incorporate pedestrian scale slats when combined with auto barrier elements
- Lighting should incorporate:
 - Globe Luminaires in parks and parkways
 - Acorn Luminaires along commercial streets (preferred by CCD guidelines)
 - Promenade Pedestrian Double Luminaires in pedestrian focused areas
 - "Hockey Puck" street lamps (required by CCD)
- Slope and ditch paving:
 - Should be used to mitigate the scale of slope and ditch paving
 - Use textured walls to provide visual interest (also consider vegetation)
 - Should use a distinctive palette of colors and materials
- Medians and tree lawns should be:
 - As wide as possible
 - Vertically separated from the roadway surface
 - Of a residential character
 - Visually appealing incorporating a simple palette of vegetation
- Signage and documentation should:
 - Incorporate gateway elements announcing differing parts of the corridor
 - Incorporate landmarks that help to identify intersections, neighborhoods etc...
 - Identify unique places
 - Be legible for vehicles and pedestrians
- Public art and special features:
 - Should stand out from the existing context
 - Be placed at gateways
 - Be used as landmarks
 - Be visually interesting

Analysis

The US 6 improvements are divided into two pieces based on their relationship to I-25 for the purpose of aesthetic analysis. The US 6 bridge over I-25 is part of the Valley Highway corridor and should be designed to fit the color schemes and urban design treatments identified in the FEIS. The US 6 corridor from the BNSF Railway bridge to Knox Court is a separate corridor; at this time, CDOT does not have any standards for color or urban design treatments for this corridor.

Nodes

The I-25 Valley Highway FEIS urban design analysis and existing conditions identified two nodes within the project corridor. These nodes identify major roadway crossings and are the most visible project elements to either the pedestrian or motorist from US 6 and I-25.

The first node is the US 6/I-25 highway interchange (see Figure 8). This node is characterized by large highway structures: flyover structures, ramps and the US 6 bridge over I-25. Large landscaped areas within the interchange loop ramps have a non-distinct landscape treatment but can offer some visual

relief from the highway structures. The new US 6 bridge would be highly visible from I-25 in both directions. The South Platte River, South Platte River Trail, Frog Hollow Park and the Phil Milstein Park are all located within this node, but are not visible to motorists due to the elevated grades of US 6.

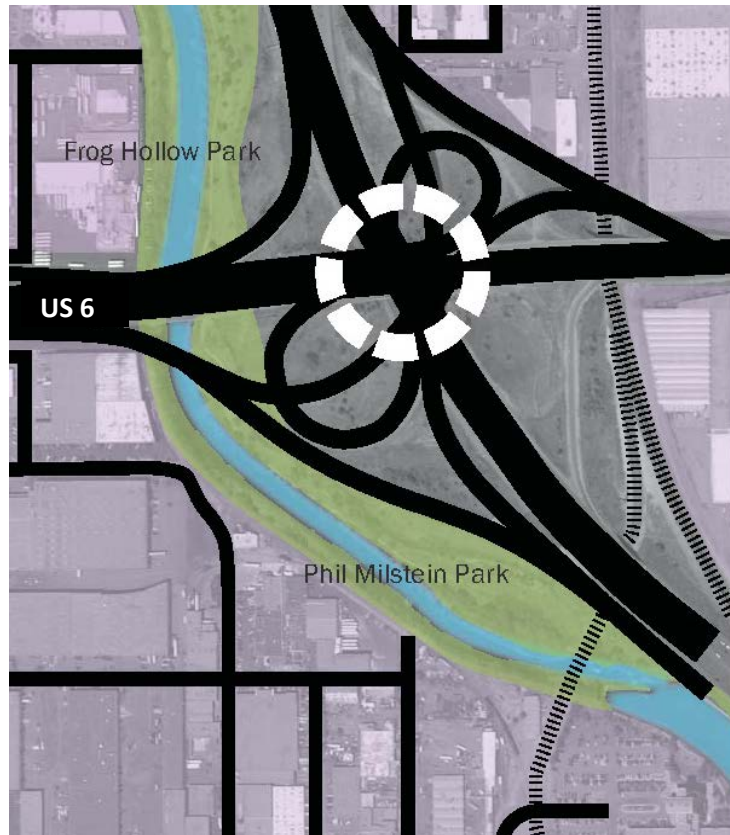


Figure 8: US 6 and I-25 Interchange Node

The second node is the US 6/Federal Boulevard Interchange (see Figure 9). US 6 passes under Federal Boulevard at this location. Views of Federal Boulevard are mostly blocked by the embankment from US 6, but the Federal Boulevard bridge does provide good views to the west of Barnum North and South Parks and downtown to the east. Current reconstruction plans for the Federal Boulevard bridge include attached sidewalks on either side for pedestrian circulation.

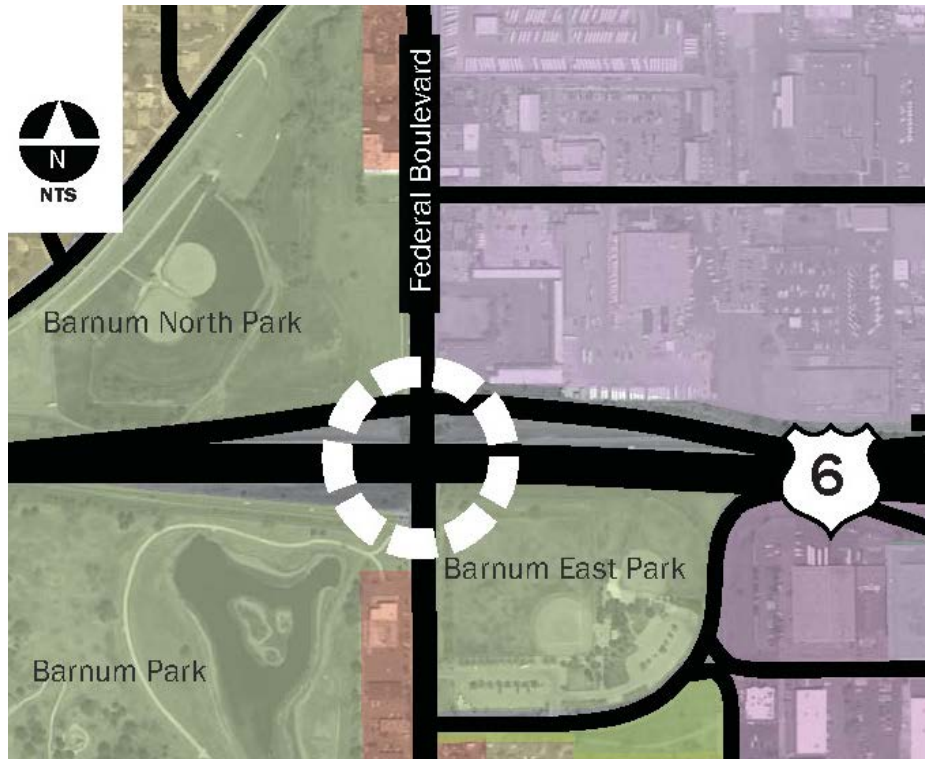


Figure 9: US 6 and Federal Boulevard Node

Bridge Recommendations

The US 6 Bridges Design Build Project would include eight new or reconstructed structures in the study area (See Figure 10). Following is a list of recommendations to enhance aesthetics and visual quality at each structure location.

1. US 6/BNSF Railway bridge (reconstructed)

This bridge is located just east of the I-25/US 6 interchange and is generally not visible to the public due to its location under US 6 and away from the I-25 corridor. Minimal aesthetic treatments are recommended for this bridge. Color treatment should match the grey color scheme of the I-25 corridor.

2. I-25 northbound to US 6 westbound tunnel (new)

This tunnel would parallel I-25 and be located on the east side of I-25 under US 6. The inside of the tunnel and portal on the south side would be visible to the motorists. Simple treatments are suggested for the inside of the tunnel. The portal should tie architecturally to the US 6 bridge over I-25. The color treatment should match the grey color scheme of the I-25 corridor.

3. US 6 bridge over I-25 (reconstructed)

This would be the most prominent bridge feature in the corridor due to its location above I-25. This bridge should match the grey color scheme of I-25, and should have aesthetic enhancements on the piers and pier cap ends.

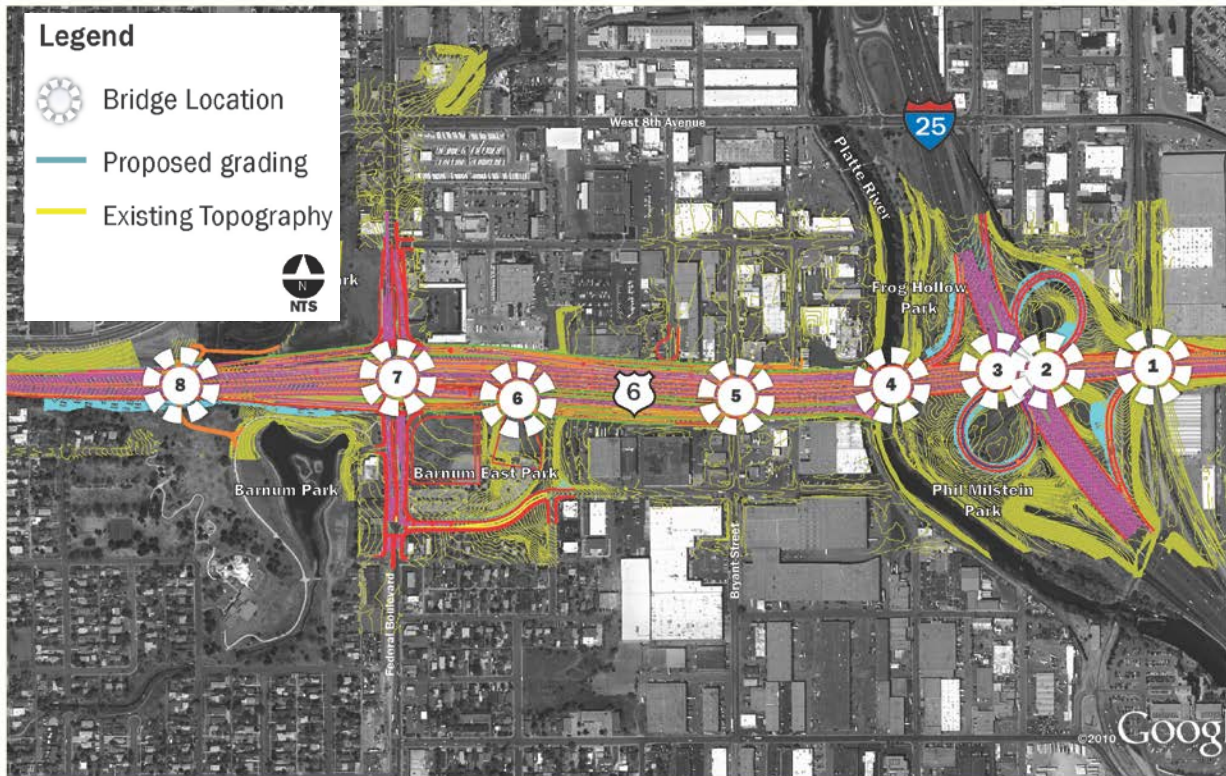


Figure 10: Bridge Locations

4. US 6 bridge over the South Platte River (reconstructed)

From the motorist point of view, this bridge would be viewed like a continuous part of the highway, without any major monumentation or visible structure. This bridge would be viewed on the underside by bicyclists and pedestrians using the South Platte River Trail. The bridge columns under this bridge should have an aesthetic treatment that matches the form liner treatments at adjacent walls at the top of the piers that ties to the other structures within the US 6 corridor.

5. US 6 bridge over Bryant Street (reconstructed)

The underside of this bridge would be viewed on by motorists, bicyclists and pedestrians on Bryant Street. There are no columns under this bridge, but the abutments and inside wall treatments would be visible to pedestrians, bicyclists and passing motorists. The inside wall features should have a rough face on the walls to reduce the potential for graffiti. To accomplish this, a fractured fin form liner for the entire vertical surface under the bridge is also recommended.

6. US 6 access ramp bridge (new)

This new bridge would be located on the south side of US 6 and would serve as the new access ramp to US 6 from northbound Federal Boulevard. Minimal aesthetic treatments should occur to this bridge due to its size, location, and lack of views from the pedestrian and motorist.

7. Federal Boulevard bridge over US 6 (reconstructed)

The Federal Boulevard bridge over US 6 is a prominent bridge in the corridor since it is one of the few bridges that passes over US 6. This bridge is a key linkage between the neighborhoods on each side of US 6 and should have a unique architectural treatment that fits within the larger corridor design scheme of Federal Boulevard south of US 6. There are good views to the east of downtown Denver from this bridge for both the motorist and the pedestrian. The views to the west are of the Knox Court bridge. The new pedestrian bridge will also be visible from Federal Boulevard when constructed. This bridge should have a steel railing on it that has a finer level of detail than the standard highway bridges. The structure color treatment should match Federal color Flat Dusty Brown (33690). The railings and light fixtures should match CCD's standard Federal green color.

8. Pedestrian bridge over US 6 (new)

This new pedestrian bridge over US 6 at Barnum Park would also be a prominent structural feature on the US 6 corridor. The location of this bridge between Knox Court and Federal Boulevard has the potential to be a gateway feature into the downtown area from the west. The bridge would be a prominently viewed structure for motorists from both directions on US 6, and provide good pedestrian views from the bridge to downtown. Views to the west from the bridge would be mostly blocked by the Knox Court bridge. This pedestrian bridge can offer design opportunities that a standard vehicular bridge cannot due to its smaller size and reduced loading characteristics. This bridge would serve as a key trail linkage across US 6. The following design parameters are recommended:

- Minimum of 12'-0" clear width
- ADA accessible
- Safety fence or barriers so items cannot be thrown off the bridge
- Adequate pedestrian-scaled lighting to create a safe environment
- Non-slip surface treatment
- Adequate turning radii and clearances for bicycles at bridge landings and approach



Figure 11: Examples of Pedestrian Bridges over the South Platte River Identifying Possible Pedestrian Bridge Structure Types

Wall Treatment Recommendations

Retaining wall segments would need to be constructed as part of this project (see Figure 12). These wall segments primarily fall between I-25 and Knox Court. The wall treatments used for the project should have similar features that tie the overall corridor segment together. The wall segments fall within two different categories: those viewed from the highway, and those viewed from surrounding land uses. The use of block walls is prohibited; MSE walls are the preferred construction method.

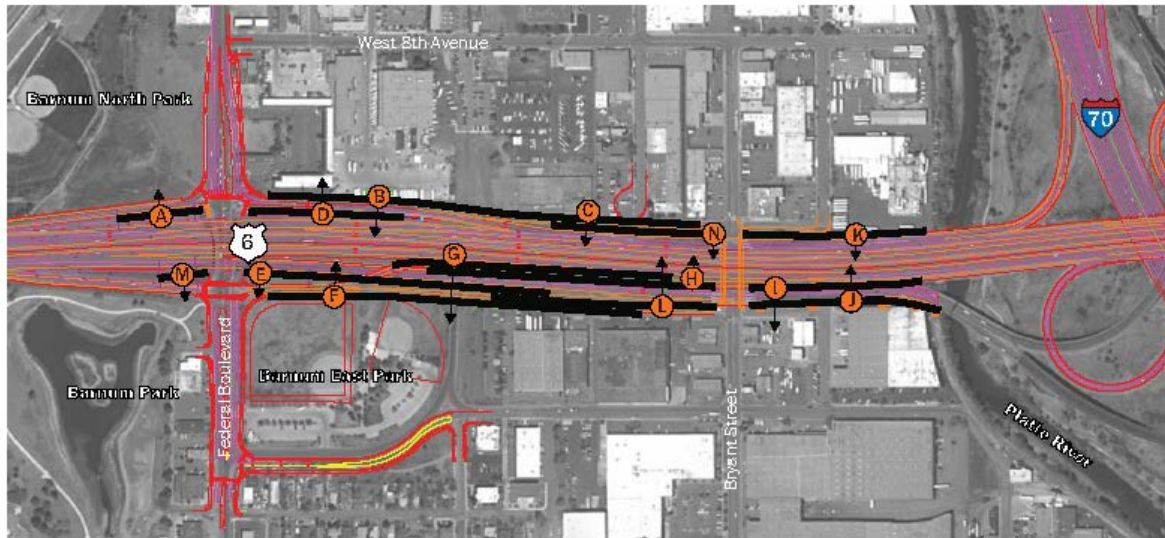


Figure 12: Potential Wall Locations Key Map

General Goals for Wall Treatments

Wall types can vary between cast in place, precast or precast MSE walls. The following are general goals for wall treatment solutions:

- Wall treatments should reflect an overall character and theme for the area; the character focus should be on the South Platte River and the three Barnum Parks around the Federal Boulevard/ US 6 node
- Retaining walls should have a distinct top (cap), middle (wall) and base
- Large expanses of wall should be broken up with either repetitive vertical columns/piers or have a graphic pattern along the length of the wall; vertical wall rustication joints for precast and cast in place walls should be approximately 10 feet on center
- Wall treatments that create a texture, pattern and relief should be used to provide visual interest and to break down the overall scale of the wall; where space allows, walls should be terraced to break up the scale of the wall
- Materials should require minimal maintenance (durable and long-lasting) and be resistant to graffiti.

Highway View Segments

There are a total of seven wall segments that would be viewed by highway motorists along the US 6 Bridges Design Build project. These walls would be needed to support entry and exit ramps and the elevated slip ramp from Federal Boulevard. These walls would vary in height from 3 feet up to 28 feet, with the longest visible segment from the highway approximately 990 feet in length.

The highway view segments are intended to create a uniform and contiguous urban design treatment that would help tie the many different walls together visually.

Neighborhood View Segments

There are a total of seven walls that would be visible from the surrounding neighborhoods and land uses. These walls would be generally out of view of the highway motorist due to their locations and screening by adjoining industrial areas. These walls should be a simple design that would resist vandalism and graffiti and repeat the prominent design features on the highway view elements.

The new wall structure that would be visible from Barnum East Park would be the most visible wall segment from the Barnum neighborhood. This wall should have an attractive finish that utilizes texture and wall graphics to create a backdrop for the park. This wall would also be a good candidate for public art opportunities that help to emphasize the uses of the park or the Barnum neighborhood.

Figure 13 shows different wall treatments that illustrate the use of pattern, wall texture and repetition as unifying elements. Figures 14 and 15 show other options for wall treatments.



Figure 13: Different Retaining Wall Form Liners and Patterns

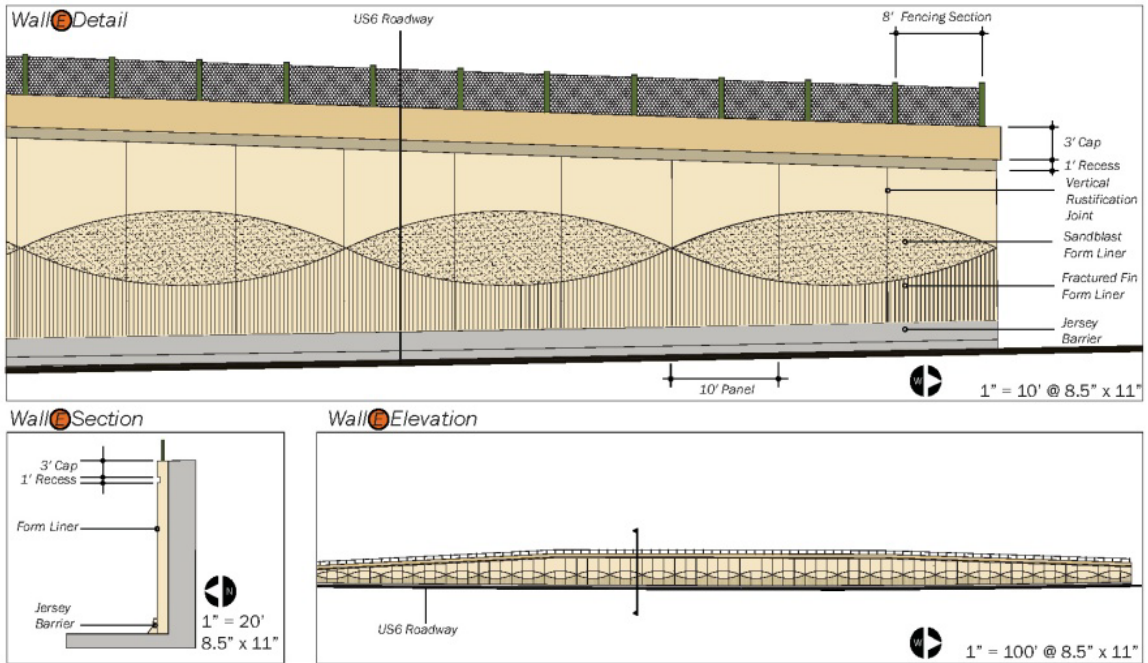


Figure 14: Wall Treatment Alternative A

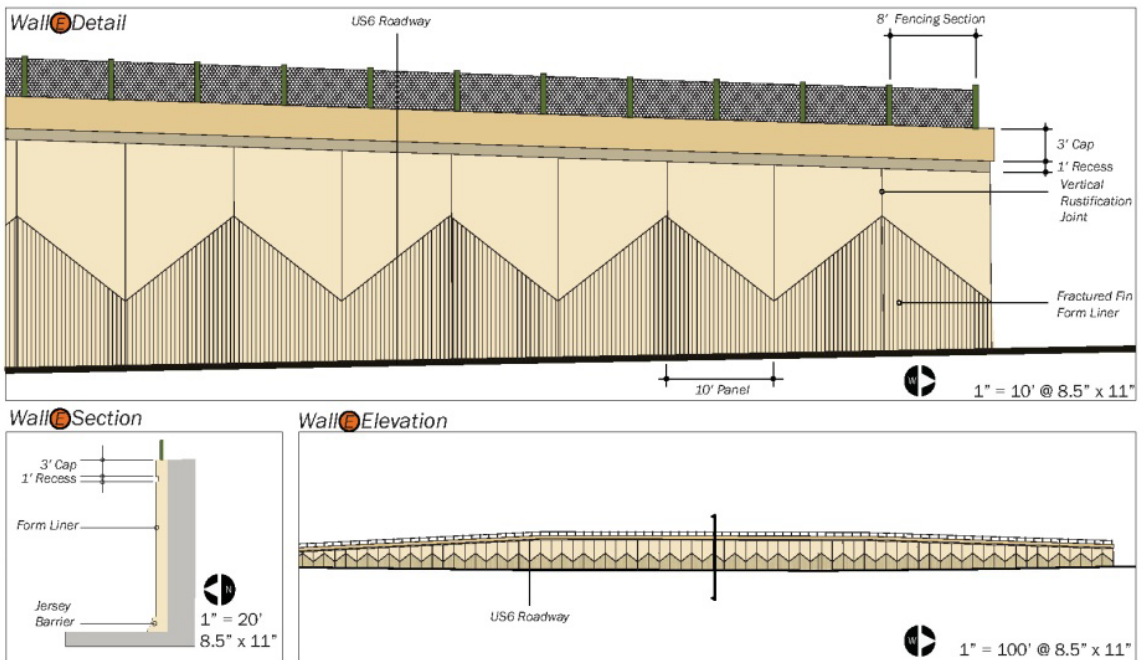


Figure 15: Wall Treatment Alternative B

Lighting Recommendations

CDOT standards dictate the use of high-mast fixtures for lighting on US 6, I-25 and the access ramps. Other lighting that would be installed as part of the US 6 Bridges Design Build Project includes street lighting on the Federal Boulevard bridge, the pedestrian bridge over US 6, under bridge lighting on the US 6 bridges over Bryant Street and the South Platte River Trail.

Highway Lighting

Light fixtures should be the CDOT standard High Mast fixture.

Bridge Lighting

Federal Boulevard

Lighting on Federal Boulevard should match the intent of the design south of US 6 along Federal Boulevard, specified in the SH 88/Federal Boulevard Environmental Assessment and associated improvements that are currently under construction. CCD also has plans for improvements from 5th Avenue to the north that this lighting would tie into.

Pedestrian Bridge

Lighting for the pedestrian bridge needs to be appropriately scaled for the bicycle and pedestrian use of the bridge. The fixtures should adequately illuminate the bridge walking surface. Accent lighting should be added to the bridge to make its location visible to passing motorists.

Under Bridge Lighting

Bryant Street

Wall pack lighting fixtures should be placed on both sides of the Bryant Street bridge to illuminate the attached sidewalks along Bryant Street.

South Platte River

Wall pack overhead lighting fixtures should be placed on the underside of the bridge above the South Platte River Trail. These fixtures should match other under bridge fixtures along the South Platte River Trail. Where possible, uplighting should be used under the bridge to enhance the environment under the bridge and to add additional lighting for safety purposes.

Landscape and Irrigation Recommendations

There are a number of opportunities for landscape improvements within the corridor.

- I-25 and US 6 Interchange. In this area, there are large areas of open landscape within the ramps and adjacent to the corridor. These highway landscape treatments should consist of irrigated sustainable turf and urban landscape mass plantings consistent in density to the existing plantings. Due to the grading and drainage requirements of the project, these areas would be fully regraded as part of the project, and there would be areas where plantings would not be able to occur due to water storage and drainage ways. Plantings should be loosely grouped at the edges of these detention areas, allowing for views into and through the drainage basins.
- The new detention pond on the north side of US 6 west of Bryant Street. This area should be landscaped similar to the US 6 and I-25 interchange.
- Landscape improvements to Barnum Park East in conjunction with the CCD Parks Department.
- Remaining landscape remnants around the new Federal bridge structure. These plantings should tie back into the plant palette at the adjacent Barnum Park (North, South, or East).
- All landscape areas shall be irrigated.

Other Recommendations

Medians

The only median treatments identified as part of this project are the medians along Federal Boulevard at each end of the Federal Boulevard bridge. These medians should be cast in place concrete with an integral color to match the Federal Boulevard treatments being constructed south of US 6.

Slope and Ditch Paving

Slope and ditch paving is used at the underside of bridges or where the bridge structure rises from the ground at the abutments. This paving is a different type than the vertical faces of the bridge abutments or wall treatments, but can be treated in a similar way to provide a uniform treatment and consistency in the corridor. These surfaces should be similar in color and treatment to the bridges they are adjacent to. These treatments should be durable, easy to maintain, and graffiti resistant.

Slope paving materials under the US 6 Platte River bridge should match the Urban Drainage and Flood Control requirements for use along the river corridor.

Public Art and Special Features

There are a number of opportunities for public art and other special feature within the US 6 corridor. These features should either be located where the maximum number of people would view them, such as on a bridge pier or structure, or where a smaller number of viewers can see the feature as a discovered item. Special features should match the context in which they are located by using scale, materials, texture, color and themes that are relevant to the area and corridor. Art can be used as:

- A gateway from one area into another;
- A marker of a specific key location or nodes; and
- To enhance large wall expanses that are seen from Barnum Park or from US 6.

Summary of Recommendations

The design of the Proposed Project should include the highway “kit of parts.” Due to design changes, the “kit of parts” has been modified since what was presented in the FEIS, as presented in Table 1.

As it relates to aesthetics and urban design, the design changes between the FEIS Preferred Alternative/2007 ROD decision and the Proposed Project include the addition of the pedestrian/bicycle bridge over US 6 and the addition of three bridge replacements.

Table 1: Summary of Previously and Currently Recommended Aesthetics and Urban Design Highway Kit of Parts

Improvement Category	FEIS and 2007 ROD General Recommendations	US 6 Bridges Design Build Project: What has Changed?	Proposed Project General Recommendations
<p>Improvements to highway landscapes, retaining walls in areas to be reconstructed</p>	<ul style="list-style-type: none"> -Be broken by wall caps and columns. -Be terraced to mitigate scale. -Incorporate natural materials, resists graffiti and be durable. -Consider using vegetation to screen walls. -Use textured relief for visual interest. -Use themes and narratives. -Be constructed to incorporate multiple materials, colors and patterns. -Use pictorial elements that reflect local contextual elements 	<p>No changes that affect aesthetic and urban design impacts</p>	<p>Same as FEIS/2007 ROD, along with:</p> <ul style="list-style-type: none"> -Walls along I-25 to match the FEIS design -Complementary but unique wall treatments for US 6 segment -Walls should have a distinct cap, middle and base -Large expanses of wall should be broken up with either repetitive vertical columns/piers or have a graphic pattern along the length of the wall; vertical wall rustication joints for precast and cast in place walls should be approximately 10 feet on center Wall treatments that create a texture, pattern and relief should be used to provide visual interest and to break down the overall scale of the wall; where space allows, walls should be terraced to break up the scale of the wall -Materials should require minimal maintenance (durable and long-lasting) and be resistant to graffiti.

Improvement Category	FEIS and 2007 ROD General Recommendations	US 6 Bridges Design Build Project: What has Changed?	Proposed Project General Recommendations
<p>Replacement of Federal Boulevard and South Platte River bridges would create aesthetics and urban design opportunities.</p>	<p>Vehicular bridges should:</p> <ul style="list-style-type: none"> -Be unique and strongly identifiable. -Be open and transparent and use materials that reflect the local context. -Have a form that reflects the purpose of the structure and responds to the scale of user. -Incorporate distinctive colors and materials while adding lighting and signage detailing. <p>Pedestrian and bicycle bridges should be:</p> <ul style="list-style-type: none"> -Scaled for pedestrian and bicycle use. -Uniquely identifiable with distinctive forms. -Accessible by stairs and ramps. -Access should be enhanced by lighting and materials. -Public art should be incorporated into structures <p>Bridge piers should be:</p> <ul style="list-style-type: none"> -Proportional and aesthetically pleasing. -Use a composition of materials and incorporate designs that break down the scale. -Landscaping should be incorporated to integrate the piers into the landscape. <p>Bridge railings should:</p> <ul style="list-style-type: none"> -Be transparent to enhance visibility -Respond to the scale of users. -Be used to separate pedestrian and bike traffic from auto traffic. -Incorporate pedestrian scale slats when combined with auto barrier elements. 	<ul style="list-style-type: none"> - Additional replacement of US 6 bridges over Bryant Street, I-25, and BNSF - New pedestrian/ bicycle bridge over US 6 	<p>Same as FEIS/2007 ROD, along with:</p> <ul style="list-style-type: none"> -Bridges 1, 2 and 3 should match the I-25 FEIS color scheme -Bridges 4, 5, 6, 7 and 8 should have a unique but complementary design -The South Platte River bridge columns (below the bridge) should have an aesthetic treatment that matches the form liner treatments at adjacent walls at the top of the piers that ties to the other structures within the US 6 corridor. <p>Pedestrian Bridge to have the following design parameters:</p> <ul style="list-style-type: none"> -Minimum of 12'-0" clear width. -ADA accessible. -Safety fence or barriers so items cannot be thrown off the bridge. -Adequate pedestrian-scaled lighting to create a safe environment. -Non-slip surface treatment. -Adequate turning radii and clearances for bicycles at bridge landings and approaches.

Improvement Category	FEIS and 2007 ROD General Recommendations	US 6 Bridges Design Build Project: What has Changed?	Proposed Project General Recommendations
Improvements to high-mast lighting in areas to be reconstructed	<p>Lighting should incorporate:</p> <ul style="list-style-type: none"> -Globe Luminaires in parks and parkways -Acorn Luminaires along commercial streets (preferred by CCD guidelines). -Promenade Pedestrian Double Luminaires in pedestrian focused areas. -"Hockey Puck" street lamps (required by CCD). 	Bridge replacement at Bryant Street, which includes pedestrian traffic below US 6	<p>Same as FEIS/2007 ROD, along with:</p> <ul style="list-style-type: none"> -Under bridge lighting-wall pack lighting fixtures
Improvements to slope and ditch paving in areas to be reconstructed	<p>Slope and ditch paving:</p> <ul style="list-style-type: none"> -Should be used to mitigate the scale of slope and ditch paving. -Use textured walls to provide visual interest (also consider vegetation). -Should use a distinctive palette of colors and materials. 	No changes that affect aesthetic and urban design impacts	Same as FEIS/2007 ROD
<p>-Improvements to highway landscapes in areas to be reconstructed</p> <p>-Limited amount of medians and tree lawns in the US 6 segment. Paved medians only.</p>	<p>Medians and tree lawns should be:</p> <ul style="list-style-type: none"> -As wide as possible -Vertically separated from the roadway surface. -Of a residential character. -Visually appealing incorporating a simple palette of vegetation. 	No changes that affect aesthetic and urban design impacts	Same as FEIS/2007 ROD

Improvement Category	FEIS and 2007 ROD General Recommendations	US 6 Bridges Design Build Project: What has Changed?	Proposed Project General Recommendations
Improvements to signage in areas to be reconstructed	<p>Signage and documentation should:</p> <ul style="list-style-type: none"> -Incorporate gateway elements announcing differing parts of the corridor -Incorporate landmarks that help to identify intersections, neighborhoods etc... -Identify unique places -Be legible for vehicles and pedestrians 	No changes that affect aesthetic and urban design impacts	Same as FEIS/2007 ROD
No impacts specific to aesthetics and urban design	<p>Public art and special features:</p> <ul style="list-style-type: none"> -Should stand out from the existing context -Be placed at gateways -Be used as landmarks -Be visually interesting 	No changes that affect aesthetic and urban design impacts	Same as FEIS/2007 ROD

Improvement Category	FEIS and 2007 ROD General Recommendations	US 6 Bridges Design Build Project: What has Changed?	Proposed Project General Recommendations
<p>-Improvements to highway landscapes in areas to be reconstructed</p> <p>-Removal of existing vegetation during construction.</p> <p>-Potential introduction of noxious weeds into areas disturbed by construction.</p>	<p>-Revegetate construction areas using CDOT approved native seed mix. If construction occurs outside of appropriate seeding windows, slopes will be temporarily protected from erosion using mulch and mulch tackifier.</p> <p>-Replace trees greater than 2 inches in diameter on a 1:1 basis. Existing shrubs removed during construction in the South Platte River riparian area will be replaced with native species to their pre-construction aerial coverage.</p> <p>-Impacted landscape areas (irrigated or otherwise) shall be enhanced and incorporated into the final design to ensure the existing landscape does not become fragmented.</p> <p>-Target noxious weed populations by preparing and implementing an Integrated Weed Management Plan.</p> <p>-Conduct habitat disturbing activities, such as tree removal, grading, scraping, grubbing, etc., during the non-breeding season unless the area has been verified by a qualified biologist that no active nests are present.</p>	<p>-Large detention areas at US 6/I-25 interchange and north of US 6 east of Federal Boulevard.</p> <p>-Increased vertical clearance at South Platte River</p>	<p>Same as FEIS/2007 ROD, along with:</p> <p>-I-25/US 6 interchange shall have irrigated sustainable turf and urban mass plantings consistent in density to the existing plantings.</p> <p>-Plantings should be loosely grouped at the edges of detention ponds to allow for views into and through the drainage areas.</p> <p>-Landscape improvements adjacent to the Barnum Parks (North, South and East) should tie into the existing park planting palette.</p> <p>-All landscape shall be irrigated.</p>

Mitigation

Comparison to FEIS and 2007 ROD

The FEIS identified the following aesthetics and urban design impacts that relate to the US portion of the Preferred Alternative:

- Improvements to highway landscapes, retaining walls, high-mast lighting, signage, slope and ditch paving, and concrete barriers

Similarly, the FEIS called for the following aesthetics and urban design mitigation:

- Use conceptual “kit of parts” in design of aesthetic elements and treatments
- Continue coordination with other agencies through final design and implementation

Proposed Project Mitigation

The Proposed Project mitigation is similar to what was stated in the FEIS. The specific mitigation is:

- CDOT will require the Contractor to use conceptual “kit of parts” in design of aesthetic elements and treatments. A “kit of parts” was developed during the EIS process and is described in the Final EIS and accompanying Aesthetics and Urban Design Report.
- With CDOT involvement, continue coordination with other agencies and apply recommendations from the 2012 Aesthetics Technical Report, Appendix D, during final design and construction.

Adaptive Mitigation

The final design and construction of the Proposed Project may result in adjustments that affect the area impacted or the improvements proposed related to wall treatments, bridge treatments, lighting, slope and ditch paving, medians and tree lawns, signage and documentation, public art and special features, and landscaping and vegetation. If one of these adjustments is proposed, the design/build contractor will need to work with CDOT to secure support from the appropriate CCD agency and approval from FHWA for any changed impacts and mitigation commitments.

References

Colorado Department of Transportation. November 2006. Final Environmental Impact Statement/Final Section 4(f) Evaluation: I-25 Valley Highway Project, Logan to US 6.

Federal Highway Administration. July 2007. Record of Decision: I-25 Valley Highway Project, Logan to US 6.

Felsburg Holt & Ullevig. February 2005. Aesthetics and Urban Design Report for the Valley Highway EIS, Denver, Colorado.

Felsburg Holt & Ullevig. October 2006. Aesthetics and Urban Design Report for the Valley Highway EIS, Addendum "Kit of Parts."

- Federal Boulevard Alameda to 6th Avenue Environmental Assessment, October 2007
- Urban Design Manual for Region 6-DRAFT, undated.