CDOT

WB I-70 Peak Period Shoulder Lane

VISUAL TECHNICAL REPORT

October 26, 2018

Categorical Exclusion

VISUAL TECHNICAL REPORT

WESTBOUND I-70
PEAK PERIOD SHOULDER LANE

Prepared for:

Prepared by:

October 26, 2018

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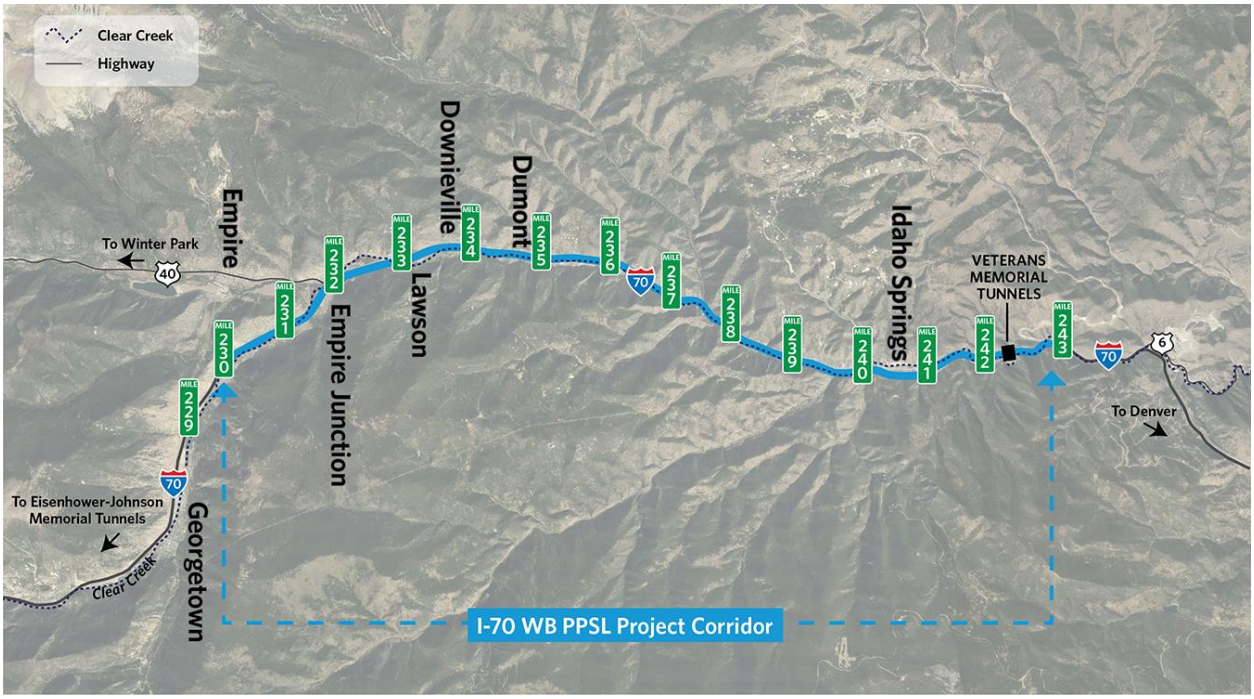
Acronyms and Abbreviations

AVE	Area of Visual Effect
BLM	Bureau of Land Management
CDOT	Colorado Department of Transportation
CSS	Context Sensitive Solutions
EB	eastbound
EA	Environmental Assessment
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
I-70	Interstate 70
MP	Milepost
PPSL	Peak Period Shoulder Lane
PEIS	Programmatic Environmental Impact Statement
ROD	Record of Decision
SH	State Highway
US 40	U.S. Highway 40
USFS	U.S. Forest Service
VIA	A visual impact assessment
WB	Westbound

Section 1. Purpose of the Report

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing a Categorical Exclusion for proposed changes to the westbound (WB) lanes of Interstate 70 (I-70) between approximately milepost (MP) 230 and MP 243, in Clear Creek County, Colorado (Proposed Action; Figure 1). The Proposed Action includes the addition of a 12-mile tolled Peak Period Shoulder Lane (PPSL) between east Idaho Springs and the U.S. Highway 40 (US 40)/I-70 interchange in the WB direction and improvements to the State Highway (SH) 103 interchange. The Proposed Action improves operations and travel time reliability in the WB direction of I-70 in the area of visual effects (AVE). Additionally, the improvements are consistent with the *I-70 Mountain Corridor Programmatic Environmental Impact Statement* (PEIS; CDOT 2011), PEIS Record of Decision (ROD; FHWA 2011), Context Sensitive Solutions (CSS) on the I-70 Mountain Corridor (CDOT 2009) process, and other commitments of the PEIS and ROD. The Proposed Action fits within the definition of "expanded use of existing transportation infrastructure in and adjacent to the corridor" included in the "Non-Infrastructure Related Components" element within the Preferred Alternative's Minimum Program of Improvements.

Figure 1. Project Corridor



Source: HDR 2018.

This document discusses the regulatory setting and describes the affected environment and the impacts of the Proposed Action on visual resources within the AVE. This document also identifies mitigation standards, including applicable measures identified in the I-70 Mountain Corridor PEIS, which reduce visual impacts during construction and operations.

Section 2. Summary of Visual Impacts from Previous NEPA Analyses

2.1 How were Visual Resources Treated in the I-70 Mountain Corridor PEIS (Tier 1)?

The *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement* (CDOT, 2011a), a Tier 1 document, and the ROD committed to conducting specific additional analysis and coordination regarding visual impacts during Tier 2 projects. The document analyzed the potential visual impacts along I-70 from Golden to Glenwood Springs. It compiled site views both to and from I-70 for 20 communities, recreational viewers, and roadway viewers and the effect project elements would have on those views. The project elements that were analyzed include landform: retaining walls; roadside cut-and-fill slopes, median treatments and structures elements; elevated platforms, piers/columns, bridges, catenary, barrier, and fencing.

The PEIS determined that the Preferred Alternative results in the greatest adverse visual impact because of a high level of visual contrast.

The following commitments from the PEIS and ROD apply to this Tier 2 project:

- Conduct a more detailed and localized analysis of visual resources in individual jurisdictions and segments along the corridor to define important visual elements further and assess the potential effects of Tier 2 processes.
- Consider creating visual simulations during Tier 2 processes to illustrate the visual change at specific locations accurately. CDOT will continue to coordinate with all jurisdictions regarding direct and indirect impacts to visual resources.
- Explore mitigation options (such as design modifications) that could minimize disruption to or interference with the corridor's historic towns, and mountain scenery, using the *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines (CDOT 2010)*.
- Maintain pedestrian and bicycle access during construction to the extent practicable.

The FHWA, in cooperation with CDOT, prepared an Environmental Assessment (EA) and Finding of No Significant Impact (FONSI) for proposed changes to the eastbound (EB) lanes of I-70 and the EB bore of the Twin Tunnels (now known as the Veteran's Memorial Tunnels in Clear Creek). The Twin Tunnel project limits extended from 238.5 on the west side to MP 244.5 on the east overlap between the WB PPSL project and the Twin Tunnels project occurs from MP 238.5 on the west side to MP 243 on the east side.

2.2 How were Visual Resources Treated in the Twin Tunnels Expansion Projects?

FHWA and CDOT prepared a Categorical Exclusion for the WB bore of the Twin Tunnels, which consisted of the same milepost and AVE as the Twin Tunnels EA (EB) and FONSI. Findings from this study were similar to the findings from the Twin Tunnels EA and FONSI completed for the EB direction.

The visual elements examined during the Twin Tunnels Expansion projects were the construction of the tunnels, including signage, new walls, and an expanded highway footprint. The construction also included vegetation clearance and the installation and maintenance of erosion control best management practices. Highway users and recreationalist were expected to experience minor to moderate visual impacts based on the Project.

CDOT committed to reducing visual effects during operation by complying with the following:

- CDOT is committed to incorporating the *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines* to avoid and minimize negative effects on visual quality in regards to the rockfall mitigation to be designed to blend in with the color and texture of the existing geology.
- Added vegetation to enhance the natural setting in locations where feasible.

CDOT committed to reducing visual effects during construction by complying with the following:

- Remove visually obtrusive erosion control devices
- Stockpile areas will be in containers or neatly organized, cleaned and located in less visibly sensitive areas and, whenever possible, not visible from the Scott Lancaster Memorial Trail.
- Lighting, including “down-lighting,” was directed toward the interior of the construction staging and work areas, and was shielded so that it does not spill over into adjacent areas.

2.3 How were Visual Resources Treated in the EB I-70 Peak Period Shoulder Lane Categorical Exclusion (Tier 2)?

The FHWA, in cooperation with CDOT, prepared a Categorical Exclusion for proposed changes to the EB lanes of I-70 between approximately MP 230 and MP 243, in Clear Creek County, Colorado. A *Visual Impact Technical Memorandum* (CDOT 2014) discussed the regulatory setting and described the visual resources and the impacts of the Proposed Action on the visual character within the AVE. The WB PPSL AVE is located within the same study boundaries of the EB PPSL Categorical Exclusion.

The features that have the highest potential to affect AVE visual character and quality were:

- Addition of downslope retaining walls in nine locations, re-facing of one wall adjacent to the SH 103 off-ramp and an additional wall in east Idaho Springs to carry the new Exit 241 bridge and associated ramps.
- Removal and replacement of two bridges that go over I-70 (the SH 103 and the Exit 241 bridge replacement) and interchange improvements.
- Addition of safety features including emergency pullouts, widening on-ramp locations and signage.
- Narrowing the existing median in two locations.
- Rebuilding the Water Wheel Park and rockfall mitigation east of the Park.

The visual impact of each of these features was determined to be minor.

CDOT made the following commitments relevant to this Tier 2 project:

- CDOT will continue to work with the Technical Team through final design to ensure signs are placed to minimize impact to sensitive resources.
- Work with specialty contractors to determine the most effective means and methods for rockfall mitigation that meet geotechnical and aesthetic needs and incorporate strategies from the *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines.*
- Explore mitigation options (such as design modifications) that could minimize disruption to or interference with the corridor's historic towns, and mountain scenery will be using the *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guideline.*

Section 3. What Process was Followed to Analyze Visual Impacts

3.1 Methodology

The visual analysis follows guidance from the 2015 Federal Highway Administration's *Guidelines for the Visual Impact Assessment of Highway Projects.* Also, the *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement*, Aesthetic Guidance, and Design Criteria documents were used and identification of specific views and features for resource analysis.

Potentially sensitive viewer groups include those who travel through the corridor, those who live in the corridor and view Proposed Action visual elements and those who engage in recreational activities. Typically, cyclists, rafters, pedestrians, and corridor residents are more sensitive to changes in the viewshed because the duration of views is longer.

Assessing visual compatibility, viewer sensitivity to changes and degree of the visual effects on visual quality determine the visual impacts of a Proposed Action. Factors used to do this evaluation include the level of contrast of the Proposed Action with the existing visual character and the compatibility of specific elements with the visual character. Proximity, extent, view duration and viewer awareness are measures used to quantify viewer sensitivity.

3.2 What is a Visual Impact Assessment?

A visual impact assessment (VIA) documents the adverse and beneficial impacts on visual quality as a result of a project to inform the project decision-making process. The VIA also "provides designers with the information they need to most effectively mitigate adverse impacts on visual quality while implementing concepts to enhance existing visual quality" (FHWA, 2015).

Using the VIA scoping questionnaire, Appendix A, the WB PPSL Project was determined to need an abbreviated VIA. Elements of the Proposed Action that were determined to be of concern on this scoping form are the barrier walls, business visibility, and rockfall mitigation.

Visual Impact Assessment Process

The VIA process is carried out in four phases:

1. Establishment—The primary purpose of the establishment phase is to define the AVE. This is done by considering the landscape constraints and the physiological limits of human sight
2. Inventory—The purpose of the inventory phase is to examine the visual quality of the AVE.
3. Analysis—The purpose of the analysis phase is to assess the impacts the project may cause to the visual resources and the viewers, including describing the degree of impacts as beneficial, adverse, or neutral.
4. Mitigation—The purpose of the mitigation phase is to define the mitigation and enhancement efforts to be included in the project design.

Conducting a Visual Assessment in Four Steps:
1. Establishment
2. Inventory
3. Analysis
4. Mitigation

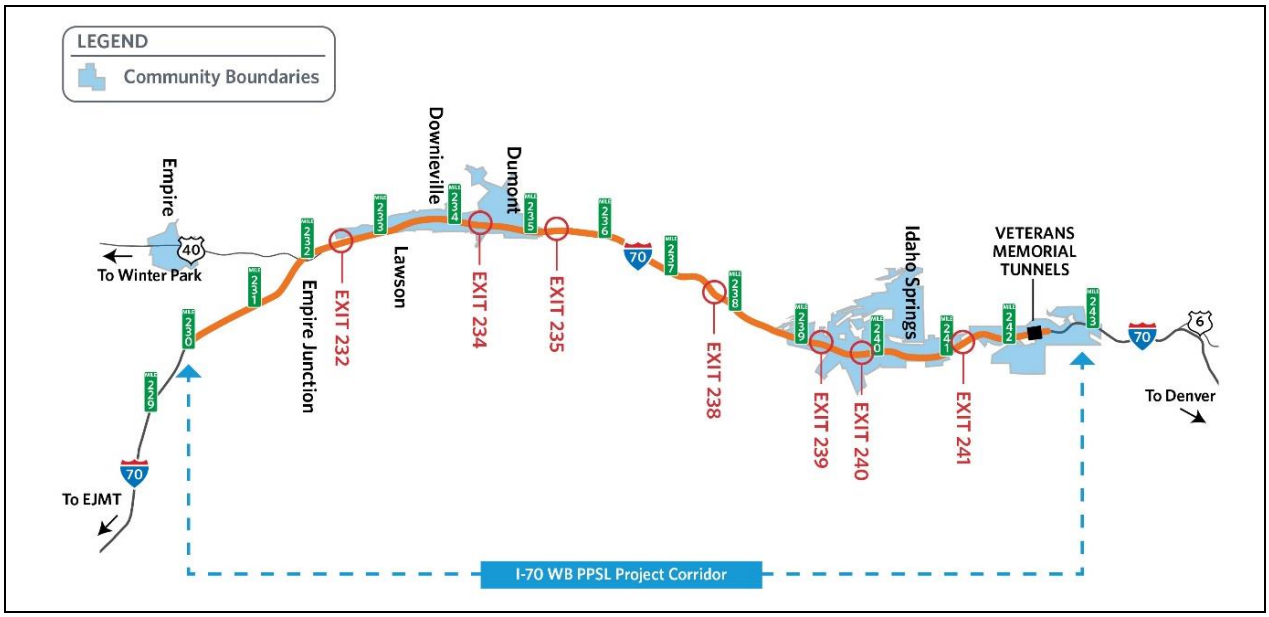
3.3 Study Area

The study area for the WB PPSL project encompasses CDOT right-of-way along I-70 in both directions from MP 243 to MP 230 and areas immediately adjacent to the right-of-way. This study area was used to evaluate the **direct** effects of the Proposed Action.

For transportation and socioeconomic impacts, the study area for **indirect** effects includes Clear Creek County and the communities of Idaho Springs, Downieville-Lawson-Dumont, and the town of Empire. This area is broadly defined and includes the communities and other areas that would be **indirectly** affected by the Proposed Action. The indirect effects study area includes the communities shown in Figure 2.

For the remaining resources, the study area for **indirect** effects generally includes a 0.25-mile buffer around the study area. This area encompasses the communities and other areas that would be indirectly affected by the Proposed Action.

Figure 2. Study Area Communities



3.4 Regulations

This section identifies the relevant federal, state, regional, and local regulations, guidelines, and/or laws that apply to visual assessments.

3.4.1 Federal

- **Section 4(f); the National Historic Preservation Act of 1966[1].** Requires that federal agencies evaluate the impact of all federally funded permitted projects on eligible historic properties, including visual impacts to and from historic properties.
- **National Environmental Preservation Act (NEPA) of 1969[2].** NEPA was signed into law as a broad national framework to assure that all branches of government give proper consideration to the environment prior to undertaking any major federal action that could affect the environment.
- **FHWA, 1981, *Visual Impact Assessment for Highway Projects*, Publication No. FHWAHI-88-054[3].** Developed in the early 1980s, this document provided the first guidance for how visual effects should be considered and addressed in road projects.
- **FHWA, 2015c, *Guidelines for the Visual Impact Assessment of Highway Projects*, No. FHWA-HEP15-029[4].** Updated guidelines for the visual assessment of highway projects were developed to recognize the visual importance of US highways and to assess visual impacts.

3.4.2 State

- **CDOT, 2014, *Landscape Architecture Manual*[5].** Developed in 2014, the *Landscape Architecture Manual* purpose is to expand transportation design decisions beyond strictly functional and engineering criteria within a Context Sensitive Solutions approach.
- **CDOT. 2011, *Mountain Mineral Belt Aesthetic Guidance*[6].** The Mountain Mineral Belt Aesthetic Guidance was developed to recognize the high visual quality of the corridor and provide an aesthetic vision to guide the design of projects and improvements.
- **CDOT, 2011, *I-70 Mountain Corridor Aesthetic Guidance*[7].** Developed an aesthetic vision for the overall corridor. The guidance is intended to be used in all design efforts as part of the CSS process. The guidelines were updated in 2015 to reflect lessons learned and best management practices.

3.4.3 Local and Regional

- **Clear Creek County, 2030, Community Master Plan[8].** Update from 2017, this document is the primary policy tool to advise decision-making on a county level.

[1] http://www.achp.gov/nhpa.pdf.
[2] https://ceq.doe.gov/.
[3] http://www.dot.ca.gov/ser/downloads/visual/FHWAVisualImpactAssmt.pdf.
[4] https://www.environment.fhwa.dot.gov/env_topics/other_topics/VIA_Guidelines_for_Highway_Projects.aspx#chap1.
[5] https://www.codot.gov/programs/environmental/landscape-architecture/cdot-landscape-architecture-manual-8-18-14/view.
[6] https://www.codot.gov/projects/contextsensitivesolutions/docs/aesthetics/aesthetics-design-segment-guidance/mountain-mineral-belt-design-segment-3-31-11.pdf.
[7] https://www.codot.gov/projects/contextsensitivesolutions/design/i-70-mountain-corridor-aesthetics-guidance.
[8] http://www.co.clear-creek.co.us/DocumentCenter/View/929.

- **Clear Creek County, 2014, *Clear Creek County Vision for the I-70 Mountain Corridor*[9].** Developed as an evaluation system to allow the County to review impacts along the I-70 Mountain Corridor.
- **Clear Creek County, 2005, Clear Creek Greenway Plan[10].** Based off of a priority of the 2003 Open Space plan, the Plan outlines the goals and objectives of the 36-mile recreational trail.
- **City of Idaho Springs, 2017, Envision Idaho Springs[11].** Developed as a long-range plan that articulates a vision for the future of the City of Idaho Springs.

3.5 Public Involvement

Between November 2016 and July 2017, CDOT conducted a pre-NEPA study on WB I-70 in the Mountain Corridor between the top of Floyd Hill (MP 247) and the Eisenhower-Johnson Memorial Tunnels (MP 215). The pre-NEPA study was called the Concept Development Process (CDP)[12].

Comments specific to visual resources from the public involvement during the Concept Development Process included:

- Clear signage and instructional signage is needed.
- Sight distance along the express lane and frontage road is dangerous due to significant amount of truck traffic, speed and foliage that can block vision.
- Visual effect that potential rock cuts would have throughout the project limits.
- Visual enhancements are needed.

A face to face meeting occurred in July 2017 and September 2018, an online public meeting was held and targeted outreach occurred within the low income and minority communities adjacent to I-70. Input related to visual impacts included:

- A recommendation to raise Exit 240 ramps so that travelers can see across the bridge
- Height of the noise walls on the west end of Idaho Springs casts shadows on Miner Street below and properties along Miner Street, making it dangerous in the winter.
- Height of barrier walls and glare screen is a concern—in case the view of historic Idaho Springs is blocked.
- Visual enhancements needed on the different barrier heights throughout Idaho Springs to make them more consistent and more aesthetically pleasing.

3.6 Context Sensitive Solutions

That CDP process and the subsequent National Environmental Policy Act process followed the I-70 Mountain Corridor CSS process and the 6-Step Decision-Making Process. Individuals from local jurisdictions, communities, state and federal agencies and special interest groups were a part of a Project

[9] http://www.co.clear-creek.co.us/DocumentCenter/View/4293.
[10] http://www.clearcreeksheriff.us/DocumentCenter/Home/View/928.
[11] https://drive.google.com/file/d/1AdXl4w29hyC235ESkYAmmC1qBTWeHtsK/view.
[12] https://www.codot.gov/projects/i-70mountaincorridor/concept-development-process.

Leadership Team and a Technical Team. The Technical Team discussed visual impact related issues at several meetings. Their concerns included:

- The desire to minimize the visual impact of rock cutting.
- Visual effects to historic properties.
- Request to minimize sign clutter and the number of signs.
- Concerns about the visual impact of water quality treatment facilities.
- The desire to maintain views from the road to key businesses in Idaho Springs.
- Views of new barriers.
- Visual effect of loss of the grassy median.

3.7 Agency Coordination Conducted

Agency coordination with federal partners such as the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) occurred during the Tier 1 process. Coordination also occurred with local agencies such as Clear Creek County, BLM, and USFS. CDOT also coordinated with staff and citizens from communities in the corridor to understand each community's aesthetic values and identity. As part of this effort, CDOT evaluated each landscape unit to determine the overall landscape scenic attractiveness and visibility of the corridor from sensitive viewpoints following the BLM Visual Resource Management Program (BLM, 1980) and USFS Scenery Management System of landscape classifications (U.S. Department of Agriculture 1995).

The I-70 Mountain Corridor CSS Team (during 2010 and 2011) established the overall corridor aesthetic principles and regional functional context. Additionally, CDOT convened aesthetic working groups to assist the corridor and consultant teams in preparing the aesthetic guidance. The working groups collaboratively developed descriptions for four geographic design segments, as well as Areas of Special Attention (ASAs) within each segment, which collectively includes the entire I-70 Mountain Corridor. The project is located in the Mountain Mineral Belt and includes (1) the Idaho Springs and (2) Downieville-Lawson-Dumont and Empire Junction ASAs as described in Section 5.3 of this technical memorandum.

During the I-70 WB PPSL process, agency coordination occurred during the CSS process described above, which included Technical Team meetings, Issues Task Force meetings, and separate meetings with Clear Creek County and Idaho Springs. The Project Leadership Team included the USFS.

Section 4. Description of the Proposed Action

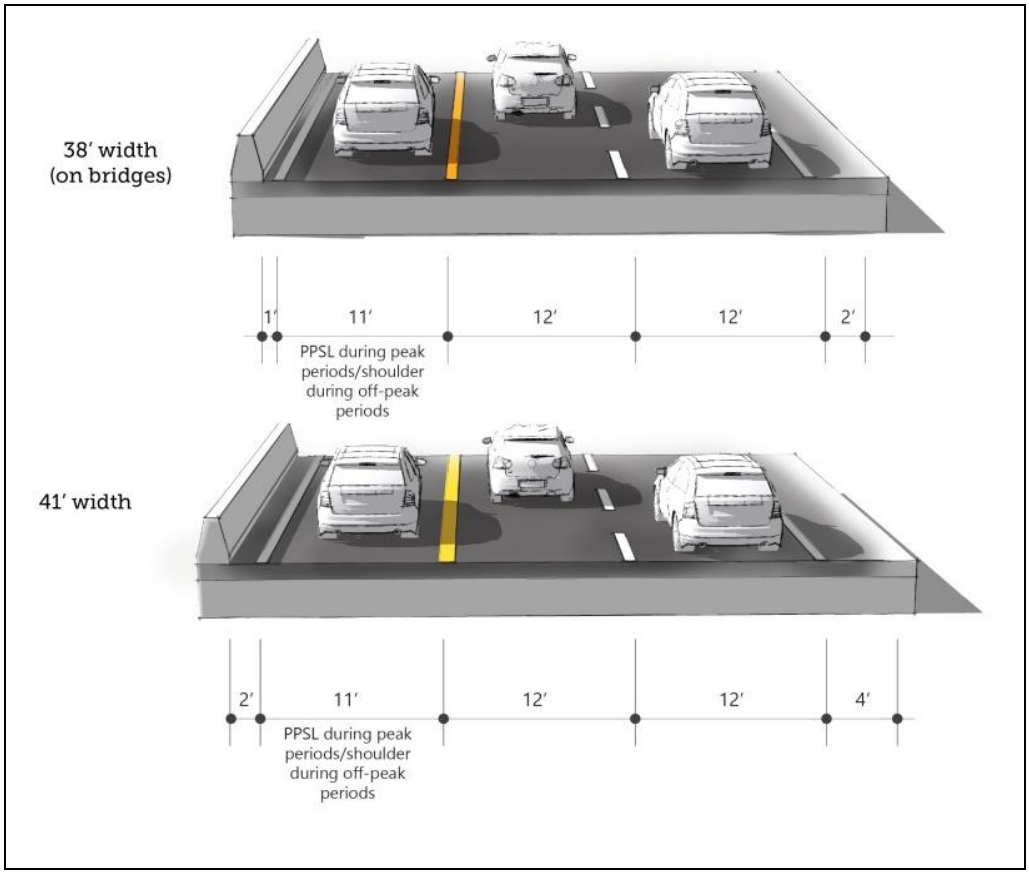
The WB PPSL project adds an approximate 12-mile tolled PPSL on WB I-70 between the Veterans Memorial Tunnels (just west of MP 243) and the US 40/I-70 interchange (MP 232). The lane entrance begins approximately 500 feet east of the Veterans Memorial Tunnels portal. The WB PPSL maximizes the use of the existing alignment and infrastructure in order to minimize any new impacts within the study area. The 11-foot lane is open for use only during peak periods, and otherwise serves as the shoulder of the interstate. Use of the WB PPSL is prohibited for trucks, buses, or any vehicle over 25 feet long. Overhead signs showing the lane status and toll rate are located throughout the corridor and at the entrance point.

An ingress/entrance point for traffic coming onto WB I-70 from Idaho Springs is provided approximately 2,500 feet west of Exit 239. An egress point for traffic exiting to Downieville is provided about 4,400 feet

east of Exit 235, and an egress point for traffic exiting to US 40 is provided approximately 4,400 feet east of Exit 232.

The WB PPSL ends approximately 1/2 mile west of Exit 232. Figure 3 illustrates the typical cross sections of the Proposed Action.

Figure 3. WB PPSL Proposed Action Typical Cross Sections



Source: HDR 2018.

Improvements include:

I-70 Modifications. The general purpose lanes and shoulder of WB I-70 are resurfaced and widened in select locations on the existing alignment between approximately MP 241.5 and MP 232 to accommodate a lane on the shoulder during peak travel periods. Drainage enhancements include a storm system for minor and major storm events and water quality facilities. At SH 103, I-70 is slightly realigned to enhance safety and improve drainage.

SH 103 Interchange Improvements. Ramp improvements address sight distance problems. The pedestrian sidewalk is improved by adding lighting and a decorative paving buffer adjacent to the existing sidewalk on the SH 103 bridge over I-70. This sidewalk connects to a new sidewalk buffered from 13th Avenue between the interchange ramp and Idaho Street in Idaho Springs.

Safety Pull-Outs. A total of seven new safety pull-outs are built—five along WB I-70 and two along EB I-70. One existing safety pull-out on EB I-70 is improved. The intention of these is to provide a space for vehicles to use if they experience a break down and for law enforcement to use.

Rockfall Mitigation. Rockfall mitigation measures are added at five locations to reduce the chance of rocks or other debris from falling on travel lanes or shoulders and reduce the potential for crashes and travel disruptions. Rockfall mitigation measures are included in the WB direction at MP 239, MP 238.4, MP 237.1, and MP 236.4, and in the EB direction at MP 240.3.

Active Traffic Management. Dynamic signage informs drivers so the WB PPSL is appropriately used to reduce congestion. This innovative design improves mobility.

Fiber Optic Upgrades. Fiber optics are designed to accommodate future emerging technologies for autonomous and connected vehicles, improving driver information and emergency response capabilities.

Dumont Port-of-Entry Interchange. Merge area improvements to the Dumont interchange acceleration lane includes restriping of I-70 to reduce merge conflicts between truck traffic and the general-purpose lane traffic.

Dynamic signage

Section 5. What are the Visual Resources in the AVE?

5.1 What is the Visual Character of the AVE and Landscape Unit?

The key viewsheds within the landscape unit are shown in Figure 4 through Figure 7. While industry, tourism have shaped the corridor, and growing communities the mountainous character dominates the visual character of the area. The sheer size of the mountain vista views surrounding the different visual elements along the corridor create visual continuity for the AVE.

The AVE is within the Mountain Mineral Belt design segment of I-70, according to the *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines* (CDOT 2010). The proposed improvements would be visible to I-70 motorists, to residential and commercial uses adjacent to I-70, to recreationists along Clear Creek, and to trails along Clear Creek (CDOT 2011). Rich in mining history, the Mountain Mineral Belt includes historic towns, such as Idaho Springs and Dumont, as well as many scenic views, vibrant forests, rocky hillsides, and waterways. However, the mountainous terrain breaks up any continuous or extended views in the corridor.

The visual character of the Landscape Unit within the AVE is consistent with the Mountain Mineral Belt as described in 2010. The mountainous canyon environment characterized by forested hillsides dominates the view with historic towns and Clear Creek located in the bottom.

Figure 4. Key Viewsheds Within the Landscape Unit (Section 1)

Figure 5. Key Viewsheds Within the Landscape Unit (Section 2)

Figure 6. Key Viewsheds Within the Landscape Unit (Section 3)

Figure 7. Key Viewsheds Within the Landscape Unit (Section 4)

5.2 Areas of Special Attention

The AVE also contains two ASAs. An ASA is a location along the I-70 Mountain Corridor that was identified with multiple or unique issues by the I-70 Mountain Corridor CSS Aesthetic Working Group during the PEIS process.

Downieville-Lawson-Dumont and Empire Junction Area of Special Attention. This area includes the communities of Downieville, Lawson, Dumont, and Empire Junction (CDOT 2011b). The area is generally bounded by Dumont (Exit 235) at MP 235 on the east and Empire Junction on the west MP 232. Empire Junction is a gateway to Grand County and the hub of Clear Creek County. The Clear Creek Canyon becomes narrow through Downieville, Lawson, and Dumont while Empire Junction is more open and flat.

Important contextual features and places within the Downieville-Lawson-Dumont and Empire Junction areas create a unique context. These include historic buildings, the birthplace of the gold and silver booms, Lawson Hole Whitewater Course, the Port-of-Entry, CDOT maintenance facilities, proximity to Clear Creek, and regional access to Grand County.

Idaho Springs—Area of Special Attention. Located in a narrow canyon, I-70 through Idaho Springs was one of the first highway sections constructed in Colorado (CDOT 2010b). Development in Idaho Springs is generally bounded on the east by the Twin Tunnels (now called Veterans Memorial Tunnels) and on the west by Exit 239. In addition to the businesses and residences associated with Idaho Springs, man-made landscape features include evidence of historic mining, a major electrical power line, and the I-70 highway. Several important contextual features and places add to the unique character of Idaho Springs, including the Charlie Tayler Water Wheel and the Argo Mill. The area's proximity to Clear Creek and SH 103, which is a National Scenic and Historic Byway, also add to the visual context.

5.3 Key Viewshed Section Maps

Figure 4 through Figure 7 illustrate key views in the corridor, including views from each direction of travel, views of existing signage, views of important historic properties, and background views of importance.

5.4 Who are the Viewers of the Area of Visual Effects and Landscape Unit?

Neighbors. Neighbors include those who are adjacent to the highway and have views of the road. Within the context of the WB PPSL AVE, this consists of Idaho Springs and the Downieville-Lawson-Dumont communities with residences or commercial businesses in close proximity to the I-70 highway; particularly those on the north side of the highway with direct views of the WB lanes. The residences and businesses are located in existing subdivisions and/or rural areas in unincorporated county areas.

Recreational Users. Recreational users include those viewing the corridor from trails, parks, recreation areas, picnic areas, interpretive sites, Clear Creek and river access points. Typically, cyclists, rafters, pedestrians and corridor residents are more sensitive to changes in the viewshed (when compared to travelers) because the duration of views is longer.

Travelers. Travelers are the group of motorists traveling through the corridor and have views from the road. Motorists include those viewing the corridor as they travel on I-70. The predominant views of the Proposed Action are from WB travelers, but some elements can also be seen from the EB direction.

Motorists travel on I-70 for many reasons—to and from work, to and from medical appointments, commercial vehicles using the corridor for commerce, and others

Touring Travelers: Tourists are people who are traveling on a highway, primarily for enjoyment, usually to a pre-determined destination. These types of trips tend to cover longer distances, and take more time than local commuting trips. Touring travelers frequently are traveling in groups with both a driver and passengers. Touring travelers are equally interested in project coherence, cultural order, and natural harmony.

Table 1 discusses the viewer preferences of each group that are present in the AVE.

Table 1. Viewer Preferences

Viewers	Description	Preferences
Neighbors		
Residents	Live within viewing distance of the project—may be owners or renters.	Prefer a stable landscape with cultural order and harmony.
Recreational Users	Provide recreational services or participate in recreational activities.	Prefer cultural order and natural harmony.
Retail	Sell goods and services to public (merchants) and purchase goods and services (shoppers).	Merchants desire heightened visibility with few visual intrusions. Shoppers seek visual clarity to locate their destination. Project coherence and natural harmony are the primary interests.
Commercial	Occupy commercial property including office buildings, warehouses, and other commercial structures.	Dependent on cultural order and project coherence; for building developers, natural harmony can be a method to attract and keep tenants.
Industrial	Participate in industrial activities such as mining or manufacturing.	Prefer their activities to be fairly concealed and are not dependent on any of the three visual attributes, but may benefit from them.
Civic	Providers or recipients of government organizations.	Prefer cultural order and project coherence. Natural harmony would also be a preference due to the natural landscape surrounding the AVE.
Institutional	Providers or recipients of institutional organizations.	Primary interest is cultural order but natural harmony would also be a preference in this AVE. Project coherence is critical.
Travelers		
Motorists—Touring	Travelers on a highway, primarily for enjoyment, usually to a pre-determined destination.	Equally interested in project coherence, cultural order, and natural harmony.
Motorists—Shipping	Make a living using a highway primarily to move goods.	Primary interest is adequate wayfinding.

Table 1. Viewer Preferences

Viewers	Description	Preferences
Motorists—Commuting	Regular travelers of the same route—not necessarily to or from work, but to or from a frequent destination.	Primary interest is project coherence, though cultural order and natural harmony are useful for wayfinding.

Section 6. What are the Environmental Consequences?

6.1 Evaluation Process and Criteria

This section describes the criteria and evaluation of the visual impacts of the Proposed Action to the visual character, viewers, and visual quality of the AVE. For this analysis phase, the study team evaluated the changes to the visual resources within each landscape unit in three steps, to identify:

- Visual compatibility of the Proposed Action with the visual character (compatible or incompatible)
- Viewer sensitivity to changes (sensitive or insensitive)
- Degree of visual impacts to visual quality (adverse, neutral or beneficial)

6.2 Evaluation Criteria

6.2.1 Compatibility with Visual Character

The study team evaluated the contrast and the incompatibility of the project elements. The degree of visual contrast is characterized in the following three levels:

- Strong visual contrast—Proposed Action attracts attention and dominates landscape features.
- Moderate visual contrast—Proposed Action attracts attention, but remains subordinate to landscape features
- Weak visual contrast—Proposed Action does not attract attention or reduce the diversity and continuity of landscape features. The setting remains dominant.

Determining the visual compatibility of the project (compatible or incompatible) with visual character of the natural, cultural, and project environments are tied to the levels of visual contrast:

- Compatible—Moderate or weak levels of visual contrast to natural environment and cultural environment features are considered compatible with the visual character of the landscape unit
- Incompatible—A strong or moderate-strong levels of contrast to natural environment and cultural environment features are considered incompatible with the visual character of the landscape units

6.2.2 Viewer Sensitivity

Viewer sensitivity is important to gauge the likely awareness of elements of the Proposed Action. Viewer Exposure criteria include proximity, extent, and duration:

- Viewer proximity is measured by the three distance zones: foreground, middle ground and background.
- Extent refers to the number of people that view the scene or object.
- View duration measures how long viewers view the scene or object.

6.2.3 Impact to Visual Quality

The focus of the FHWA VIA is determining the degree of impacts to the visual quality of each landscape unit (beneficial, adverse, or neutral). The process for assessing visual impacts incorporates the visual compatibility and viewer sensitivity assessments to determine the degree of visual impact to visual quality.

6.3 What Direct Effects are Anticipated?

Table 2 summarizes the main findings of the VIA. Direct effects range from beneficial to adverse. The users that experience the greatest direct effects will be the recreation or residential users viewing the highway improvements from the side of the highway.

Table 2. Visual Impacts

Feature	Level of effect	Details of effect
Rock Stabilization Along WB Lanes	Neutral	▪ **MP 239**--A new concrete barrier, vinyl-clad fence, and rock mesh are installed on the north side of the roadway to contain rockfall for about 1,200 feet. The fence is about 20 feet high and the rock mesh is about 80-100 feet high ▪ **MP 238.4**—Overhanging slab (20 feet wide, 2 feet thick). Solution is to remove the slab and use sculpted shotcrete. Shotcrete shall be stained and sculpted to mimic adjacent natural rock. ▪ **MP 237.1**— Contained blasting and rock sculpting to mitigate for unstable rock slopes. Fractured rock that can be stabilized by buttress, bolt and mesh. ▪ **MP 236.4**—Pinned mesh, barrier, and fence are needed. Viewers are primarily WB motorists who are less sensitive to the change. Because care is taken to make sure changes blend with the surrounding visual character, contrast is lessened and the rock stabilization is compatible with the existing views. The bolting and mesh is also compatible with treatment elsewhere along I-70 in Clear Creek County, so the travelers are used to seeing such treatment. (See Appendix B for visual simulations of these four rock stabilization locations.)
Rock Stabilization Along EB Lanes	Neutral	**MP 240.3**—Rockfall mesh is added with a barrier and fence at the bottom. EB travelers will see this rockfall mitigation. It is similar to

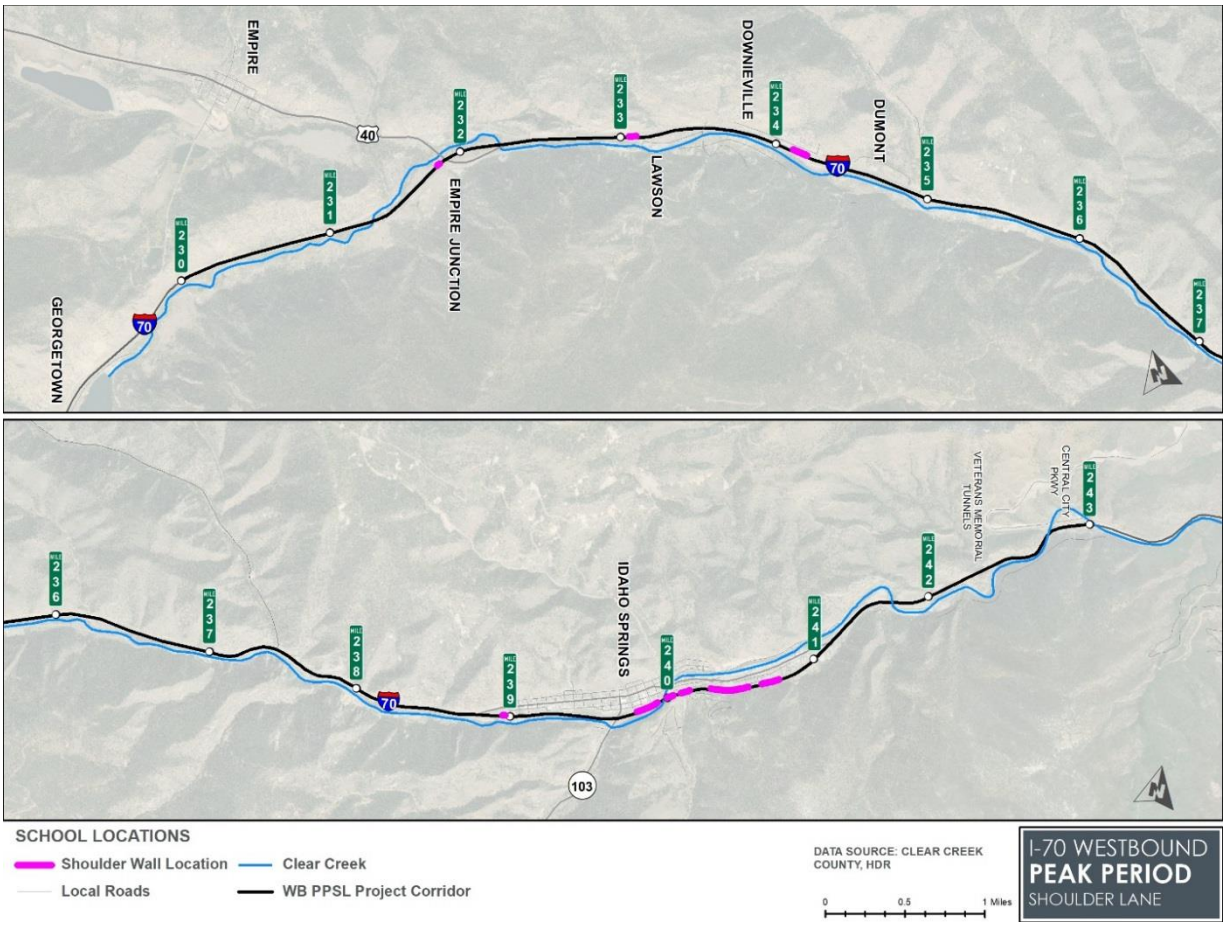
Table 2. Visual Impacts

Feature	Level of effect	Details of effect
		other treatment elsewhere on the I-70 Mountain Corridor.
Signage	Neutral	New signs to be placed throughout the AVE. Viewers are primarily EB and WB motorists. New signs are compatible with existing visual character. Contrast is weak. (See Appendix B for visual simulations.)
Median Barrier Walls/Rail	Neutral/Beneficial	Median walls are placed in 4 locations. These are not visible to the WB traveler, because they are lower in elevation than the WB lanes. The EB traveler may see them in some locations, but they are compatible with the WB highway infrastructure already in place. Because the median barrier through Idaho Springs is a consistent type, the visual continuity is improved over the existing situation, which is a hodgepodge of barrier types. Contrast is weak. (See Appendix B for visual simulations.)
Shoulder Retaining Walls	Neutral/Adverse	There are 11 new retaining walls added north of the WB lanes, adjacent to the shoulder (Figure 8). These walls are primarily visible to adjacent residential and business areas but also to recreationists. Portions of the wall (with barrier on top) are also visible to the WB traveler. The longest retaining wall (1,258 lineal feet) is located in Idaho Springs from the Safeway Store to the west and is approximately 7 feet tall, including the barrier. Shoulder retaining wall locations are shown in Figure 7 below. Only shoulder wall locations are shown because these are potentially of greater visibility than median walls due to their height and visibility from more sensitive viewers. The tallest wall is almost 20 feet, including the barrier, and is clearly visible from the residential areas in East Idaho Springs, contrasts with the existing vegetated slope and is incompatible with a residential area. The majority of retaining walls farther west are lower in height and more compatible with the existing visual setting, resulting in a neutral impact. (See Appendix B for visual simulations.)
Water Quality Detention Basins	Neutral	Three water quality detention basins are included. With mitigation as described in Table 3; these represent weak contrast with the existing setting. Simulations of these are included in Appendix B of this document.
Auxiliary Lane Addition	Neutral	Between Exit 240 and Exit 239, the acceleration lane and deceleration lane are connected to from an auxiliary lane. Views are constrained to

Table 2. Visual Impacts

Feature	Level of effect	Details of effect
		WB motorists. The addition of 12 feet to 13 feet of pavement is compatible with existing view. Contrast is weak.
Vegetation Removal	Neutral	During construction some vegetation would be removed in the following locations: ▪ Idaho Springs to construct retaining walls. ▪ Idaho Springs between Exit 240 and Exit 239 to accommodate the auxiliary lane in the median. ▪ West of Idaho Springs to install rockfall mitigation. ▪ Along the truck on-ramp west of the Dumont port-of-entry. Trees, grasses, and scrub-shrub vegetation are removed.
Median Width Reduction	Neutral	This occurs in nine locations, all located west of Idaho Springs. Widening of the WB lane pavement occurs toward the grassy median, removing 14 percent of the total median area. The median width that remains varies from 13.7 feet to 19.4 feet. The remaining median maintains the same look and feel of the rural, grassy appearance, minimizing contrast and incompatibility. EB travelers are the primary viewers because the median is generally at a lower elevation than the WB lanes.
Noise Wall Modifications	Neutral	A 500-foot section of the existing noise wall is moved approximately 4 feet to the north. Existing visual character remains. Weak contrast, compatible change. Because the existing wall is just moved, its final appearance is identical to its current appearance.
Guardrail Removal and Replacement	Beneficial	Through Idaho Springs, guardrail in median with paddles is removed and replaced with Type 9 barrier with glare screen. West of Idaho Springs, all existing guardrail on the outside is removed and replaced with new Type 3 barrier. The visual effect of this change is to improve continuity because the existing guardrail needs repair and is of multiple types.
Pier and Sign Structure Protection	Neutral	In four locations, existing Type 3 barrier is removed and replaced with Type 9 barrier. This is compatible with existing views. Contrast is weak.
Improvements to Trail Crossings	Beneficial	In two locations, improvements to lighting, drainage, removal of chain link fencing, and slope beautification occur, which improve the visual setting.

Figure 8. Shoulder Retaining Walls



Source: HDR 2018.

6.4 How will the Proposed Action affect specific viewer groups?

WB motorists on I-70 are unlikely to notice the additional pavement in areas where widening is planned because it is relatively minor when compared to the view of the existing pavement. Along the majority of the impacted AVE, no additional pavement widening is planned, however the new striping is visible.

In areas where retaining walls are necessary, they are not visible to WB I-70 motorists because they are located on the north and south side of the travel lanes below the road surface. The new median retaining walls are visible to EB I-70 motorists, as well as to adjacent property owners on the south side of I-70. Walls along the outside (right) shoulder of WB I-70 are visible to adjacent property owners and residents on the north side of I-70 in Idaho Springs.

Rockfall mitigation sites are primarily visible to WB motorists, although some may be seen by EB motorists.

Recreationists adjacent to I-70 may see occasional signage, the outside barrier and the rockfall mitigation areas. None of these views are likely to be considered substantially incompatible or of high contrast with the existing highway infrastructure.

Merchants and economic development groups in Idaho Springs are concerned about any new infrastructure blocking views of important historic buildings in Idaho Springs. Numerous visual simulations were developed illustrating that the primary views blocked in Idaho Springs are the parking lot at the northeast corner of SH 103 and I-70. Views of the Argo Mine and Mill are not blocked by barrier with glare screen in the median.

6.5 What Indirect Effects Are Anticipated?

No notable indirect adverse effects occur later in time or farther removed in distance from the Proposed Action. Over time, the visual quality of the Proposed Action improves as landscaping and other vegetation matures and softens the appearance of retaining walls and weathering of new rock faces occurs.

6.6 What Effects Occur During Construction?

The visual effects during construction of the Proposed Action include materials, temporary lighting and signage, staging areas with vehicles and personnel, dust, fencing and other similar items. This detracts from the view and creates a temporary negative impact for motorists and recreationists during the period of construction.

Section 7. What Mitigation Is Needed

Table 3 presents mitigation commitments for the WB PPSL project. Table 4 presents design strategies adopted from the I-70 Mountain Corridor CSS Design Criteria and Aesthetic Guidance.

Table 3. Mitigation Commitments for Visual Impacts

Activity	Location	Impact	Mitigation	Responsible Branch	Timing/Phase of Construction Mitigation to be Constructed
Signage	Throughout the PPSL AVE	Visual impact of signage	CDOT will continue to work with the Technical Team through final design to ensure signs are placed to minimize impact to sensitive resources.	CDOT Engineering	Pre-construction
Rockfall stabilization	Rockfall stabilization in four places west of Idaho Springs	Visual impact of rockfall stabilization	All materials used will be evaluated for consistency with the natural features to find what best blends in with the surroundings. In accordance with the aesthetic guidelines, the Project team will consider these best practices during design and construction in order to ensure the least impact: ▪ Use scatter blasting techniques and random rock drilling at varying depths to cause rock to break in natural patterns and expose natural rock fractures. ▪ Use rock staining when appropriate. ▪ For rockfall protection, use naturally sculpted benches and ledges across the face of rock instead of human-made features. When required, the use of natural contours supplemented with retention devices (such as protection fencing or mesh screens) can be used to minimize the extent of benching ▪ Rock quality and topographic conditions should be considered as a part of natural sculpting techniques ▪ When mesh rockfall draping is required, it should follow the existing natural contours of the rock face	CDOT Engineering and Contractor	Pre-construction and During Construction

Table 3. Mitigation Commitments for Visual Impacts

Activity	Location	Impact	Mitigation	Responsible Branch	Timing/Phase of Construction Mitigation to be Constructed
			▪ Efforts should be made to reduce the visual clutter of rock face protection devices. Consider PVC-coated colored mesh, draping the mesh over the edge of the face and attaching the mesh reasonably close to the face. The end of the mesh material should terminate in a hidden condition when possible ▪ Consider low reflectivity and color matching materials for rock safety structures. Rock safety structures that include earth-tone colors will match the patterns of surrounding rocks ▪ All site grading and existing disturbance restoration in the AVE should utilize landforms that reflect the patterns and diversity naturally occurring throughout the segment. Earthen embankments are natural reflections of the landscape and should mimic the patterns found in pre-existing conditions. Grading should avoid scarring on steep slopes, as well as the negative visual effects that result. New rock faces will be naturalized with custom shaping and coloration will be applied to reduce the contrast between new cuts and existing rock faces.		

Table 3. Mitigation Commitments for Visual Impacts

Activity	Location	Impact	Mitigation	Responsible Branch	Timing/Phase of Construction Mitigation to be Constructed
Rockfall Mitigation	MP 239	Visual impact of rockfall mitigation	The concrete barrier will be stained with an approved natural color. The vinyl-clad fence is brown in color, and the rock mesh is similar in color to the rock face.	CDOT Engineering and Contractor	Pre-construction and During Construction
Shoulder Walls	14 locations	Visual impacts of shoulder and median walls	Use vegetation to soften the appearance of the walls where feasible. Protect existing trees during construction. The Colorado random reveal texture will be placed on the surface of the walls.	CDOT Engineering and Contractor	During Construction
Vegetation Removal	Various locations within CDOT right-of-way along I-70	Visual impact of removal of trees	Trees removed during construction shall be replaced at a 1:1 replacement ratio based on a stem count of all trees with diameter at breast height of 2 inches or greater.	CDOT Engineering and Contractor	During Construction
Construction vehicles and material stockpiled during construction	Throughout the AVE	Visual impacts during construction	▪ Remove visually obtrusive erosion control devices ▪ Stockpile areas will be in containers or neatly organized, cleaned and located in less visibly sensitive areas and, whenever possible, not visible from recreational areas. ▪ Lighting, including “down-lighting,” will be directed toward the interior of the construction staging and work areas, and shielded so that it does not spill over into adjacent areas.	CDOT Engineering and Contractor	During Construction

Table 4. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
ADAPTING THE HIGHWAY TO EXISTING TOPOGRAPHY	▪ Use structural retaining devices to minimize earthwork and stay within existing limits of disturbance.
STRUCTURES THAT SUPPORT TRANSPORTATION FACILITIES (retaining walls)	▪ Incorporate wall materials that have a consistent texture and pattern. ▪ Employ simple vertical textures and patterns on walls to create shadows and interest. ▪ Use grading strategies to minimize the height of retaining walls along the AVE. ▪ Utilize landscape platforms and turn the ends of walls to meet with the grades of hills and slopes to ensure that retaining walls are integrated with adjoining slopes. ▪ Design walls with a single material, style, and method rather than a mix of materials—even if wall height varies. ▪ Design walls to include an appropriate cap with an overhang to create shadows and interest.
INTERCHANGE DESIGN	▪ Consider the urban design implications associated with interchanges—including connections to the local road network, pedestrian circulation, and adjacent land uses. ▪ Ensure smooth and seamless access into the community. ▪ Utilize a compact interchange design to avoid consuming more land than necessary. Utilize vertical walls to facilitate this style of design. ▪ Provide native landscaping in median areas to create a transition from the transportation AVE to the community environment.
GUARDRAILS, BARRIERS, AND EDGE DELINEATION	▪ Use Type 3 Guardrail W-beam with wooden posts for guard rails. Eliminate the use of galvanized “W” rails. ▪ Color concrete barriers using the selected colors from the design segment color palette in order to blend the roadway into the surrounding environment. These will be identical to Twin Tunnels colors. ▪ Incorporate landform and planting directly with concrete barrier walls. ▪ Utilize continuous concrete barriers rather than segmented movable barriers. ▪ Provide edge delineation through applied markings and reflectors rather than painting bright contrasting colors on concrete barriers.
COLOR SELECTION AND APPLICATION	▪ Apply this segment’s color palette to transportation structures and associated facilities within this segment—including sound walls, retaining walls, lighting, signage, bridges, among others. The colors selected for this segment complement the unique features found here and provide consistency across the entire design segment.
EARTHWORK, EMBANKMENT, AND RESTORATION OF EXISTING DISTURBANCE	▪ Limit slopes to 2.5:1 (H:V) maximum and physical disturbance to less than 40 vertical feet from the edge of pavement or rail platform to the farthest edge of cur or fill as described in the Design Criteria.

Table 4. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
	▪ Round the top and bottom of the slope to provide a stable area for revegetation and transition the embankment back into natural grade. When viewed in elevation, this rounded transition should occur over the last 1/6 of the slope top and toe ▪ When clearing vegetation is necessary for earthwork, the roadway design may remove more vegetation than required in order to create a natural and irregular edge, allow a naturalized rounding of the slope, frame scenic views, and create islands of significant existing trees and shrubs. ▪ Use a warped or variable slope technique in areas where the terrain is rolling and road work requires frequent shifts between cuts and fills. ▪ Soften transitions by laying back the slopes more at the ends of the cuts and fills than in the middle. ▪ Vary the slope of the embankment through the length of a large cut or fill area. A consistent slope should not be used for a longitudinal length greater than 300 feet. ▪ Restore graded areas with a landscape pattern that resembles the existing natural plant community. ▪ Use large-scale rip-rap and talus (including boulders) in conjunction with native grass, wildflower, shrub, and tree species for restoration on steep slopes. ▪ Utilize a variety of plant material—including trees, shrubs, and herbaceous plants—in revegetation efforts to ensure long-term establishment and success. ▪ Analyze the location and amount of native topsoil prior to construction. Strip, store, and ultimately reuse any topsoil removed during construction within this segment in order to retain the seed bank and bacteria in the soil. ▪ Grind and chip existing shrubs and other plants grubbed in the area of disturbance and mix with topsoil prior to reuse to increase organic matter and regenerative capacity. ▪ Increase the success of revegetation by track walking with earthwork equipment to create small depressions and pockets for water capture. ▪ Implement control measures and ongoing maintenance to prevent the spread of invasive weed species.
HYDROLOGIC FEATURES	▪ Allow sedimentation ponds and features to perform water quality functions and then drain into natural hydrologic patterns. ▪ Utilize natural rock, riparian planting, and stream channel improvements to preserve and/or enhance the visual quality of features, including streams, ponds, and waterfalls. ▪ Detention basins should be revegetated or covered with appropriate ground treatment in order to reduce the look of an engineered landscape.

Table 4. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
LANDSCAPE PLANTING, REVEGETATION, AND TOPSOIL MANAGEMENT	▪ Detention basins should be revegetated or covered with appropriate ground treatment in order to reduce the look of an engineered landscape. ▪ Minimize the linear effect of vegetation clearing. ▪ Mimic surrounding conditions of plant density and spacing, species composition, and plant community structure. ▪ Blend existing rock and natural materials from the site with the landscape. Save and reuse native rock, stumps, and other natural materials in conditions such as boulder fields, talus slopes, or ground cover that emulates the existing landscape. Reuse of existing materials should be considered part of the site design.
MANAGEMENT OF CONSTRUCTION MATERIALS	▪ Do not stockpile construction materials in medians or other areas of high visual or recreational value—even on a short-term or temporary basis. ▪ Manage dust on stockpiles and/or construction zones by using revegetation with annual grasses or mechanical methods.

Section 8. References

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Appendix A.

VIA Scoping Questionnaire

Appendix B.

Visual Simulations and Renderings