VISUAL RESOURCES TECHNICAL MEMORANDUM

April 2014

EB I-70 Peak Period Shoulder Lane

CATEGORICAL EXCLUSION

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Acronyms and Abbreviations

ASA	Area of Special Attention
BLM	Bureau of Land Management
CDOT	Colorado Department of Transportation
CE	Categorical Exclusion
CR	County Route
CSS	Context Sensitive Solutions
EA	Environmental Assessment
EIS	Environmental Impact Statement
FHWA	Federal Highway Administration
I-70	Interstate 70
MP	milepost
PEIS	Programmatic Environmental Impact Statement
PPSL	peak period shoulder lane
ROD	Record of Decision
SH	State Highway
US 40	U.S. Highway 40
USFS	U.S. Forest Service

Section 1. Purpose of the Memorandum

The Federal Highway Administration (FHWA), in cooperation with the Colorado Department of Transportation (CDOT), is preparing a Categorical Exclusion (CE) for proposed changes to the eastbound lanes of Interstate 70 (I-70) between milepost (MP) 230 and MP 243.

The Technical Memorandum describes the visual resources in the study area, the visual impacts associated with the Proposed Action and mitigation commitments.

Section 2. How Does the Analysis Relate to the Tier 1 PEIS?

The *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement* (CDOT, 2011a), a Tier 1 document, committed to conducting specific additional analysis and coordination regarding visual impacts during Tier 2 projects. The following commitments from the PEIS are applicable to this Tier 2 project:

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

Section 3. What Process Was Followed to Analyze Visual Resources?

3.1 Methodology

The visual analysis follows guidance from the document *Visual Impact Assessment for Highway Projects* (FHWA, 1989). In addition, the *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement* (CDOT, 2011a) was used as a resource for the analysis approach and identification of specific views and features that are designated for consideration and protection.

What is a Viewshed?
A viewshed is the visible surface area from an observer's point of view. Viewsheds are defined by what viewers can see from the project and what portions of the project viewers can see from the surrounding area.

Potentially sensitive viewer groups include those who travel through the corridor 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. The visual impacts of a Proposed Action are determined by assessing changes in vividness, intactness and unity, factors that describe visual quality. The likely viewer response to those changes varies depending on the sensitivity of the viewer group.

How is Visual Quality Determined?

The project team determined the visual quality of existing views using three criteria (FHWA, 1988):

1. *Vividness* is the memorability of landscape components as they combine in striking and distinctive visual patterns.
2. *Intactness* is the visual integrity of the natural and human landscape and its freedom from encroaching elements.
3. *Unity* is the visual coherence and compositional harmony of the landscape considered as a whole.

Four locations were chosen to represent the range of views in the study area. The view selection process included field reconnaissance of the corridor and assessment of potential visual character units from which the existing highway and project are visible.

3.2 Study Area

The area studied in this visual resource assessment (the viewshed) includes areas that travelers on I-70 can see from the roadway, as well as views toward the project from the surrounding areas, such as the State Highway (SH) 103 bridge, the Water Wheel in Idaho Springs, and the Clear Creek corridor. Typically, if viewers can see an area or a feature from the project, a viewer located in that area or near the feature can also see the highway.

Section 4. Description of the Proposed Action

The purpose of the I-70 Peak Period Shoulder Lane (PPSL) project is to provide short-term eastbound operational improvements to relieve traffic congestion during periods when traffic volumes are highest. This segment is the most congested stretch of the entire I-70 Mountain Corridor. During both the summer and winter peak season, traffic volumes are highest on weekends when recreational travelers comprise more than 90 percent of traffic. In 2010, drivers experienced speeds of less than 20 miles per hour for 35 percent of the time on Sundays, which have the highest volume. Some motorists divert to the frontage road (variously called CR 308, CR 314 or Colorado Boulevard) along I-70, which affects its ability to function as a local access county road.

The Proposed Action would add a peak period shoulder lane between the US 40/I-70 interchange and east Idaho Springs. This managed lane would be used during peak periods, defined as Saturdays, Sundays, and holidays, improving travel times and operations. The project extends from MP 230 to MP 243, with improvements proposed as follows:

- MP 230 to MP 232—signage improvements only. Signage would notify motorists of the status of the managed lane, entrance and exit points, and cost.
- MP 232 to MP 242—roadway improvements, including up to 3.5 feet of widening in select areas to accommodate the managed lane, up to 14 feet of widening at the SH 103 on-ramp, and 4 feet to 8 feet of widening at all other on-ramps in the corridor; replacement of the existing SH 103 bridge; bridge replacement and interchange improvements at Exit 241; improvements to Water Wheel Park; signage; rock fall mitigation in two locations; and construction of 11 retaining walls.
- MP 242 to MP 243—signage improvements only.

The managed lane, which would be tolled, would operate up to, but not exceed, 20 percent of the annual days or 7.5 percent of the time, and connect to the three-lane section provided by the Twin Tunnels project, east of Idaho Springs, thereby capitalizing on that investment.

The improvements will be consistent with the *I-70 Mountain Corridor Programmatic Environmental Impact Statement (PEIS) Record of Decision (ROD)* (CDOT, 2011b), I-70 Mountain Corridor Context Sensitive Solutions process, and other commitments of the PEIS. The Proposed Action fits within the definition of "expanded use of existing transportation infrastructure in and adjacent to the corridor" as an element of the Preferred Alternative Minimum Program.

See Figure 1 for an overview of the proposed improvements.

Section 5. What Are the Current and Future Conditions of Visual Resources in the Study Area?

5.1 What is the Visual Character of the Study Area?

Clear Creek County from Empire Junction to east Idaho Springs is dominated by rugged mountain views in the background and coniferous forests on foothills in the middle ground, in a V-shaped canyon. Historic mining features and the communities of Lawson, Dumont, Downieville, and Idaho Springs are also clearly evident to the I-70 traveler. Figure 2 (from the *I-70 Mountain Corridor Programmatic Environmental Impact Statement*) illustrates key views and points of interest in the study area.

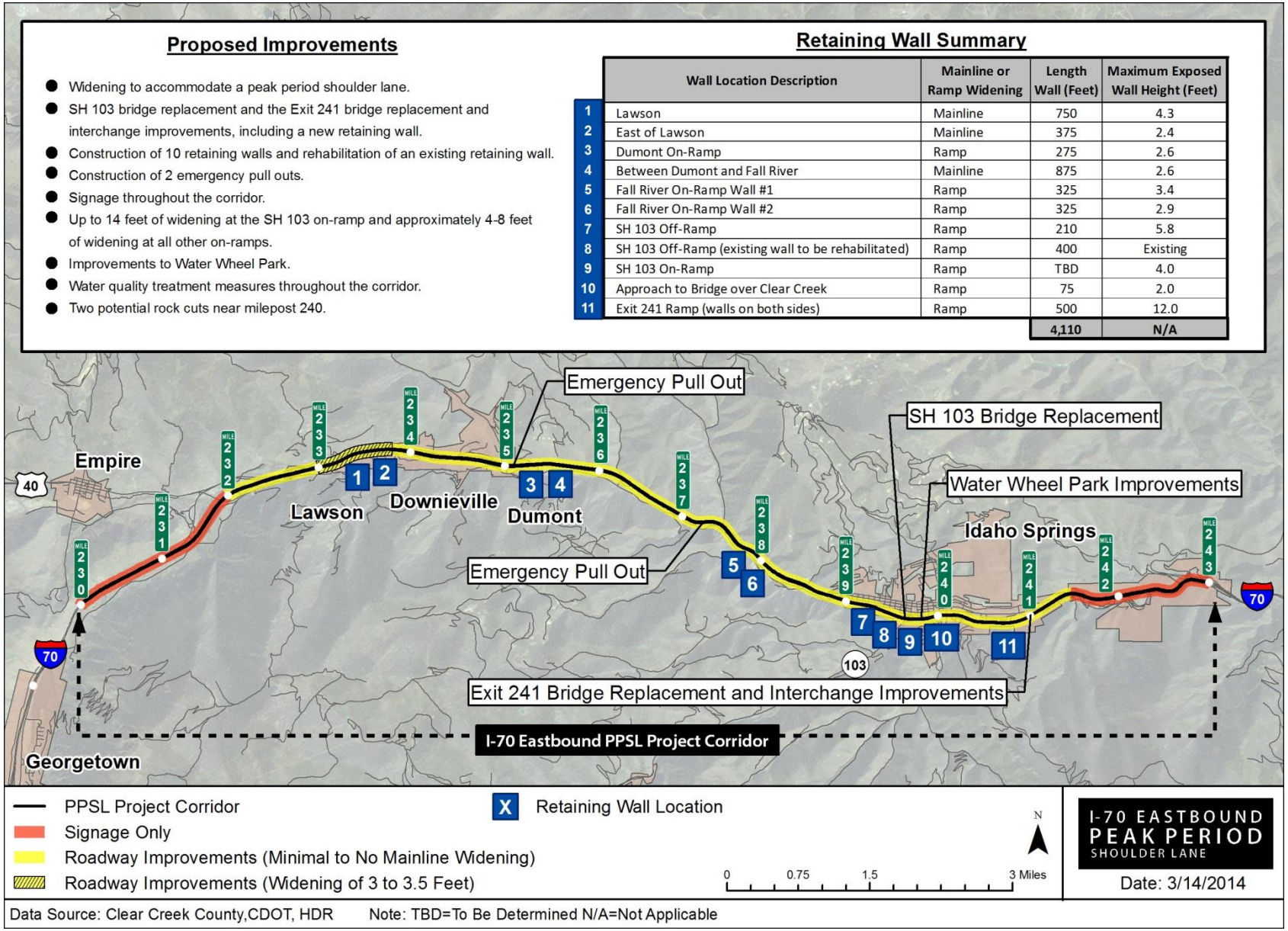
The I-70 PEIS defined the scenic attractiveness of the study area as Class B, which indicates that the lands have some distinctive features but are overall typical of the characteristic landscape.

The study area 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.

There are two Areas of Special Attention (ASA) that are within the study area. These ASAs were identified during the PEIS process.

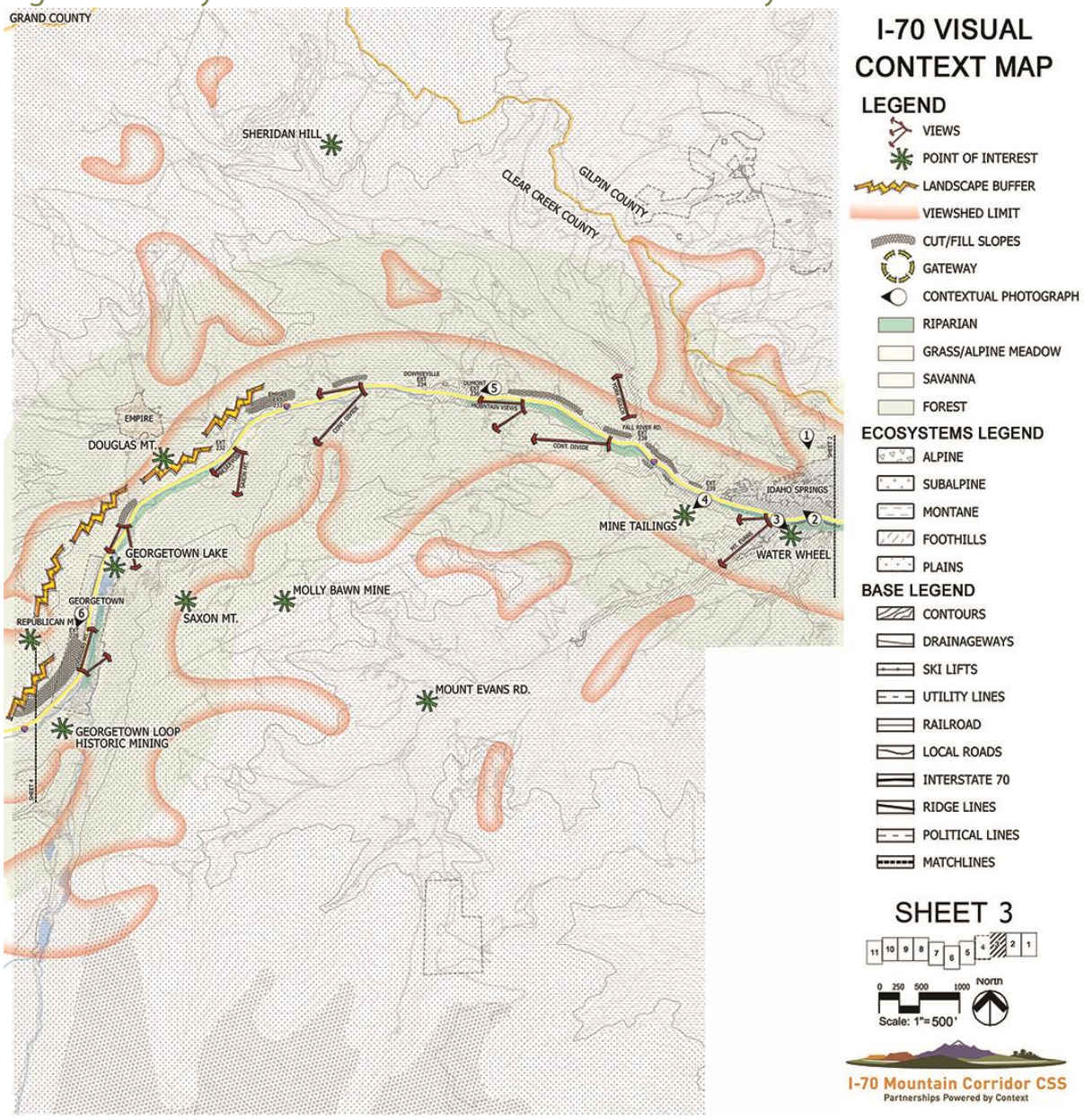
Downieville-Lawson-Dumont and Empire Junction Area of Special Attention: An area including the communities of Downieville, Lawson, Dumont, and Empire Junction were identified as an Area of Special Attention by the I-70 Mountain Corridor Context Sensitive Solutions (CSS) Aesthetic Working Group. The area is generally bounded by Dumont (exit 236) on the east and Empire Junction on the west. These limits are between MP 236 to 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.

Figure 1. Proposed Improvements



Important contextual features and places within the Downieville-Lawson-Dumont and Empire Junction areas create a unique context in and around the area. 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.

Figure 2. Key Views and Points of Interest in the Study Area



Source: CDOT, 2011a

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, 2011d). Development in Idaho Springs is generally bounded on the east by the Twin Tunnels and on the west by the west I-70 interchange. In addition to the businesses and residences associated with Idaho Springs, manmade 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.

Clear Creek

5.2 What Project Features Will Have the Most Noticeable Visual Effects?

The features of the Proposed Action that have the greatest potential to affect study area visual character and quality are:

- Addition of downslope retaining walls in nine locations, re-facing of one wall adjacent to the SH 103 off-ramp and Clear Creek and an additional wall in east Idaho Springs to carry the new Exit 241 bridge and associated ramps.
- Widening at on-ramp locations
- Removal and replacement of two bridges that go over I-70 (the SH 103 bridge and the Exit 241 bridge replacement and interchange improvements).
- Addition of emergency pull outs in two locations.
- Addition of signage throughout the study area.
- Narrowing the existing median in two locations.
- Rebuilding the Water Wheel Park adjacent to Idaho Springs.
- Rock fall mitigation located east of Water Wheel Park.
- Construction activities (with temporary staging of equipment, materials and vehicles, earth moving activities, and vegetation removal).

5.3 What Agencies Were Involved in the Visual Analysis and What Issues Did They Express?

During the Tier 1 PEIS process, CDOT coordinated the approach for the visual resource assessment with federal land managers, consistent with the Bureau of Land Management (BLM) and U.S. Forest Service (USFS) visual assessment methodologies. CDOT also coordinated with staff and citizens from communities in the corridor to understand each community's aesthetic values and identity. 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 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 ASAs within each segment, that collectively include 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 5.1 of this technical memorandum.

During the I-70 PPSL project scoping process, concern about visual impacts was expressed in various PLT and Technical Team meetings as well as during the Section 106 (historic property impact assessment) process. This was reflected in the Core Value of "Engineering Criteria and Aesthetic Guidance," the Critical Issue of "Aesthetics Inspired by the Surroundings," and the Evaluation Criterion of "Achieve the Mountain Mineral Belt aesthetic guidelines." These were used to evaluate all alternatives developed. Primary concerns brought up by the Technical Team included visual effects to historic buildings and districts, effects of signage and effects of loss of the median in two places. This information was discussed in various Technical Team meetings and the Technical Team members were quite appreciative of the work the project team did to minimize visual impacts. Specific mention of this was made in the February 24, 2014 Technical Team meeting (in response to additional removal of signs from the signage plan).

Section 6. What Are the Environmental Consequences?

6.1 How does the Proposed Action Affect Visual Resources?

When considering the visual quality of an area it is important to understand who uses the area and their sensitivity to the visual resources. Within the study area three viewer groups were identified: adjacent land owners, motorists, and recreationists. The individual visual experience of each viewer group is defined by degree by which each is subjected to a particular view, the number of potential viewers, and the extent and duration to which a viewer group is affected. This information also factors into the assessment of visual impact.

The following definitions of visual impact are used in this analysis:

- **Minor:** An effect that does not block or impede important scenic views; effects that are detectable but slight; visual contrast that would diminish the scenic quality of the landscape to a minimal degree, maintaining existing viewshed vividness, intactness and unity.
- **Moderate:** An effect that would noticeably contrast with the visual setting and change a scenic view of value; an effect that would easily be noticeable (and contrast with existing vividness, intactness and unity) from sensitive viewpoints.
- **Major:** An effect that blocks or impedes a scenic view of value or substantially increases contrast with an existing setting as viewed from a sensitive viewpoint.

Mitigation for all impacts identified is discussed in Section 7.

6.1.1 How will the Proposed Action affect specific viewer groups?

Eastbound 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 existing pavement. Along the majority of the impacted corridor, no additional pavement widening is planned. In areas

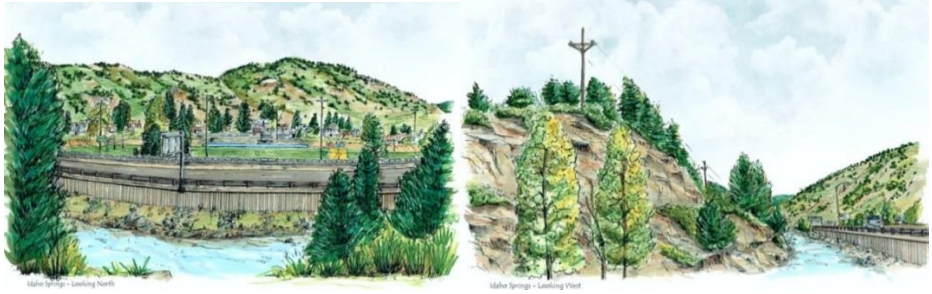
where retaining walls are necessary, they would not be visible to I-70 motorists because they are located on the south side of the travel lanes below the road surface. The new retaining walls would be visible to creek and trail users, as well as to adjacent property owners.

Additional signage is needed for the management of the Peak Period Shoulder Lane and will be noticeable to eastbound motorists. Signs will be placed in the median cantilevered over the managed lane and on the sides of the road. The signage plan has been developed to be context sensitive, using the minimum size signs necessary. New overhead signs are proposed in 19 locations, of which 9 will be Active Traffic Management signs, which means they will be blank a majority of the time. New ground mounted right side sign installations and median sign installations are proposed as necessary for compliance with FHWA sign guidance. Existing speed limit signs will be removed and replaced with Variable Speed Limit signs. The signs that will be most visible are PPSL warning signs and tolling signs required by FHWA. The remaining signs are recommended for safety along the PPSL. During off-peak operations, most of these signs would be blank and would only be lit in case of an unsafe condition. There are no overhead gantries and most of the signs are of a smaller size and located on the side of the road. While these signs would affect the visual experience to some extent, the majesty of views along the corridor is unlikely to be impacted since the dramatic mountain views and views of historic features would overshadow the increased signage. Rarely would the motorist be able to see more than one sign at a time. Sign locations have been carefully sited to minimize effects on important scenic views identified by stakeholders. The overall visual impact of additional pavement, retaining walls, and signage would be minor because motorists have a lower sensitivity to their surroundings due to movement at relatively higher speeds and relatively low viewing duration.

Westbound motorists on I-70 would be even less affected than eastbound motorists. The additional pavement would not be noticeable. Additional signage in the median may be visible; however, the overall visual experience would continue to be dominated by the surrounding peaks, historic buildings, and mines that are characteristic of the area.

Recreationists on the Greenway Trail or on or in the vicinity of Clear Creek would have a greater duration of view than motorists on I-70. Because most of the retaining walls are less than 4.3 feet in height, many of them will likely not be noticeable once vegetation is re-established, and the overall intactness of the view would not be changed (see Figure 3). The bin wall just west of SH 103 will be reinforced, lengthened, and a different surface treatment (identical to random reveal surface treatment used for the retaining walls on the Twin Tunnels project) will be used than the existing treatment. Although this change would be noticeable, because there is an existing wall in this location, there is no change in existing vividness, unity or intactness. The effect of this change is minor.

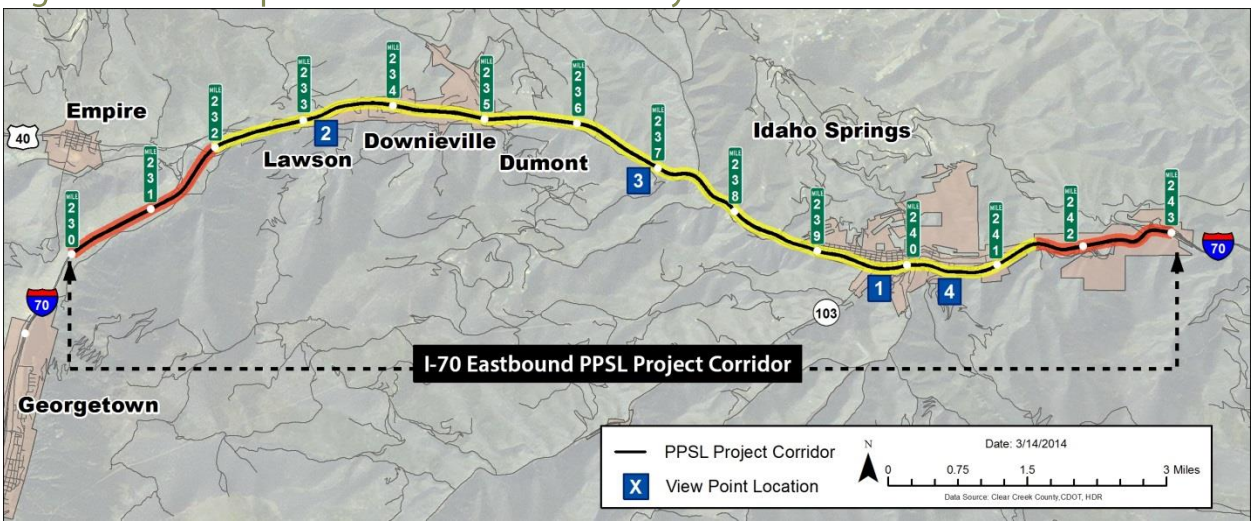
Figure 3. View of Reinforced Bin Wall just west of SH 103



6.1.2 Viewpoints

Four viewing locations were identified that would best represent views where the Proposed Action creates a change in the view (see Figure 4). These viewpoints were selected to represent views for each viewer group.

Figure 4. Viewpoints Used for Visual Analysis



Viewpoint 1 Visual Effects

Viewpoint 1 is positioned to look across the SH 103 Bridge towards Idaho Springs (see Figure 5). This viewpoint represents pedestrians and bicyclists crossing the bridge and motorists traveling on SH 103 north toward Idaho Springs. This serves as a gateway for pedestrians, bicyclists, and motorists accessing the city of Idaho Springs. In addition, those users accessing Clear Creek and Mount Evans, popular tourist destinations, would see the new bridge. Background views include the surrounding Arapaho National Forest lands and the lightly forested hills rising behind Idaho Springs, eventually drawing the viewer's eye east, down the valley, which frames an open vista. The foreground view shows the outlining edges of Idaho Springs which consist of buildings associated with the manmade environment, highway markings, and the characteristic signage located above the line of sight. The SH 103 Bridge is visible and consists of two travel lanes, narrow concrete sidewalks, and railing and fencing. These visual elements create a moderately vivid experience for both recreationist and motorist alike. Conversely, the intactness and visual integrity of the landscape ranks lower due to the opposing built elements of Idaho Springs compared to the monolithic landscape that frames the view. The degree to which the entire viewpoint's elements create a unifying visual impact is moderate.

The proposed roadway improvements would widen the bridge, thus marginally impacting the existing views with the additional lanes and bicycle and pedestrian improvements. This variance would be most noticeable to bicyclists and pedestrians because the potential duration of their views would be longer, whereas motorists passing through the area at a higher speed of travel would experience less noticeable visual differences in their view. The new view increases the scale and size of built forms. Since the scenic and natural characteristics of this particular view are marginal and the new pavement does not contrast with the existing view, the effect of this increase in built forms is minor. The highway widening and bridge work would not decrease intactness and vividness of the line and form of the mountain backdrop. Therefore, the overall visual impact to this viewpoint is minor.

Figure 5. Viewpoint 1—SH 103 Bridge Replacement

Existing View

Proposed View

Viewpoint 2 Visual Effects

Viewpoint 2 is located within the town of Lawson looking east along County Road 308, south of the I-70 corridor (see Figure 6). This view represents that of adjacent landowners residing within the town of Lawson, which is positioned beneath the existing grade of I-70. The existing background view is dominated by the angular rocky bluffs of the surrounding peaks. The geologic history of the adjacent landscape is chronicled within the exposed rock that dominates the middle ground view for residents. Interstate 70 and the adjacent signage screen a portion of the views experienced since the town of Lawson is lower in elevation in comparison to the highway and accompanying bridge. The contiguous slope of the right-of-way down from the interstate and the residences and yards along County Road 308 complete the foreground views, which consist of native grasses, exposed rock, and the residences of Lawson. These visual elements create a vivid experience for adjacent landowners and pedestrians walking along County Road 308. Although the existing mitigation of I-70 is evident by the material selections and attempt to blend the highway components into the surrounding landscape, the intactness of the view is ranked lower because of the existing interstate. The degree to which the viewpoint elements create a unifying visual impact is moderate.

Figure 6. Viewpoint 2—The Town of Lawson

Existing View

Proposed View with retaining wall

The proposed roadway improvements would require a 2 to 4.3-foot-tall retaining wall to be constructed adjacent to the existing interstate, which would marginally impact the existing views of residents and of travelers along County Road 308. The presently sloping landscape from the interstate would be capped with a retaining wall that would impact the overall appearance but not impede the existing viewshed. The wall would be constructed in compliance with the *I-70 Mountain Corridor Aesthetic Guidance*, thus minimizing any contrast or conflict with the existing landscape. The existing vividness and intactness of the view would be minimally affected from this viewpoint because the wall is so far away from the majority of the viewers. In addition, the location of the wall substantially above the elevation of the residences minimizes its visual effect for those residents. The unity of the existing viewpoint is not affected. Therefore, the overall effect of this retaining wall to this viewpoint is minor.

Viewpoint 3 Visual Effects

Viewpoint 3 represents the eastbound motorist's view just west of Idaho Springs (see Figure 7). The existing background view is dominated by forested mountain views with varying hues of dark green, characteristic of a lodgepole pine forest. The middle ground view consists of the rugged foothills of Belleview Mountain to the north and facilities associated with the historic Stanley Mill to the south. Foreground views are comprised of the existing highway guardrails with the banks of Clear Creek narrowly visible. These visual elements combine to create a modestly vivid experience for motorists traveling through the corridor. The intactness and visual integrity of the landscape rank as fair because of the mining structures, which are an intrusion into the forested landscape. The degree to which the entire viewpoint's elements create a unifying visual impact is moderate.

Figure 7. Viewpoint 3—Eastbound View (west of Idaho Springs)

Existing View | Proposed View

The proposed roadway improvements would widen the roadway by only 3 feet to 3.5 feet, thus marginally impacting the existing views with the additional pavement, which will be used as an additional lane during peak periods only. Additional signage located above the pavement would not disturb the existing views of the mines and have minimal impact on the views as a whole, however when there is a sign in the viewpoint it would break up the line, form and color of the background mountain view. Because the existing viewpoint is deemed modestly vivid, the additional signage and widening would have little effect to the overall vividness, intactness, and unity experienced by motorists passing through the area. Additionally, the intactness and visual integrity of the view shed would remain virtually uninterrupted because the additional pavement and signage would not obstruct background views of the mines or the integrity of the existing highway's course through the landscape.

Viewpoint 4 Visual Effects

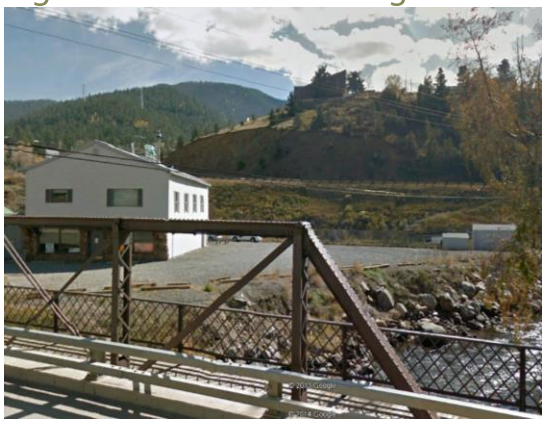
Viewpoint 4 represents the locations above Idaho Springs where two existing rock cuts are visible in the background. Foreground and middle ground views consist of the built-up urban area of Idaho Springs. The view has relatively low unity and intactness because parking lots break up the compositional harmony.

Figure 8. Rock Fall Mitigation

Eastbound and westbound motorists would notice the two new rock fall mitigation locations between MP 240 and MP 241). The western location would be approximately 375 feet long and 55 feet high, and the eastern location 500 feet long and 50 feet high. These locations are shown on Figure 8. The rock fall mitigation, which would be a mesh fence bolted to the rock face, is perceived as unnatural and diminish visual quality. The overall visual impact would be minor because motorists have a lower sensitivity to their surroundings due to movement at relatively higher speeds and relatively low viewing duration and because the mitigation would not change the overall viewshed vividness, intactness or unity. In addition, additional area of mitigation (over and above the existing rock fall mitigation in the corridor) would be relatively small.

The rock fall mitigation would be visible from parts of Idaho Springs (see Figure 9). The westernmost location would be visible to roadway users on Miner Street and the easternmost visible to roadway users on Colorado Boulevard. Viewers from these locations would be able to perceive a change in color and texture from the existing view. Although this change would be visible, the impact of it is minor because it does not change overall viewshed vividness, intactness or unity. Mitigation to minimize these impacts is described in Section 7.

Figure 9. Rock Fall Mitigation Locations as seen from Idaho Springs



View of the western rock fall mitigation area from Miner Street, on the bridge over Clear Creek

View of the eastern rock fall mitigation area from Colorado Boulevard, in front of Safeway

6.1.3 What are the visual effects of the retaining walls?

Eight of the ten new retaining walls would be less than 5 feet tall and minimally visible to recreationists. The ones that are taller (with the tallest being 5.8 feet) are adjacent to SH 103, which is a more built setting. Because these walls are shorter in height, they would minimally affect the existing vividness, intactness, and unity of the setting. Therefore, the visual impact is minor.

One new retaining wall located adjacent to the off-ramp from EB I-70 to Exit 241 is taller. The wall would be approximately 12 feet tall at its highest point and approximately 500 feet long. The new wall is replacing a weedy side slope adjacent to the Forest Service maintenance building. The new wall will be very aesthetically pleasing with the same random reveal pattern as used on the Twin Tunnels walls. The new wall will not noticeably contrast with the existing visual setting nor will it block or impede a scenic view. It will change the existing viewshed vividness, but the existing unity and intactness of the view is not changed. This is a minor visual impact.

6.1.4 What are the visual effects of widening at on-ramp locations?

The project would require the widening of on-ramp locations at the SH 103 Bridge and the Exit 241 Interchange. The existing undergrowth vegetation within the right-of-way would be removed to accommodate the widening and additional pavement laid in its place. The additional pavement would not noticeably increase the visual contrast in views of the highway or adjacent development.

At all other on-ramp locations the widening is so minor that the visual change would not be noticed.

6.1.5 What are the visual effects of the removal and replacement of two of the bridges that go over I-70?

The project would require the SH 103 Bridge and the Exit 241 Bridge to be removed, widened, and replaced. The new bridges would be very similar in appearance and the supplementary pavement plus additional signage would only minimally increase the visual contrast. The new bridges would not block or impede important scenic views nor would they diminish visual character. Because they are taller in height than the existing bridges there will be a minimal diminishment of views.

6.1.6 What are the visual effects of the addition of emergency pull outs in two locations?

Additional emergency pull outs would be installed along the corridor in two places (see Figure 10) to enhance safety for stranded motorists. These emergency pull outs would require additional pavement. The additional pavement would not noticeably increase visual contrast and neither location is in an area of high vividness, intactness, or unity.

Figure 10. Emergency Pull Out Locations

6.1.7 What are the visual effects of the two rock fall mitigation areas?

There may be two new areas of rock fall mitigation, both located at existing rock These would be visible to the motorists in both directions and to some viewers in Idaho Springs. The western location may be approximately 500 feet long and 55 feet high, and the eastern location may be 375 feet long and 55 feet high. The primary effect of these new mitigation rock fall mitigation locations would be increased contrast in color and texture. Because the rock fall mitigation does not noticeably change the existing setting, since they are in an area of past rock cuts and only minimally contrast with the existing viewshed vividness, intactness and unity, the overall effect of the rock fall mitigation is minor.

6.1.8 What are the visual effects of the addition of signage throughout the study area?

There are currently 130 locations of existing signage in the study area. New overhead signs are proposed in 19 locations, of which 9 will be Active Traffic Management signs, which means they will be blank a majority of the time. New ground mounted right side sign installations and median sign installations are proposed as necessary for compliance with FHWA sign guidance. Existing speed limit signs will be removed and replaced with Variable Speed Limit signs. Two existing sign locations would be removed, and there are eight locations where sign installations would be removed and replaced. Sign locations have been chosen to minimize the effect on the key views illustrated on Figure 2. The visual effects from these additional signs would be minor.

6.1.9 What are the visual effects of narrowing the existing median in two locations?

The narrowing of the existing median in two locations would have a very minor effect to the visual experience of motorists passing through the area because the new median width is 16 feet to 20 feet, compared to an existing median width of 22 feet. The existing vividness, intactness, and unity of the views would not be changed.

6.1.10 What are the visual effects of rebuilding the Water Wheel Park adjacent to Idaho Springs?

The Charlie Tayler Water Wheel is an iconic symbol of the significance mining had on establishing Idaho Springs. The water wheel can be viewed by motorists on I-70 or recreationists

that bike or hike along the Greenway Trail. Temporary construction measures needed to rebuild the park will be visible by both motorists and recreationists during the renovations. The resulting improvements to the visual quality of the park are substantially more positive, with noticeably higher quality materials being used, creating an enhanced user experience. The vividness, intactness, and unity of the view will be improved by the enhanced park features.

6.2 What Indirect Effects Are Anticipated?

No notable indirect adverse effects would occur later in time or be farther removed in distance from the project than those already described in the previous paragraphs under Section 6 of this technical memorandum. Over time, the visual quality of the Proposed Action would improve as landscaping and other vegetation matures and softens the appearance of retaining walls.

6.3 What Effects Occur During Construction?

Visual effects during construction include materials stockpiles, temporary lighting and signage, staging areas with vehicles and personnel, dust, fencing, vegetation removal and other similar items. This will detract from the view and the experience of the motorists and recreationists during the period of construction, creating a temporary impact.

Section 7. What Mitigation Is Needed?

7.1 Tier 1 Mitigation Strategies

The Tier 1 PEIS indicates that mitigation strategies for visual resources will be defined in Tier 2 National Environmental Policy Act processes in coordination with corridor communities. The mitigation strategies will focus on reducing visual contrast associated with implementation of the action alternatives.

7.1.1 PPSL Mitigation

To avoid, minimize, and mitigate impacts to visual quality CDOT will incorporate the mitigation strategies shown in Table 1.

Table 1. Mitigation Commitments for Visual Impacts

Activity	Location	Impact	Mitigation
Signage	Throughout the PPSL study area.	Signage noticeable by motorists.	CDOT will continue to work with the Technical Team through final design to ensure signs are placed to minimize impact to sensitive resources.
Rock fall mitigation	East and west of Soda Creek Road	Rock fall mitigation is unnatural and diminishes visual quality.	Work with specialty contractors to determine the most effective means and methods for rock fall mitigation that meet geotechnical and aesthetic needs and incorporate strategies from the I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines.
Rock fall mitigation	East and west of Soda Creek Road	Mitigation techniques, such as wire mesh, diminish visual quality.	Incorporate rock fall mitigation strategies from the I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines.
Construction on or adjacent to	Throughout the PPSL	Increased transportation	CDOT is committed to Context Sensitive Solutions (CSS), a process that is used to ensure collaboration.

Table 1. Mitigation Commitments for Visual Impacts

Activity	Location	Impact	Mitigation
I-70	study area	infrastructure alters the visual environment.	CDOT will follow the I-70 Mountain Corridor CSS Aesthetic Guidance and continue to review design elements with the Technical Team to ensure consistency with Core Values and local preferences.

In addition to the mitigations above, CDOT will adopt the following design strategies from the I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines, as listed in Table 2.

Table 2. 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 (bridges)	▪ Utilize closed end abutment designs which have a minimum vertical height of 8 feet as described in the Design Criteria. ▪ Simple and elegant bridge design is more appropriate than complex shapes and geometries. The elegant design provides an aesthetic contrast to the complexity of the surrounding mountain landscape. ▪ Create a clean, uncluttered appearance below the bridge and eliminate the exposed support pier face condition. The Aesthetic Guidance recommends a box girder design. ▪ Incorporate thoughtful and deliberate shadow patterns on super structures and abutments. The overhang of the bridge deck should be equal to 2/3 the height of the girder to produce the desired shadow on the superstructure. ▪ Treat the color of bridges and other structures in a manner consistent with this segment's color palette. ▪ Consider attached metal rails or 24-inch-high concrete wall with attached metal rail rather than solid concrete barrier for bridge rails. ▪ Use a consistent material for approach rail and bridge rails. Ensure the point of attachment between the two does not sacrifice the appearance of continuity. ▪ Utilize a concrete wall face with a simple vertical or horizontal texture pattern on bridge abutments.
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 corridor. ▪ 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.

Table 2. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
	▪ 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 corridor 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. ▪ 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

Table 2. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
	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.
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

Table 2. Design Strategies Adopted from the I-70 Mountain Corridor CSS Aesthetic Guidance

Aesthetic Design Guidelines	Mitigation
	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

BLM (Bureau of Land Management). 1980. *Bureau of Land Management Visual Resource Management Guide.*

Clear Creek County. 2005. *Clear Creek County Greenway Plan,* 2005.

CDOT (Colorado Department of Transportation). 2008. *National Environmental Policy Act Manual,* Version 2, December 2008.

—. 2010. *I-70 Mountain Corridor Context Sensitive Solutions Aesthetic Design Guidelines.*

—. 2011a. *I-70 Mountain Corridor Final Programmatic Environmental Impact Statement.*

—. 2011b. *I-70 Mountain Corridor Programmatic Final Environmental Impact Statement Record of Decision.*

—. 2011c. *Downieville-Lawson-Dumont & Empire Junction – Area of Special Attention Report.* Mountain Mineral Belt. Draft March 2011.

—. 2011d. *Idaho Springs—Area of Special Attention Report.* Mountain Mineral Belt. Draft March 2011.

—. 2012. *Twin Tunnels Environmental Assessment, Visual Resources Technical Memorandum.* May 2012.

FHWA (Federal Highway Administration). 1989. *Visual Impact Assessment for Highway Projects* (FHWA-HI-88-054). Federal Roadway Administration, 1981, reprinted 1989.

USDA. (U.S. Department of Agriculture), Forest Service. 1995. *Landscape Aesthetics: A Handbook for Scenery Management, Agricultural handbook number 701*. Washington, D.C.