

5.23 Summary of Impacts and Mitigations

The exhibits in this section summarize the impacts and mitigations for which CDOT has already committed related to transportation (Chapter 4), the resources evaluated in Sections 5.2 through 5.19 of this chapter (Chapter 5), Section 4(f), and Section 6(f).

Exhibit 5.23-1 Summary of Transportation Impacts and Mitigation

Alternative/Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
All Alternatives	Temporary road closures and traffic detours may have impacts on access to certain public services	<ul style="list-style-type: none"> Coordinate with RTD for phasing of improvements to minimize disruptions to transit operations Coordinate with RTD more than 30 days in advance during construction to minimize disruptions to service areas and schedules and notify transit users in advance of any closures, delays, or modifications in bus or rail routes; and on modifications or relocation of transit stops or signage along the affected routes since accessibility is required to be maintained Coordinate with UPRR, BNSF, and DRIR for phasing of improvements to minimize disruptions to railroad operations Coordinate with Denver to determine appropriate truck routes on city streets
No-Action Alternative	Adverse effects to mobility, access, safety, and operations since no changes to capacity, interchanges, or other facilities will be made	
Revised Viaduct Alternative	<ul style="list-style-type: none"> Improved pedestrian/bicycle facilities Improved traffic operations due to the addition of new lanes, improvement to ramps, addition of auxiliary lanes, improvements to roadways, and modification of interchanges Impacts to local traffic volumes caused by removal of the York Street interchange and changes to the Steele Street/Vasquez Boulevard interchange and the Colorado Boulevard interchange 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> Improved pedestrian/bicycle facilities Improved traffic operations due to the addition of new lanes, improvement to ramps, addition of auxiliary lanes, improvements to roadways, and modification of interchanges Impacts to local circulation since some of the north-south street connectivity is being discontinued due to design restrictions Temporary impacts to rail facilities will result from the construction of railroad bridge structures and/or the relocation of track operations Impacts to local traffic volumes caused by removal of the York Street interchange and changes to the Steele Street/Vasquez Boulevard interchange and the Colorado Boulevard interchange 	
Managed Lanes Option (option to Build Alternatives)	Improved transportation operations, preservation of transportation capacity, and the ability to provide reliable travel times	

Exhibit 5.23-2 Summary of Social and Economic Conditions Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures
All Alternatives	<ul style="list-style-type: none"> • Residential relocations • Business relocations • Temporary effect to the regional economy from construction-related traffic congestion • Temporary road closures and traffic detours may have impacts on access to certain public services 	<ul style="list-style-type: none"> • Compensate any person(s) whose property needs to be acquired according to the U.S. Constitution and the Uniform Act of 1970, as amended • Provide safe and efficient connections through neighborhoods during construction for all modes of transportation, including bicycles and pedestrians • Coordinate with emergency service providers during construction to minimize effects on response times • Use standard measures—such as phased construction, advance notice of road closures and detours, and fixed and variable signage—to reduce effects on local residents, businesses, and services and on I-70 motorists • Provide a robust and context-sensitive communications and outreach plan throughout construction to ensure residents are kept informed • Coordinate with RTD more than 30 days in advance during construction to minimize disruptions to service areas and schedules and notify transit users in advance of any closures, delays, or modifications in bus or rail routes; and on modifications or relocation of transit stops or signage along the affected routes since accessibility is required to be maintained • Use signs and notifications to reduce adverse effects on access to homes, businesses, and services during the construction period from detours • Use the <i>Aesthetic and Design Guidelines</i> (see Attachment O) developed during the EIS process with Denver and the community during final design to help CDOT identify appropriate aesthetic design elements to ensure compatibility within the community and each viewshed; CDOT is committed to following the guidelines and continued community involvement during final design and construction

Exhibit 5.23-2 Summary of Social and Economic Conditions Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures
No-Action Alternative	<ul style="list-style-type: none"> • 13 to 15 residential relocations • 6 to 15 business relocations (includes 1 non-profit relocation) • Acquisition of right of way from the buffer area between 46th Avenue and the field to the south of Swansea Elementary School (North Option only) • \$818.9 million to \$828.9 million of regional economic output (4,200 to 4,300 person years of employment) 	No mitigation measures specific to this alternative
Revised Viaduct Alternative	<ul style="list-style-type: none"> • 38 to 44 residential relocations • 15 to 27 business relocations (includes 1 non-profit relocation) • Acquisition of right of way from the buffer area between 46th Avenue and the field to the south of Swansea Elementary School (North Option only) • \$2,115.6 million to \$2,331.2 million of regional economic output (10,900 to 12,100 person years of employment) 	<ul style="list-style-type: none"> • Create an urban space for community and neighborhood activities under the new viaduct • Redesign and reconstruct the school playground (North Option only); this will include the adjacent parcels as part of the elementary school site and will eliminate Elizabeth Street between 46th Avenue and 47th Avenue
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • 56 residential relocations • 18 business relocations (includes 1 non-profit relocation) • Acquisition of right of way from the buffer area between 46th Avenue and the field to the south of Swansea Elementary School • \$2,478.6 million to \$2,690.7 million of regional economic output (12,800 to 13,900 person years of employment) 	<ul style="list-style-type: none"> • Removing the viaduct, lowering the highway, and covering portions of the highway to include space for community and neighborhood activities • Redesign and reconstruct the school playground; this will include the adjacent parcels as part of the elementary school site and will eliminate Elizabeth Street between 46th Avenue and 47th Avenue and 46th Avenue between Clayton Street and Columbine Street will be removed to allow for a seamless connection between Swansea Elementary School and the landscape on the highway cover

Exhibit 5.23-3 Summary of Environmental Justice Benefits, Impacts, and Mitigations

Alternative/ Option	Benefits/Impacts	Mitigation Measures
All Alternatives	<p>Benefits</p> <ul style="list-style-type: none"> • Creating new construction-related jobs • Building the highway to updated standards and improving mobility <p>Impacts</p> <ul style="list-style-type: none"> • Increasing noise and dust during construction • Potential for disturbing hazardous material sites during construction • Impacting mobility during construction due to detours • Temporarily closing or delaying, or permanently rerouting, public transit services in the area 	<p>Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Provide targeted assistance to encourage businesses that are crucial to low-income and minority populations to find new locations in the same neighborhoods • Provide funding to CRHDC to assist residential and business displacees with financial counseling and procurement of financing for replacement property and securing business and residential loans; CDOT has already provided funding to CRHDC as early mitigation • Collect representative soil samples of three or four recently cleaned-up residential properties pre-, during, and post-construction to test for lead and arsenic to ensure that the properties aren't re-contaminated due to construction activities • Provide residents close to the highway construction—between 45th Avenue and 47th Avenue from Brighton Boulevard to Colorado Boulevard—two free portable or window-mounted air conditioning units with air filtration and assistance for the potential additional utility costs during construction • Provide residents close to the highway construction—between 45th Avenue and 47th Avenue from Brighton Boulevard to Colorado Boulevard—interior storm windows • Provide contributions to existing programs that facilitate access to fresh food • Facilitate opportunities to promote hiring individuals from the communities such as job fairs with contractors • Execute geographic-based hiring preferences (CDOT has submitted an application and received approval under Special Experiment Project 14 (SEP-14) for the US DOT pilot program) • Research opportunities to invest funds in a local workforce development program aimed at job readiness training prior to construction • Provide a new HVAC system, doors, and windows for Swansea Elementary School • Prior to the start of roadway construction, build two new classrooms at Swansea Elementary School to enhance the overall quality of the school <p>Environmental justice impacts include effects on various resources on an identified low-income or minority population or community; therefore, any mitigation measures for those resources apply to environmental justice as well. The resources listed below are discussed previously in this section, and the mitigation measures discussed in the sections below are also applicable to environmental justice:</p> <ul style="list-style-type: none"> • Mitigations from Section 5.2, Social and Economic Conditions • Mitigations from Section 5.5, Relocations and Displacements • Mitigations from Section 5.8, Visual Resources and Aesthetic Qualities • Mitigations from Section 5.12, Noise • Mitigations from Section 5.18, Hazardous Materials

Exhibit 5.23-3 Summary of Environmental Justice Benefits, Impacts, and Mitigations

Alternative/ Option	Benefits/Impacts	Mitigation Measures
No-Action Alternative, North Option	<p>Benefits/Impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Improving aesthetic quality with a structure that complements the neighborhood • Keeping the Nestlé Purina Petcare Company at its existing location • Displacing Pilot Travel Center truck stop to eliminate a point-source location for air pollution <p>Impacts</p> <ul style="list-style-type: none"> • Increasing physical barrier effect • Displacing Stop N Shop and Pilot Travel Center truck stop • Relocating 15 residences • Impacting 349 noise receptors • Moving the highway closer to Swansea Elementary School 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Improve aesthetic quality with the new structure and provide more open space with longer bridge spans under the viaduct
No-Action Alternative, South Option	<p>Benefits/Impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Improving aesthetic quality with a structure that complements neighborhood • Displacing Nestlé Purina Petcare Company • Swansea Elementary School remains at its existing location <p>Impacts</p> <ul style="list-style-type: none"> • Increasing physical barrier effect • Displacing El Tepetate Market and El Rinconcito Mini Market • Impacting 347 noise receptors • Relocating 13 residences 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Improve aesthetic quality with the new structure and provide more open space with longer bridge spans under the viaduct

Exhibit 5.23-3 Summary of Environmental Justice Benefits, Impacts, and Mitigations

Alternative/ Option	Benefits/Impacts	Mitigation Measures
Revised Viaduct Alternative, North Option	<p>Benefits/impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Preserving north-south connectivity • Improving aesthetic quality with a structure that complements neighborhood • Keeping the Nestlé Purina Petcare Company at its existing location • Displacing Pilot Travel Center truck stop to eliminate a point-source location for air pollution <p>Impacts</p> <ul style="list-style-type: none"> • Increasing physical barrier effect • Impacting 403 noise receptors • Displacing Stop N Shop and Pilot Travel Center truck stop • Relocating 38 residences • Moving the highway closer to Swansea Elementary School 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Create an urban space for community and neighborhood activities under the new viaduct • Improve aesthetic quality with the new structure and provide more open space with longer bridge spans under the viaduct • Redesign and reconstruct the school playground; this will include the adjacent parcels as part of the elementary school site and will eliminate Elizabeth Street between 46th Avenue and 47th Avenue
Revised Viaduct Alternative, South Option	<p>Benefits/impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Preserving north-south connectivity • Improving aesthetic quality with a structure that complements neighborhood • Displacing Nestlé Purina Petcare Company • Swansea Elementary School remains at its existing location <p>Impacts</p> <ul style="list-style-type: none"> • Increasing barrier effect • Impacting 381 noise receptors • Impacting and displacing El Tepetate Market and El Rinconcito Mini Market • Relocating 44 residences 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Improve aesthetic quality with the new structure and provide more open space with longer bridge spans under the viaduct

Exhibit 5.23-3 Summary of Environmental Justice Benefits, Impacts, and Mitigations

Alternative/ Option	Benefits/Impacts	Mitigation Measures
Partial Cover Lowered Alternative	<p>Benefits/impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Removing the viaduct's visual barrier between Brighton Boulevard and Colorado Boulevard • Minimizing the presence of the highway in this area since it is below grade and is covered • Providing multi-modal safety from improved lighting and sidewalks at north-south connections • Displacing Pilot Travel Center truck stop to eliminate a point-source location for air pollution • Reducing highway noise and air quality impacts to the school and adjacent properties by placing a cover over the highway • Keeping the Nestlé Purina Petcare Company at its existing location <p>Impacts</p> <ul style="list-style-type: none"> • Limiting north-south pedestrian and bicycle connectivity compared to the existing conditions • Relocating 56 residences • Impacting 105 noise receptors • Moving the highway closer to Swansea Elementary School • Displacing Stop N Shop and Pilot Travel Center truck stop • Creating visual obstruction with safety barriers; eliminating views across the highway 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Remove the viaduct, lower the highway, and cover portions of the highway to include space for community and neighborhood activities • Redesign and reconstruct the school playground; this will include the adjacent parcels as part of the elementary school site and will eliminate Elizabeth Street between 46th Avenue and 47th Avenue and 46th Avenue between Clayton Street and Columbine Street will be removed to allow for a seamless connection between Swansea Elementary School and the landscape on the highway cover • Provide \$2 million in funding to develop affordable housing units in the Elyria and Swansea Neighborhood through available programs
Managed Lanes (option to Build Alternatives)	<p>Benefits/impacts listed previously under All Alternatives also apply.</p> <p>Benefits</p> <ul style="list-style-type: none"> • Creating reliable travel time • Providing congestion-free lanes • Reducing congestion in all travel lanes <p>Impacts</p> <ul style="list-style-type: none"> • Creating a financial burden to the low-income community, who may not be able to afford to use the managed lanes 	<p>Mitigation measures listed previously under All Alternatives also apply. Mitigation measures that were developed specifically to reduce impacts to low-income and minority populations living in the adjacent communities are listed below:</p> <ul style="list-style-type: none"> • Research ways to provide assistance for low-income populations within the area (such as free transponders) for using the managed lanes

Exhibit 5.23-4 Summary of Land Use Impacts and Mitigation

Alternative	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	4.0 acres to 6.0 acres converted to transportation use	Continue to coordinate with local jurisdictions to ensure compatibility with land use plans and to address any inconsistency that may arise due to the project alternatives
Revised Viaduct Alternative	40.6 acres to 41.9 acres converted to transportation use	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • 66.6 acres converted to transportation use • Creation of a 4 acre cover with up to 3 acres of public space over I-70 	
Managed Lanes (option to Build Alternatives)	<ul style="list-style-type: none"> • An additional 1.7 acres would be required if the Managed Lanes Option is selected with the Revised Viaduct Alternative, resulting in 42.3 acres to 43.6 acres converted to transportation use • An additional 1.7 acres would be required if the Managed Lanes Option is selected with the Partial Cover Lowered Alternative, resulting in 68.3 acres converted to transportation use 	

Exhibit 5.23-5 Summary of Relocations and Displacements Impacts and Mitigations

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative, North Option	<ul style="list-style-type: none"> • 15 residential relocations • 6 business relocations (includes 1 non-profit relocation) 	<ul style="list-style-type: none"> • Compensate any person(s) whose property needs to be acquired according to the U.S. Constitution and the Uniform Act of 1970, as amended • Provide all impacted owners notification of the acquiring agency's intent to acquire an interest in their property, including a written offer letter of just compensation specifically describing those property interests; assign a right of way specialist to each property owner to assist them with this process • Provide bilingual services for any of the relocated and displaced businesses or households that need them • Meet directly with those owners and occupants who would be relocated as a result of the proposed project; conduct multiple meetings with these individuals to provide an introduction and overview of the process associated with the Uniform Act; provide information on resources available, including assistance from local, state, and federal agencies, and private agencies in the community; identify individual eligibility for benefits
No-Action Alternative, South Option	<ul style="list-style-type: none"> • 13 residential relocations • 15 business relocations 	
Revised Viaduct Alternative, North Option	<ul style="list-style-type: none"> • 38 residential relocations • 15 business relocations (includes 1 non-profit relocation) 	
Revised Viaduct Alternative, South Option	<ul style="list-style-type: none"> • 44 residential relocations • 27 business relocations (includes 1 non-profit relocation) 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • 56 residential relocations • 18 business relocations (includes 1 non-profit relocation) 	

Exhibit 5.23-6 Summary of Historic Preservation Impacts and Mitigations

Alternative	Impacts	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • Adverse Effect—1 to 7 historic resources • No Adverse Effect—50 to 56 historic resources • No Effect—9 historic resources • Temporary impacts may include dust and debris, visual and auditory degradation related to construction activities, and decreased access 	<ul style="list-style-type: none"> • Establish a Programmatic Agreement with SHPO and consulting parties • Provide Level II archival documentation for adversely affected resources • Provide funding and participate in the creation of a documentary covering the history of I-70 East and its relationship to the Elyria and Swansea and Globeville Neighborhoods (mitigation has been completed, and is available to view at www.i-70east.com) • Implement other mitigation measures, as identified, in consultation with SHPO and consulting parties as described in the Programmatic Agreement • Cease work during construction if unidentified historic resources are encountered and notify CDOT and SHPO immediately • Contact consulting Indian tribes if Indian cultural materials are identified at any time during construction
Revised Viaduct Alternative	<ul style="list-style-type: none"> • Adverse Effect—8 historic resources • No Adverse Effect—54 historic resources • No Effect—4 historic resources • Temporary impacts may include dust and debris, visual and auditory degradation related to construction activities, and decreased access 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • Adverse Effect—13 historic resources • No Adverse Effect—50 historic resources • No Effect—3 historic resources • Temporary impacts may include dust and debris, visual and auditory degradation related to construction activities, and decreased access 	

Exhibit 5.23-7 Summary of Paleontological Resources Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	Minimal deep surface disturbance	<ul style="list-style-type: none"> • Perform spot-checking of excavations by a qualified paleontologist in areas of high paleontological potential during all phases of construction until bedrock is reached, then perform continuous paleontological monitoring • Cease work immediately upon discovery of any paleontological resources, fence off the area, and allow the paleontologist to conduct sampling or excavation of specimens by hand or with mechanized equipment; do not resume work in the area until receiving formal notification from the paleontologist allowing work to resume
Revised Viaduct Alternative		
Partial Cover Lowered Alternative	Increased potential for encountering paleontological resources in excavated bedrock of the Denver and Arapahoe Formations	

Exhibit 5.23-8 Summary of Visual Resources and Aesthetic Qualities Impacts and Mitigations

Alternative/Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • Replacing the existing viaduct with new infrastructure will improve the visual quality • New noise walls on the viaduct can obstruct views of the downtown Denver skyline • Relocating the Nestlé Purina PetCare Company and removing the facility will open up some views to the downtown Denver skyline (South Option only) • New features of the project (e.g., detention ponds, retaining walls) will change the visual environment along the project corridor 	<p>Use the <i>Aesthetic and Design Guidelines</i> (see Attachment O) developed during the EIS process with Denver and the community during final design to help CDOT identify appropriate aesthetic design elements to ensure compatibility within the community and each viewshed; CDOT is committed to following the guidelines and continued community involvement during final design and construction.</p>
Revised Viaduct Alternative	<ul style="list-style-type: none"> • Replacing the existing viaduct with new infrastructure will improve the visual quality • New noise walls on the viaduct can obstruct views of the downtown Denver skyline • Relocating the Nestlé Purina PetCare Company and removing the facility will open up some views to the downtown Denver skyline (South Option only) • New features of the project (e.g., detention ponds, retaining walls) will change the visual environment along the project corridor 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • Introducing public space to the area and reducing the roadway's visual dominance by removing the existing viaduct will greatly improve the visual quality • Ground-level noise walls or safety barriers are less intrusive to viewers' eyes compared to the No-Action and Revised Viaduct Alternatives, but they also introduce a new visual impact by blocking the view across the highway • Views for drivers traveling eastbound and westbound will be entirely different from the existing conditions • New features of the project (e.g., detention ponds, retaining walls) will change the visual environment along the project corridor 	
Managed Lanes Option (option to Build Alternatives)	<ul style="list-style-type: none"> • Additional visual barriers will be created with the direct connections at I-270, I-225, and Peña Boulevard • Managed lanes infrastructure will create new visual impacts along the project corridor 	

Exhibit 5.23-9 Summary of Parks and Recreational Resource Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures Specific to Alternatives
All Alternatives	South Platte River Greenway (Section 6(f) resource) temporary impacts may occur during construction	<ul style="list-style-type: none"> • Provide adequate notice and signing to Greenway users prior to construction • Return Greenway to pre-construction or comparable state following construction
No-Action Alternative	0.39 acre of impact to Swansea Elementary School (North Option)	No mitigation measures specific to this alternative
Revised Viaduct Alternative	<ul style="list-style-type: none"> • 0.76 acre of impact to Swansea Elementary School (North Option) • Minor realignment of Sand Creek Greenway Trail • Sand Creek Greenway Trail closures may occur during construction 	<ul style="list-style-type: none"> • Use remnants of adjacent parcels obtained for right-of-way expansion to reconfigure the school site plan and replace all the playground facilities; this includes closing Elizabeth Street between 46th Avenue and 47th Avenue • Provide trail detours and ADA-compliant detour signage during construction • Return trails to pre-construction or comparable state following construction
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • 0.95 acre of impact to Swansea Elementary School • Minor realignment of Sand Creek Greenway Trail • Sand Creek Greenway Trail closures may occur during construction • Utility easement/access permit required and 0.3 acre will be converted to a drainage outfall/spillway in Globeville Landing Park • Part of Globeville Landing Park will be closed during construction 	<ul style="list-style-type: none"> • Use remnants of adjacent parcels obtained for right-of-way expansion to reconfigure the school site plan and replace all the playground facilities; this includes closing Elizabeth Street between 46th Avenue and 47th Avenue • Provide trail detours and ADA-compliant detour signage during construction • Return trails to pre-construction or comparable state following construction • Coordinate with Denver Parks and Recreation, CPW, and NPS regarding impact to Globeville Landing Park, a Section 6(f) resource • Replace 0.3 acre of land converted to a non-recreation use by the construction of the spillway in Globeville Landing Park and the utility easement/access permit area with in-kind land of at least current fair market value and reasonable equivalent usefulness and location and investigate the acquisition of land identified by Denver near Milstein Park for this replacement

Exhibit 5.23-10 Summary of Air Quality Commitments and Strategies

Air Quality Consideration (all alternatives)	Commitments and Strategies Applicable to All Alternatives
<ul style="list-style-type: none"> • MSAT emissions could increase temporarily during construction • Construction fugitive dust could cause temporary impacts • No violation of the NAAQS for the No-Action Alternative or the Build Alternatives 	<p>Before and during construction:</p> <ul style="list-style-type: none"> • Monitor for PM₁₀, which will allow for the real-time modification or implementation of various dust control measures during construction <p>During construction, BMPs could include the following measures and others, if applicable, as identified during project development (per the FDCP):</p> <ul style="list-style-type: none"> • Cover, wet, compact, or use chemical stabilization binding agents to control dust and excavated materials at construction sites • Use wind barriers and wind screens to prevent spreading of dust from the site • Have a wheel wash station and/or crushed stone apron at egress/ingress areas to prevent dirt being tracked onto public streets • Use vacuum-powered street sweepers to remove dirt tracked onto streets • Cover all dump trucks leaving sites to prevent dirt from spilling onto streets • Minimize disturbed areas, particularly in winter • Prohibit unnecessary idling of construction equipment • Locate construction diesel engines as far away as possible from residential areas • Locate construction staging areas close to work sites, while situating them as far away as possible from residential uses • Require heavy construction equipment to use the cleanest available engines or be retrofitted with diesel particulate control technology • Use alternatives to diesel engines and/or diesel fuels, such as biodiesel, liquefied natural gas, compressed natural gas, fuel cells, and electric engines, if applicable • Install engine pre-heater devices to eliminate unnecessary idling for winter-time construction • Prohibit tampering with equipment to increase horsepower or to defeat an emission control device's effectiveness • Require construction vehicle engines to be properly tuned and maintained • Use construction vehicles and equipment with the minimum practical engine size for the intended job <p>Post construction:</p> <ul style="list-style-type: none"> • Continue the "sweepbox" program on the highway to achieve the current level of fugitive dust reduction; and enhance street sweeping after snow events to reduce the particulate matter accumulation during operations <p>BMPs could also include the following measures and others as identified during project development:</p> <ul style="list-style-type: none"> • Optimize signal timing at intersections and along arterial streets near the highway to reduce vehicle delay and tailpipe emissions • Implement congestion pricing and commuter incentive programs that reduce peak-period highway congestion and emissions • Encourage TDM options, such as high-occupancy vehicle lanes and agreements with major employers to promote and implement flexible work programs

Exhibit 5.23-11 Summary of Energy Impacts and Mitigations

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • 68 billion Btu consumed per day • 2,380 billion Btu consumed during construction 	<ul style="list-style-type: none"> • Limit idling of construction equipment • Encourage employee carpooling and vanpooling for construction workers • Encourage use of closest material sources
Revised Viaduct Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 70.9 billion Btu consumed per day • 6,018 billion Btu consumed during construction 	<ul style="list-style-type: none"> • Locate construction staging areas close to work sites, while situating them as far away as possible from residential uses • Encourage use of cleaner and more fuel-efficient construction vehicles (for example, low sulfur fuel, biodiesel, or hybrid technologies)
Revised Viaduct Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 70.4 billion Btu consumed per day • 6,648 billion Btu consumed during construction 	<ul style="list-style-type: none"> • Encourage the use of alternative fuels and asphalt binders
Partial Cover Lowered Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 71.3 billion Btu consumed per day • 7,068 billion Btu consumed during construction 	<ul style="list-style-type: none"> • Implement traffic management schemes that minimize delays and idling • Implement energy conservation measures where appropriate, such as energy-efficient electrical system specifications, lighting, mechanical equipment, and building insulation in accordance with CDOT's Lighting Design Guide (CDOT, 2006)
Partial Cover Lowered Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 70.0 billion Btu consumed per day • 7,698 billion Btu consumed during construction 	<ul style="list-style-type: none"> • Encourage energy-efficient options for the cover facilities (Partial Cover Lowered Alternative only)

Exhibit 5.23-12 Summary of Noise Impacts and Mitigation Measures

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures
All Alternatives	Construction noise will present short-term effects to those dwelling units located along the corridor and along designated construction access routes.	<ul style="list-style-type: none"> Implement BMPs to minimize noise during construction, as per FHWA's <i>Highway Construction Noise Handbook</i> (2006) Conduct a benefited receptor survey prior to construction to determine if the recommended noise wall is desired; if the survey results show that the majority of benefited receptors who respond to the survey desire the noise wall, the noise wall will be optimized and built
No-Action Alternative, North Option	Number of noise receptors that exceed NAC threshold <ul style="list-style-type: none"> Globeville: 9 Elyria: 116 (20 that increase by 10 dBA or more) Swansea: 233 (20 that increase by 10 dBA or more) Stapleton: 0 Peoria Street: 0 Montbello: 0 Aurora: 4 	Location and height of feasible and reasonable walls: <ul style="list-style-type: none"> Elyria: 8 feet to 20 feet Swansea: 8 feet to 20 feet
No-Action Alternative, South Option	Number of noise receptors that exceed NAC threshold <ol style="list-style-type: none"> Globeville: 9 Elyria: 108 (7 that increase by 10 dBA or more) Swansea: 239 (27 that increase by 10 dBA or more) Stapleton: 0 Peoria Street: 0 Montbello: 0 Aurora: 4 	Location and height of feasible and reasonable walls: <ul style="list-style-type: none"> Elyria: 8 feet to 20 feet Swansea: 8 feet to 20 feet
Revised Viaduct Alternative, North Option	Number of noise receptors that exceed NAC threshold <ul style="list-style-type: none"> Globeville: 18 to 24 Elyria: 125 (31 that increase by 10 dBA or more) Swansea: 278 (66 that increase by 10 dBA or more) Stapleton: 0 Peoria Street: 0 Montbello: 29 to 34 Aurora: 3 	Location and height of feasible and reasonable walls: <ul style="list-style-type: none"> Elyria: 8 feet to 20 feet Swansea: 8 feet to 20 feet
Revised Viaduct Alternative, South Option	Number of noise receptors that exceed NAC threshold <ul style="list-style-type: none"> Globeville: 18 to 24 Elyria: 121 (19 that increase by 10 dBA or more) Swansea: 260 (49 that increase by 10 dBA or more) Stapleton: 0 Peoria Street: 1 Montbello: 29 to 34 Aurora: 3 	Location and height of feasible and reasonable walls: <ul style="list-style-type: none"> Elyria: 8 feet to 20 feet Swansea: 8 feet to 20 feet
Partial Cover Lowered Alternative	Number of noise receptors that exceed NAC threshold <ul style="list-style-type: none"> Globeville: 18 to 24 Elyria: 55 (11 that increase by 10 dBA or more) Swansea: 50 Stapleton: 0 Peoria Street: 0 Montbello: 29 to 34 Aurora: 3 	Location and height of feasible and reasonable walls: <ul style="list-style-type: none"> Elyria: 12 to 20 feet

Note: Per CDOT regulations, if an existing noise wall is demolished, a replacement barrier meeting current noise regulatory requirements must be constructed.

Exhibit 5.23-13 Summary of Biological Resources Impacts and Mitigation Measures

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • 3.5 acres of permanent, direct impact to wildlife habitat • 0.014 acre of permanent impacts and 0.011 acre of temporary impacts to riparian areas 	<ul style="list-style-type: none"> • Comply with Senate Bill 40, CDOT Impacted Black-Tailed Prairie Dog Policy, and CDOT Standard Specifications for protection of migratory birds • Monitor disturbed sites during construction to identify and treat any noxious weed invasion
Revised Viaduct Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 313.9 acres of permanent, direct impact to wildlife habitat • 0.977 acres of permanent impacts and 0.222 acre of temporary impacts to riparian areas 	<ul style="list-style-type: none"> • Reclaim disturbed areas in phases throughout construction with native grasses and forbs • Replace riparian trees at a 1:1 ratio and riparian shrubs at a 1:1 square foot ratio
Revised Viaduct Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 365.2 acres of permanent, direct impact to wildlife habitat • 1.249 acres of permanent impacts and 0.241 acre of temporary impacts to riparian areas 	<ul style="list-style-type: none"> • Conduct a Burrowing Owl survey following CPW protocols no more than 30 days prior to construction if construction will occur in prairie dog colonies between February 1 and August 31; if a nesting pair is discovered, no construction activity will occur within 150 feet of the nest between March 15 and October 31
Partial Cover Lowered Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 317.0 acres of permanent, direct impact to wildlife habitat • 1.025 acres of permanent impacts and 0.234 acre of temporary impacts to riparian areas 	<ul style="list-style-type: none"> • Remove or trim vegetation outside of the April 1 to August 31 migratory bird-breeding season • Survey areas to be cleared and grubbed, as well as areas within 50 feet of these areas, between April 1 and August 31 for active migratory bird nests within seven days of the work being performed
Partial Cover Lowered Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 368.3 acres of permanent, direct impact to wildlife habitat • 1.298 acres of permanent impacts and 0.253 acre of temporary impacts to riparian areas 	<ul style="list-style-type: none"> • Remove existing nests from structures after August 31 and prior to April 1 • Monitor structures at least once every three days for any nesting activity between April 1 and August 31 • Prepare and implement an Integrated Noxious Weeds Management Plan prior to construction activities • Perform botanical surveys for Ute ladies'-tresses orchid and Colorado butterfly plant prior to the start of construction activities

Exhibit 5.23-14 Summary of Floodplains and Drainage/Hydrology Impacts and Mitigations

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Specific to Alternatives
No-Action Alternative	Minimal impact to potential ponding areas due to the increased width of the viaduct, which may increase runoff from I-70	<ul style="list-style-type: none"> • Create detention ponds and implement storm drainage for onsite drainage system improvements • Design proposed bridge structures to cause no adverse impact to the Sand Creek floodplain
Revised Viaduct Alternative	<ul style="list-style-type: none"> • May impact the floodplain for Sand Creek since bridge construction and new bridge structures will cross this waterway • Minimal impact to potential ponding areas due to the increased width of the viaduct, which may increase runoff from I-70 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • Impact to the Sand Creek floodplain with the proposed bridge construction and new bridge structures will cross this waterway • Impact to potential ponding areas due to the increased width of the highway, which may increase runoff from I-70 • The potential ponding areas between Brighton Boulevard and Dahlia Street will be substantially impacted due to lowered profile of the highway 	<ul style="list-style-type: none"> • Create detention ponds and implement storm drainage for onsite drainage system improvements • Build an offsite drainage system to reduce the risk of flooding within the lowered section of I-70, as well as the portion of the watershed between I-70 and the South Platte River • Design proposed bridge structures to cause no adverse impact to the Sand Creek floodplain

Exhibit 5.23-15 Summary of Wetlands, Open Waters, and Other Waters of the U.S. Impacts and Mitigations

Alternative/Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • No permanent wetland impacts • 0.005 acre of permanent other waters of the U.S. impacts • 0.013 acre of temporary impact to other waters of the U.S. 	<ul style="list-style-type: none"> • Mitigate unavoidable, permanent impacts at a 1:1 ratio in a wetland mitigation bank in the South Platte River watershed • Install temporary erosion control and sediment control BMPs before ground-disturbing activities; permanently stabilize completed areas within seven days; proposed BMPs are listed in the <i>Wetlands Finding</i> provided in Attachment N • Restore wetlands temporarily affected during construction to pre-construction conditions • Obtain and follow requirements of Section 404 permitting and Senate Bill 40 certification
Revised Viaduct Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 4.352 acres of permanent and 0.242 acre of temporary wetland impacts • 0.693 acre of permanent and 0.043 acre of temporary impacts to other waters of the U.S. and open waters 	
Revised Viaduct Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 4.442 acres of permanent and 0.244 acre of temporary wetland impacts • 0.712 acre of permanent and 0.042 acre of temporary impacts to other waters of the U.S. and open waters 	
Partial Cover Lowered Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 4.352 acres of permanent and 0.242 acre of temporary wetland impacts • 0.752 acre of permanent and 0.081 acre of temporary impacts to other waters of the U.S. and open waters 	
Partial Cover Lowered Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 4.442 acres of permanent and 0.244 acre of temporary wetland impacts • 0.771 acre of permanent and 0.080 acre of temporary impacts to other waters of the U.S. and open waters 	

Exhibit 5.23-16 Summary of Water Quality Impacts and Mitigations

Alternative/ Option	Permanent Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
All Alternatives	<ul style="list-style-type: none"> Stormwater runoff can create erosion and degradation of water quality during and after construction Winter maintenance activities use solutions and compounds that could lead to water quality issues from runoff 	<ul style="list-style-type: none"> Provide permanent water quality control features (i.e., extended detention pond) as part of the project to treat stormwater runoff from the highway Consider environmentally friendly techniques to provide water quality treatment Treat runoff entering the South Platte River and Sand Creek in conformance with CDOT's MS4 Permit and New Development and Redevelopment Program <p>Implement the following BMPs for erosion and sediment control, dust control, stormwater control, and expansive during and after construction:</p> <ul style="list-style-type: none"> Silt fences, erosion control blankets Sediment traps, sediment basins Soil stockpile management Temporary diversion structures Spill prevention and control measures Regrading Seeding and revegetating soils and slopes Mulch protection for new plantings Stormwater control channels <p>Use the following winter maintenance BMPs to meet or exceed the water quality standards of CDOT's MS4 permit:</p> <ul style="list-style-type: none"> Prevent over-treating by commencing liquid de-icer application at the beginning of snowfall and no longer pre-treating roads Apply sand/salt mixtures (30 percent/70 percent, respectively) at rates of 105 pounds to 115 pounds per lane mile, which is roughly one-third of the maximum allowable amount of 300 pounds per lane mile Use liquid de-icer products, such as magnesium chloride and Caliber (a mixture of magnesium chloride, cornstarch, alcohol, and tree sap); apply these products at rates of 40 pounds to 80 pounds per lane mile Completely remove sand/salt within the "core" sweeping area within four days of snow events, as per DRCOG and CDOT regulations; only 35 percent removal outside the "core" areas is required; for the past two years, it has been CDOT practice to remove all remaining sand/salt from the study area even though it is not in the "core" sweeping area—and CDOT will continue to do so
No-Action Alternative	<ul style="list-style-type: none"> Increase in runoff TSS loads of up to 4 percent to the South Platte River 	
Revised Viaduct Alternative	<ul style="list-style-type: none"> Increase in runoff TSS loads of 7 percent to 17 percent to the South Platte River Increase in runoff TSS loads of 22 percent to Sand Creek 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> Increase in runoff TSS loads of 11 percent to the South Platte River Increase in runoff TSS loads of 22 percent to Sand Creek 	

Exhibit 5.23-16 Summary of Water Quality Impacts and Mitigations

Alternative/ Option	Permanent Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
<p>Managed Lanes Option (option to Build Alternatives)</p>	<ul style="list-style-type: none"> Increase in runoff TSS loads of 15 percent (for a total of 37 percent) to Sand Creek 	<ul style="list-style-type: none"> Perform fleet upgrades that include on-board computers to track the amount of mixture being applied, as well as rates of application of de-icing materials; this technology prevents over-treating; the majority of the CDOT Region 1 fleet is currently equipped with these computers Use Ice Slicer, another solid mixture; this product is a sand/salt mixture with anti-corrosive additives and is applied at a rate of 100 pounds to 150 pounds per lane mile; this product is preferred over regular sand/salt mixtures because it produces less fugitive dust Stockpile solid mixtures at the I-70 and Havana Street CDOT maintenance facility; the mixtures are kept under domes to protect them from precipitation, which prevents water high in salts from running off into receiving waters Perform quality assurance audits on de-icing mixtures several times per year to ensure elevated levels of harmful anti-caking compounds are not found in the mixtures Train snowplow drivers annually, stressing the importance of meeting or exceeding water quality and air quality permit requirements Use temperature gauges built into trucks and roadway surfaces to assist with making decisions related to de-icing application rates and mixes Use vacuum sweepers, not side-cast sweepers, as part of ongoing fleet upgrades; trash within the right of way is picked up prior to each sweeping Rely on cameras/ITS systems to determine problem areas during each storm event

Exhibit 5.23-17 Summary of Geology and Soils Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures Specific to Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • Excavation below groundwater for construction of the viaduct structure foundations • Temporary impacts to groundwater during excavation 	<ul style="list-style-type: none"> • Dewater structure foundations during construction
Revised Viaduct Alternative	<ul style="list-style-type: none"> • Excavation below groundwater for construction of the viaduct structure foundations • Temporary impacts to groundwater during excavation 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • Excavation is anticipated to extend below the depth of groundwater from approximately the UPRR to Columbine Street • Temporary impacts to groundwater during excavation 	<ul style="list-style-type: none"> • Prevent groundwater infiltration into the lowered section of the highway; install underdrain pipes below the pavement to drain any additional groundwater that still enters the lowered section • Dewater during the construction process

Exhibit 5.23-18 Summary of Hazardous Materials Impacts and Mitigations

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • 7 hazardous materials sites affected • 41 acres of land disturbed • Construction activities at hazardous materials sites have the potential to spread soil or groundwater contamination • Construction at hazardous materials sites also may affect the construction budget and schedule, particularly if previously unidentified contamination is found 	<ul style="list-style-type: none"> • Before right-of-way acquisition, conduct a Phase I Environmental Site Assessment (Phase I) or initial site assessment for those properties identified for acquisition; based on these assessments, additional subsurface investigation may be required depending on the recognized environmental conditions identified and potential risk to the project • Avoid contaminated sites wherever practical; where unavoidable, initiate further site investigation and coordination with affected property owners • Follow <i>CDOT Standard Specifications for Road and Bridge Construction</i>, Section 250, Environmental, Health and Safety Management
Revised Viaduct Alternative, General- Purpose Lanes Option	<ul style="list-style-type: none"> • 24 to 25 hazardous materials sites affected • 575 acres of land disturbed • Construction activities at hazardous materials sites have the potential to spread soil or groundwater contamination • Construction at hazardous materials sites also may affect the construction budget and schedule, particularly if previously unidentified contamination is found 	<ul style="list-style-type: none"> • Follow Tri-County Health Department <i>Health and Safety Practices during Construction on or Near Former Landfills</i> • Conduct appropriate surveys for asbestos, lead-based paint, and universal wastes prior to demolition of any building structures and bridges or elevated structures; if these materials are encountered, remove them in accordance with applicable regulations and guidelines; if ACM is encountered, including buried utilities, follow CDOT Specification 250.07, Asbestos-Containing Material Management and CDOT Asbestos-Contaminated Soil Management Standard Operating Procedure; additionally, depending on the type of ACM, clean up this material in accordance with either Section 5.5 of the Solid Waste Regulations, or Regulation No. 8 of the Air Quality Control Commission Regulations
Revised Viaduct Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 24 to 25 hazardous materials sites affected • 658 acres of land disturbed • Construction activities at hazardous materials sites have the potential to spread soil or groundwater contamination • Construction at hazardous materials sites also may affect the construction budget and schedule, particularly if previously unidentified contamination is found 	<ul style="list-style-type: none"> • Update contaminated sites search databases to reflect most recent records • Prepare and implement a project-specific Health and Safety Plan and Materials Management Plan to address potential hazardous materials that are encountered during construction; these plans will consist of specific measures to protect worker and public health and safety, as well as programs to manage contaminated materials during construction • In the event that unknown contaminated media is encountered during construction, stop working until the contamination is properly evaluated and measures are developed to protect worker health and safety in accordance with the project-specific Health and Safety Plan and Materials Management Plan

Exhibit 5.23-18 Summary of Hazardous Materials Impacts and Mitigations

Alternative/ Option	Impacts and/or Benefits	Mitigation Measures Applicable to All Alternatives
Partial Cover Lowered Alternative, General-Purpose Lanes Option	<ul style="list-style-type: none"> • 25 hazardous materials sites affected • 620 acres of land disturbed • Construction activities at hazardous materials sites have the potential to spread soil or groundwater contamination • Construction at hazardous materials sites also may affect the construction budget and schedule, particularly if previously unidentified contamination is found 	<ul style="list-style-type: none"> • Implement standard construction measures for fugitive dust control, as well as stormwater erosion and sediment controls, to minimize the spread of contaminated soil; during the construction phase, require the contractor to file and abide by a dust management plan to minimize the effects of dust on surrounding communities; additionally, conduct air monitoring to determine whether dust control efforts are successful in preventing violations of air quality standards • Obtain a CDPHE CDPS Construction Dewatering Permit, Remediation Activities Discharging to Surface Water Permit or Construction Activities Discharging to Ground Water Permit, as required, utilizing readily available data; the selected contractor will follow the permit requirements • Obtain and follow the necessary CDPS Dewatering Permits if this alternative requires permanent dewatering; under the temporary construction and permanent feature dewatering permits, treat and discharge source water onsite in accordance with the permit or characterize and remove source water offsite to a permitted disposal facility • Properly abandon and close monitoring wells or septic systems disturbed during construction activities in accordance with applicable regulations and guidelines; if existing monitoring wells are impacted during construction, the project will replace them, as necessary
Partial Cover Lowered Alternative, Managed Lanes Option	<ul style="list-style-type: none"> • 28 hazardous materials sites affected • 703 acres of land disturbed • Extensive excavation through a known landfill that contains contaminants • Construction activities at hazardous materials sites have the potential to spread soil or groundwater contamination • Construction at hazardous materials sites also may affect the construction budget and schedule, particularly if previously unidentified contamination is found 	

Exhibit 5.23-19 Summary of Utilities Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures Specific to Alternatives
No-Action Alternative	<ul style="list-style-type: none"> • All utility types will be affected to some extent • Construction impacts to utilities, mainly adjustments, will be limited to the section of the existing viaduct, realigned ramps, and drainage outfall 	<ul style="list-style-type: none"> • Minimize service disruptions by connecting to active utilities, and scheduling to coincide with periods of lower demand • Encase or provide protective cover over any impacted underground utilities • Coordinate with utility owners and operators to identify construction requirements and financial responsibilities for relocations • Identify and improve any utility concerns that can be addressed as part of project implementation • Integrate above-ground utilities that are impacted by the project into the design, hide them from sight within the design, and/or design them to be aesthetically pleasing to the greatest extent practical • Move above-ground utilities underground to the greatest extent practical
Revised Viaduct Alternative	<ul style="list-style-type: none"> • All utility types will be affected to some extent • Construction impacts to utilities are estimated to be greater than the No-Action Alternative due to wider construction impacts and reconfiguration of ramps 	
Partial Cover Lowered Alternative	<ul style="list-style-type: none"> • All utility types will be affected to some extent • Construction impacts to utilities will be substantial to accommodate the lowered highway and increased width • Offsite stormwater drainage system south of I-70 will cause additional impacts to utilities and result in major benefit to address an existing deficiency 	
Managed Lanes Option (option to Build Alternatives)	<ul style="list-style-type: none"> • Additional temporary impacts to Build Alternatives only at locations of direct connections to I-270, I-225, and Peña Boulevard 	

Exhibit 5.23-20 Summary of Section 4(f) and Section 6(f) Recreation Resources Impacts and Mitigations

Alternative	Impacts and/or Benefits	Mitigation Measures Specific to Alternatives
All Alternatives	Section 6(f) <ul style="list-style-type: none"> • South Platte River Greenway temporary impacts may occur during construction 	<ul style="list-style-type: none"> • Provide adequate notice and signing to Greenway users prior to construction • Return Greenway to pre-construction or comparable state following construction
No-Action Alternative	Section 4(f) <ul style="list-style-type: none"> • Use of Swansea Elementary School (North Option) 	No mitigation measures specific to this alternative
Revised Viaduct Alternative	Section 4(f) <ul style="list-style-type: none"> • Use of Swansea Elementary School (North Option) 	Section 4(f) <ul style="list-style-type: none"> • Use remnants of adjacent parcels obtained for right-of-way expansion to reconfigure the school site plan and replace all the playground facilities; this includes closing Elizabeth Street between 46th Avenue and 47th Avenue
Partial Cover Lowered Alternative	Section 4(f) <ul style="list-style-type: none"> • Use of Swansea Elementary School Public Playground • Use of Globeville Landing Park Section 6(f) <ul style="list-style-type: none"> • Utility easement/access permit required and 0.3 acre will be converted to a drainage outfall/spillway in Globeville Landing Park • Part of Globeville Landing Park will be closed during construction 	<ul style="list-style-type: none"> • Use remnants of adjacent parcels obtained for right-of-way expansion to reconfigure the school site plan and replace all the playground facilities; this includes closing Elizabeth Street between 46th Avenue and 47th Avenue • Coordinate with Denver Parks and Recreation, CPW, and NPS regarding impact to Globeville Landing Park, a Section 6(f) resource • Replace 0.3 acre of land converted to a non-recreation use by the construction of the spillway in Globeville Landing Park and the utility easement/access permit area with in-kind land of at least current fair market value and reasonable equivalent usefulness and location and investigate the acquisition of land identified by Denver near Milstein Park for this replacement • Conditional approval from CPW and NPS is anticipated before the ROD is completed. FHWA has indicated that approval, or lack of objection, at this point is sufficient for NEPA clearance. Near the end of construction, but before closing the project, a formal Section 6(f) conversion proposal will be submitted to the NPS by CPW. CDOT will prepare the request for CPW with their approval.

Exhibit 5.23-21. Summary of Section 4(f) Historic Resource Impacts and Mitigations

Alternative	Impacts	Mitigation Measures Applicable to All Alternatives
No-Action Alternative, North Option	Use of 10 historic resources, which includes 3 <i>de minimis</i> impact determinations	<ul style="list-style-type: none"> • Adverse Effects to historic resources will be resolved by the execution of the Section 106 Programmatic Agreement between FHWA, CDOT, SHPO and consulting parties • Consultation has discussed mitigation measures such as documenting historic structures and ways to preserve the larger history of the project corridor
No-Action Alternative, South Option	Use of 4 historic properties, which includes 3 <i>de minimis</i> impact determinations	
Revised Viaduct Alternative, North Option	Use of 14 historic resources, which includes 6 <i>de minimis</i> impact determinations	
Revised Viaduct Alternative, South Option	Use of 14 historic resources, which includes 6 <i>de minimis</i> impact determinations	
Partial Cover Lowered Alternative	Use of 18 historic resources, which includes 5 <i>de minimis</i> impact determinations	

This page intentionally left blank.