

Technical Report: Construction

This Technical Report describes the potential construction impacts of both the No-Action Alternative and the Proposed Action. In general, highway construction involves the following types of action: bridge demolition/reconstruction/widening, roadway widening, excavation and grading, utility relocations, and the placement of retaining walls, storm sewer and pavement. Construction presents the potential for decreased mobility, as well as increased dust, noise, runoff, traffic congestion, temporary access changes and visual impairments for area residents and through traffic.

CONSERVATION OF RESOURCES

Both the No-Action Alternative and the Proposed Action may affect resources other than those described previously in this EA. Such impacts can include the consumption of natural resources such as fossil fuels and raw materials like gravel and aggregate. The type of alternative selected may also affect social resources such as landfill capacity. In most cases, such impacts cannot be quantified, and cannot entirely be avoided. It is recognized that these impacts should be minimized to the extent practicable. Sustainable practices incorporated into the project planning, construction, and maintenance can minimize resource impacts.

A recent study by El Paso County (*Updated Master Plan for the Extraction of Mineral Deposits*, July 2003) estimated that currently permitted quarry operations have the capacity to meet local demand for the next 12 to 20 years. New sources will then be needed, which is likely to be difficult given the environmental impacts usually associated with mining.

As part of its environmental ethic and policy, CDOT encourages its staff, consultants, and contractors to identify and utilize opportunities and methods to reduce the impact of projects and programs on environmental resources through innovative programs and by providing flexibility in project planning and construction for the use of sustainable processes and materials. This may include such concepts as: natural resource conservation, waste minimization, materials reuse, minimal use of native virgin materials, conservation and efficient use of water and energy, air pollution prevention, preference for “green” purchasing including recycled, minimally processed and packaged items, and preference for locally available resources. CDOT encourages the identification and incorporation of proven alternative materials that are as long or longer-lasting, and which require the same or less maintenance, as long as such

materials do not impact CDOT's ability to meet its primary obligations for providing a safe and efficient transportation system.

AFFECTED ENVIRONMENT

SH 16 is a limited access highway with no residential or business driveways. Access to nearby homes and businesses is available from US 85, Bandle Drive, or other local streets. Access to John Ceresa Memorial Park and Fountain Creek Regional Park is from US 85.

Most of the SH 16 corridor is adjacent to non-residential uses. The commercial and industrial businesses located near SH 16 do not have outdoor activities sensitive to construction impacts such as noise, dust or night lighting. There are a few homes that would be near construction areas: Six mobile homes in the Skyline Mobile Home Park, one home off of Southmoor Drive, and a residential cluster of six homes in the 700 block of Harvard Street, just north of SH 16 and immediately to the west of the UP and BNSF railroad lines. These homes are more than 250 feet north of the highway, while the others are about 100 feet away.

CONSTRUCTION IMPACTS

No-Action Alternative

Construction impacts would not occur with the No-Action Alternative for SH 16 but would occur on US 85 between Crews Gulch and Mesa Road, which is included in the No-Action Alternative. Routine maintenance activities, such as repaving the road, filling potholes, and repairing guardrail, would need to be accomplished from time to time. All of these actions would affect traffic flow, generate noise and dust, and require detours around the work. Some work would likely need to be accomplished at night to minimize severe traffic disruption.

Proposed Action

Construction of the Proposed Action would likely occur over at least two years. At various times and at various locations during the construction process, the following temporary effects are anticipated: increased traffic congestion due to construction activity, access disruption, emissions of dust and construction equipment exhausts, construction noise, nighttime lighting, trail detours and brief closures, potential for erosion and spread of noxious weeds, and various construction issues involving Fort Carson. Each of these effects is discussed below.

After construction is complete, the improvements will need to be maintained over the life of the road. Maintenance activities will disrupt traffic and result in impacts similar to those described for the No-Action Alternative.

- ▶ *Traffic Impacts.* SH 16 is a two-lane highway with minimal road and bridge shoulders. Because there are no nearby parallel routes that could be used as long-term detours, most of the construction would likely take place while traffic remains on the road. Although construction projects would be designed, phased and scheduled to minimize adverse traffic effects, temporary increases in traffic congestion would occur. This would result in increased travel time for commuters that use SH 16, I-25, and US 85, including those using Gate 20 to Fort Carson. It would also affect travel time to certain other local destinations including businesses, schools (e.g., Mesa Ridge High School) and nearby neighborhoods.

The Proposed Action includes modifications to several side streets, including Bandley Drive, Southmoor Drive and Rice Lane. Traffic flow on these local streets would also be affected by construction.

- ▶ *Access.* Limited access and detours would be necessary at certain locations during construction, particularly with the proposed access reconfiguration along US 85 and Southmoor Drive.
- ▶ *Air Quality.* The majority of air pollution emissions during construction would be fugitive dust, including fine particulate matter, generated by soil excavation and backfill. In addition, the various types of heavy equipment needed for construction will generate emissions including diesel engine exhausts.
- ▶ *Noise.* During construction, the Proposed Action would generate noise from diesel-powered earth-moving equipment such as dump trucks and bulldozers, backup alarms on certain equipment, compressors and pile drivers (near bridge abutments and retaining walls). Construction noise at off-site receptor locations tends to be dependent on the loudest one or two pieces of equipment operating at a given time. Noise levels from diesel-powered equipment range from 80 to 95 decibels at a distance of 50 feet. Impact equipment such as rock drills and pile drivers can generate louder noise levels. Impacts from vibration are not anticipated during the construction period since there will be no structures within 50 feet of pile driving activities; the closest structures include a residence, approximately 400 feet from the Crews Gulch Bridge and a commercial property, approximately 600 feet from the SH 16 interchange.

- ▶ *Visual.* Stockpiles of earth materials, stacks of construction materials, and parked equipment may cause a temporary visual impact to the residents and businesses near the locations of construction activities. To accelerate construction and thus minimize adverse traffic effects, nighttime construction work may be undertaken, thus requiring nighttime lighting. As noted earlier, the SH 16 corridor is largely non-residential, so nighttime lighting would be unlikely to affect neighborhoods. However, lighting and nighttime construction activity could discourage nocturnal wildlife movement along Fountain Creek and Crews Gulch.
- ▶ *Trails.* Construction of the Proposed Action would require temporary detours and brief closures of the Fountain Creek Regional Trail under SH 16 and the informal path. Trail detours would only occur during construction of the SH 16 bridges over Fountain Creek and Crews Gulch and are anticipated not to exceed six months in duration.

If replacement bridges over Fountain Creek and Crews Gulch can be constructed in separate phases, all trail traffic can be detoured to the alternate bridge trail during construction. This allows utilizing the Crews Gulch Regional Trail spur with the Fountain Creek Park Trail loop to avoid bridge construction zones associated with the Fountain Creek Regional Trail, and the reverse to avoid the bridge construction zone associated with Crews Gulch. If the bridges are phased to be constructed simultaneously, a 2 mile trail detour would be required carrying Fountain Creek Regional Trail via Crews Gulch Regional Trail, on-street US 85, to Rice Lane. Refer to the *Technical Report: Parks and Recreation/Section 6f Resources* for a diagram of trail detours in the study area.

Temporary construction effects of potential soil erosion and infestation by noxious weeds would also occur during construction.

Increased water turbidity and sediment loads could occur during bridge construction. If spills of fuel, oil, grease, or other chemicals occur during construction activities, they could pollute soils and/or aquatic habitat, or organisms.

The proposed interchange will require the relocation of the existing 33" water line owned by the Bureau of Reclamation. This issue is discussed further in Chapter 5 of the EA, *Issues Relating to the Bureau of Reclamation*.

Construction issues on Fort Carson property will include many of those described above plus the need for access to the Post by construction personnel without compromising security. These issues are discussed separately in Chapter 4 of the EA, *Issues Relating to Fort Carson*.

CONSTRUCTION MITIGATION

Construction related impacts are expected to be short-term and will be mitigated by the design/build contractor through implementation of control measures and BMPs during construction. In addition, CDOT will coordinate with the Army to determine the most appropriate mitigation measures for construction activities on Fort Carson. Specific mitigation measures are summarized below while specific activities and communication associated with the mitigation measures are presented in **Table 1**.

- ▶ Construction staging and traffic control plans will be developed to minimize the disruption to traffic and access. Public access will be maintained for existing uses at all times. Access to the I-25/SH 16 interchange will be maintained during construction in a manner that will accommodate RVs and large trucks. Traffic upon SH 16 will be safely accommodated, particularly morning school traffic. Operations on the UP and BNSF freight railroad lines will not be interrupted. CDOT will coordinate with local emergency service providers to minimize delays and ensure access to properties.
- ▶ Obstructions of through-traffic lanes will be minimized. Traffic will be guided by a flag person to improve circulation and ensure safety at construction sites where feasible.
- ▶ CDOT will coordinate with the Administrative Offices of Widefield School District 3 to identify the best ways to avoid impacts to school traffic. This will include working directly with school staff and students to educate and inform them of the hazards of construction and the construction activity schedule. Regular briefings will be provided to District 3. The school newsletter will be used to inform students as to what activities are completed or planned and what hazards are associated with these activities.
- ▶ CDOT will coordinate with Fort Carson and notify the appropriate persons of any roadway closures, nightwork, or ingress/egress reroutings. Every effort will be made to avoid disruptions for emergency providers and other traffic into and out of the army post. The Primary Defense Access Road will be kept open at all times during construction; some defense traffic may be temporarily shifted to the North Gate. Traffic at Gate 20 will accommodate daily peak demands. Access to the non-fire ranges to the south will be maintained during construction. CDOT will coordinate with the Army regarding the relocation of overhead transmission lines on base property.

- ▶ CDOT will coordinate with local developers and the City of Fountain to ensure that construction is consistent with plans for redevelopment along Bandle Drive.
- ▶ CDOT will inform the KOA Kampground (on Bandle Drive south of SH 16) of construction activities so that the local campground and corporate KOA can notify potential users. CDOT will maintain adequate turning movements for large recreational vehicles.
- ▶ Best Management Practices will be implemented to minimize construction-related air pollutant emissions. Appropriate dust suppression measures such as watering or dust palliative, will be used to minimize dust impact associated with construction activities. A water truck will be on site when dust-generating activities are scheduled to apply water to control dust as needed to prevent dust impacts offsite.
- ▶ An air quality mitigation plan will be prepared by CDOT and will describe all feasible measures to reduce air quality impacts from their project. CDOT staff must review and endorse construction mitigation plans prior to work on a project site.
- ▶ Construction vehicle emissions will be reduced through the use of late model engines, low emission diesel products, alternative fuels, engine retrofit technology, and after-treatment products where feasible.
- ▶ The contractor will be required to maintain equipment and exhaust systems in proper working condition to minimize particulate exhaust emissions from construction equipment. Idling time will be minimized to 10 minutes, which saves fuel and reduces emissions.
- ▶ No open burning of removed vegetation. Vegetation will be chipped or delivered to waste energy facilities.
- ▶ Existing power sources or clean fuel generators will be used instead of temporary power generators when feasible.
- ▶ To the extent feasible, construction noise impacts, while temporary, will be minimized by scheduling the loudest construction activities to occur during daylight hours, by minimizing nighttime construction near residential areas, and by requiring the contractor to use well-maintained equipment - particularly with respect to mufflers.
- ▶ A suitable construction staging area will be designated; contractors will store materials and equipment within that area to minimize the visual impact.

- ▶ Night construction will be limited or avoided near residential areas to minimize the adverse impacts of night lighting. Shielding will be used to the extent practicable to direct the lighting toward the construction work to minimize light trespass into Fountain Creek and Crews Gulch.
- ▶ Impacts to Fountain Creek Regional Park, Crews Gulch, and existing trails will be minimized through the implementation of the appropriate Best Management Practices. CDOT will coordinate with El Paso County, the city of Fountain, and the Trails and Open Space Coalition of the Pikes Peak Region to finalize the details of any temporary trail detours. Information on construction activities that would affect trails will be provided to trail owners and users.
- ▶ All work will be done in conformance with *CDOT Standard Specifications for Road and Bridge Construction*, in particular Section 107.25 (Water Quality Control) and Section 208 (Erosion Control).
- ▶ Temporary and permanent Best Management Practices will be implemented for erosion control, sediment control, and drainageway protection as required by local and state permitting requirements.
- ▶ BMPs will be implemented to reduce the likelihood of chemical spills. Clean up of spills would be conducted in compliance with Colorado hazardous waste regulations in 6 CCR 1007-3.
- ▶ Impacts to ground water wells, and sewer lines will be avoided through the project design and the implementation of the appropriate Best Management Practices.
- ▶ To minimize disruption of service, the relocated portion of the water line owned by the Bureau of Reclamation would be constructed prior to work that would require the demolition of the existing waterline. The relocated line will be a 33" welded steel pipe. CDOT will prepare the legal descriptions for the new easement where the water line will be relocated, and Fort Carson has agreed to the relocation of the water line on their property. CDOT will pay for the design and construction costs associated with the relocation of the water line. The design of the water line and legal descriptions for the easement will be approved by the Bureau of Reclamation and Fountain Valley Authority.
- ▶ In accordance with Section 107.02, Permits Licenses or Taxes, of CDOT's Standard Specifications for Road and Bridge Construction (2005) it shall be the responsibility of the Contractor to obtain all necessary permits required for the lawful prosecution of the construction contract.

**Table 1
Construction Activities and Communications**

continued on the following page

Location	Construction Issues	Participants	Communication Techniques (Options)	Construction Impact Mitigation
Fort Carson Army Post	<ul style="list-style-type: none"> Primary defense access road open all times Gate 20 traffic accommodate peak hour demands Maintain access to non-fire ranges to south Emergency services access Security – non-military personnel, activities, and materials on base Relocation of overhead utilities on base property 	<ul style="list-style-type: none"> Fort Carson Public Works Directorate Fort Carson Environmental Compliance Director Fort Carson Base Real Estate Directorate Fort Carson PM (Gate 20 Project) Fort Carson Base Commander (Security Deployment) Fort Carson Schools Military/Non-Military Personnel El Paso County Transportation City of Fountain Emergency Services Colorado Motor Carriers Association 	<ul style="list-style-type: none"> Directorate Meetings/Briefings/Workshops One-on-One Sessions El Paso County News (Weekly) Fort Carson Mountaineer (Weekly) Fort Carson Schools Web Site/ School Newsletters/PTA Meetings CDOT Highway Advisories (Radio, On-Line) 	<ul style="list-style-type: none"> Construction Staging Traffic control/Signing Temporary and Permanent BMPs
Bandley Drive Frontage Road	<ul style="list-style-type: none"> Access to I-25/SH 16 interchange Accommodation of redevelopment plans Convenient access to and visibility of existing uses 	<ul style="list-style-type: none"> Businesses (Owners, Tenants) El Paso County Department of Transportation City of Fountain Fire/Police/Emergency Services Business Employees/ Customers Travel Planning Organizations (i.e., AAA) 	<ul style="list-style-type: none"> Small Group Meetings/Workshops One-on-One Sessions Targeted mailings (Paper, Electronic) El Paso County News (Weekly) Project Web Site 	<ul style="list-style-type: none"> Construction staging Traffic control/Signing Business Signing on SH 16 and Bandley Drive Temporary and Permanent BMPs
I-25 / SH16 Interchange Area	<ul style="list-style-type: none"> Existing traffic back-up onto I-25 at interchange Uninterrupted through traffic on I-25 Relocation of utilities in I-25 ROW 	<ul style="list-style-type: none"> El Paso County Department of Transportation City of Fountain Colorado Springs Utilities Fort Carson (Security, Deployment) Through and Local Destination Users Travel Planning Organizations (i.e., AAA) Colorado Motor Carriers Association 	<ul style="list-style-type: none"> Small Group Meetings/Workshops One-on-One Sessions Targeted mailings (Paper, Electronic) El Paso County News (Weekly) Colorado Springs Media (Daily/Weekly) City of Fountain Newsletter (Twice Annually) Project Web Site CDOT Highway Advisories (Radio, On-Line) 	<ul style="list-style-type: none"> Construction staging Traffic control/Signing Business Signing on SH 16 Temporary and Permanent BMPs

**Table 1
Construction Activities and Communications (continued)**

<p>Southmoor Drive Relocation</p>	<ul style="list-style-type: none"> Convenient access to and visibility of existing uses Safe turns Southmoor Drive to US 85 Increased traffic on Southmoor Lane/Maintain access to US 85 Noise and air quality impacts Visual impacts Impacts to ground water wells 	<ul style="list-style-type: none"> Residents (Owners, Tenants) Businesses (Owners, Tenants) El Paso County Department of Transportation Widfield School District 3 Widfield Water & Sanitation District Widfield School District 3 Business Employees and Customers 	<ul style="list-style-type: none"> Neighborhood Meetings/ Workshops One-on-One Sessions Targeted Mailings (Paper, Electronic) El Paso County News (Weekly) School District Web Site/ School Newsletter/PTA Meetings Project Web Site 	<ul style="list-style-type: none"> Construction Staging Traffic Control/Signing Business Signing on SH 16 and US 85 Temporary and Permanent BMPs
<p>Willow Springs/Rice Lane Relocation</p>	<ul style="list-style-type: none"> Proximity of roadway to Rice Construction office Reconfiguration of Hyponex operation Relocation of utilities in Assembly Court Impacts to existing wells, water mains, sewer lines Accommodation proposed utilities in Rice Lane 	<ul style="list-style-type: none"> Businesses (Owners, Tenants) El Paso County Parks/ Recreation El Paso County Department of Transportation Widfield Water & Sanitation District Fire/Police/Emergency Services Business Employees and Customers Colorado Springs Utilities 	<ul style="list-style-type: none"> Small Group Meetings/ Workshops One-on-One Sessions Targeted Mailings (Paper, Electronic) El Paso County News (Weekly) Project Web Site 	<ul style="list-style-type: none"> Construction Staging Traffic Control/Signing Business Signing on SH 16 and US 85 Temporary and Permanent BMPs
<p>SH 16 to US 85</p>	<ul style="list-style-type: none"> Impacts to Fountain Creek, park, gulch, trails Impacts to existing wells, water mains, sewer lines Safe turns at SH 16/US 85 interchange Uninterrupted rail movements 	<ul style="list-style-type: none"> El Paso County Parks/Recreation BNSF and UP Railroads Businesses (Owners, Tenants) City of Fountain Fort Carson (Security, Deployment) Widfield Water & Sanitation District Fire/Police/Emergency Services Through and Local Destination Users Colorado Motor Carriers Association 	<ul style="list-style-type: none"> Small Group Meetings/ Workshops One-on-One Sessions Targeted Mailings (Paper, Electronic) El Paso County News (Weekly) Colorado Springs Media (Daily, Weekly) City of Fountain Newsletter (Twice annually) Project Web Site CDOT Highway Advisories (Radio, On-Line) 	<ul style="list-style-type: none"> Construction Staging Traffic Control/Signing Business Signing on SH 16 Temporary and Permanent BMPs
<p>Syracuse Street/Mesa Ridge Parkway Intersection</p>	<ul style="list-style-type: none"> Access to residential neighborhoods Access to schools Safe turns at MRHS (Cosmopolitan) Pedestrian safety at MRHS Noise and air quality impacts Visual impacts 	<ul style="list-style-type: none"> Residents (Owners, Tenants) Widfield School District 3 City of Fountain Fire/Police/Emergency Services Fort Carson (Security, Deployment) 	<ul style="list-style-type: none"> Small Group Meetings/ Workshops One-on-One Sessions Targeted Mailings (Paper) El Paso County News (Weekly) School District Web Site/ School Newsletter/PTA Meetings Project Web Site 	<ul style="list-style-type: none"> Construction Staging Traffic Control/Signing Temporary and Permanent BMPs

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