

**FORT CARSON REGIONAL GROWTH PLAN
Phase 2 Supplemental Report**

Prepared for:

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Foreword

This transportation report contains information gathered and analyzed by CDOT to help the Office of Economic Development better plan for the future growth of the Fort Carson Army Post located south of Colorado Springs, Colorado. It is not intended to be a complete report for the SH115 corridor, but rather a look at the needs associated with transportation along SH115 for a five mile segment near Fort Carson Gates 5, 6, and 7. CDOT utilized the best available information prior to May 2010 for this study and reserves the right to change the plan in the future to best serve the needs of the traveling public.

This transportation report is also designed to support the Pikes Peak Area Council of Governments (PPACG) effort to more accurately prepare for the military growth at Fort Carson. A comprehensive planning effort by various agencies will help local communities address the effects of Fort Carson growth, ensuring the best quality of life for soldiers, their families, and the region.

Direct any questions on this report to the authors listed below who are located at the Colorado Department of Transportation Region 2 North Program office, 1480 Quail Lake Loop, Suite A, Colorado Springs, CO 80906, telephone 719-634-2323.

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Introduction – The SH115 Corridor Study

The purpose of this study is to assess existing highway conditions and to help identify and predict future transportation needs for State Highway 115 (SH115). This action is necessitated by significant population growth at Fort Carson, as a result of the Base Realignment and Closure (BRAC) initiative, where new traffic demands are being placed on the highway facility. This study will look at only a 5 mile corridor segment of SH115, located just southwest of the City of Colorado Springs, Colorado, where the following Fort Carson access points exist:

- Gate 1 (Nelson Blvd) is often called Fort Carson’s Main Gate off of SH115. It currently is a secure gate and used as the west access to their cantonment area. This is by far the most heavily traveled gate along SH115 today and it is the only gate on SH115 where visitors can access the Post.
- Gate 5 (Titus Blvd) is located about 1.5 miles south of Gate 1 along SH115. It currently is a secure gate and used as Fort Carson’s southernmost, west access to their cantonment area. It serves Fort Carson’s Evans Army Community Hospital, Cheyenne Shadows Golf Course, troop work areas, and Post housing.
- Gate 6 (Wilderness Rd) is located about 3 miles south of Gate 1 along SH115. No secured gate exists there today. It is currently used for delivery of ammunition and ordinance to the Post, and recently became the default gate for pre-approved heavy truck construction traffic, used for the new infrastructure improvements on Fort Carson.
- Gate 7 is located about 5 miles south of Gate 1 along SH115. No secured gate exists there today. It is currently used for storage of embankment materials and as another southwest access point to training facilities for the soldiers.

This Corridor Study will help CDOT and the PPACG develop a SH115 Corridor Plan utilizing a multi-project approach to improving SH115 from approximately milepost 42 (Fort Carson’s Gate 1) to approximate milepost 37 (Fort Carson’s Gate 7), and will describe the safety and mobility needs associated with the improvements. The projects described are deemed the best alternatives to meet the Region’s short and long term transportation needs, given available and anticipated funding, to help accommodate future Fort Carson growth and impacts within the Pikes Peak area. CDOT’s plan supports the new activation of Fort Carson’s Gate 6 for use by decaled vehicles during the specified operational hours, and studies various alternatives, evaluating associated social, economic, and environmental effects within the five mile segment of SH115.

CDOT Corridor Planning Process

CDOT looked at various aspects for corridor improvement. Analysis indicates that there is already a need for intersection safety improvements at Fort Carson's Gate 5, which is currently funded and the design underway. Next CDOT looked to extend the limits north and south to identify and categorize other deficiencies anticipated from future growth in the area, especially at Fort Carson's Gate 6. CDOT also looked at the current planned expenditure of funds in the PPACG's Transportation Improvement Plan (TIP), which only includes improvements to the intersections at Gate 5 and Gate 6.

The process included agency coordination to determine the required and desired scope of improvements to be considered for SH115 based on planned Fort Carson growth. It identified the areas where environmental resources and utilities may be impacted, where ROW needs may occur, and develops avoidance strategies or mitigation measures as determined. It develops a framework for implementing improvements and identifies the unfunded needs, both in the short and long term.

During the study, CDOT attended regular Fort Carson Regional Growth Plan Transportation/Planning and Zoning Partnership Group meetings hosted by the PPACG. This allowed CDOT to hear discussion about transportation related issues being studied by the PPACG and their transportation consultant Felsburg Holt & Ullevig (FHU). CDOT gained valuable information from FHU's work, done for the Phase 2 Fort Carson Regional Growth Plan, which contributed to the recommendations presented in this study.

As the study progressed, CDOT met with Fort Carson Directorate of Public Works and Physical Security staffs for discussion of details related to the SH115 Improvements at Fort Carson Gate 5 project. Discussion from these meetings, such as physical layout of the reconstructed Gate 5 facility, security procedures during construction at Gate 5, and pedestrian access contributed to the recommendations presented in this study. CDOT also met with PPACG staff several times as the study developed to clarify scope, the study audience, and discuss administrative details of this report.

The results of this study clearly show Fort Carson's growth to have a significant impact to the surrounding area, and calls for the need to provide additional funding to improve SH115 in the near term.

Military Issues and Need

The first step in planning for improvements was to acquire data and establish a need. As Fort Carson continues to grow, CDOT must react quickly to new and changing information from the military, keeping the focus on quality of our transportation system for everyone in the Pikes Peak area.

Troop strength at Fort Carson began growing in 2008 and is forecast to peak in 2013. Impacts from this growth have been tempered by troop deployments which are likely to continue. The current cantonment (housing) area has been infilling with soldiers and their families, thus significantly changing traffic patterns, and adding to the traffic volumes and congestion on post, and subsequently increasing the traffic congestion to and from the Post on the surrounding highways. In addition, this congestion has become very apparent on SH115 at Gates 1 and 5 during peak travel times, when personnel entering and exiting the Post is extremely high.

CDOT understands that Ft Carson has additional large scale plans to expand their facilities into the year 2015 that include troop facilities and infrastructure along Wilderness Road (Gate 6 east). Due to the limited road network between the new facilities on Wilderness Road and the main cantonment area, soldiers will choose SH115 to travel between Gate 6 and either Gate 5 or Gate 1 each day and create a tremendous burden on SH115. Infrastructure and facility construction has already started along Wilderness Road and it entails heavy construction truck traffic entering and exiting each day from Gate 6. Substantially more soldiers, their families, and support services, will result in increased traffic volumes in this area which will overload SH115 and the basic stop controlled intersections within the study area to the point where they no longer have adequate capacity, and in turn, render the intersections unsafe for current and future travelers. In 2009, analysis of the Gate 5 intersection on SH115 showed that this location meets warrants for a traffic signal to handle the peak morning traffic demand. Traffic demand will only increase as more troops arrive and deployments taper off. Construction of other facilities in the main cantonment area such as the new commissary, expanded post exchange, new elementary school, housing, and expanded hospital will also change on-post traffic patterns and result in more traffic on SH115 between the gates in the study area.

CDOT Segment Vision and Scope

CDOT's vision for SH115, just south of Colorado Springs, is to enhance mobility and improve safety while maintaining system quality. The corridor serves as a multi-modal regional facility that serves as the primary connection between the Fremont County and El Paso County metropolitan areas and is an important scenic, tourist, and recreational corridor. The corridor provides commuter access to communities in these counties and receives a significant economic boost from the military both directly and indirectly due to increased activity in the area. Based on historic and projected population and employment levels, passenger traffic volumes are expected to increase while freight volume may also increase with respect to hauling aggregates as growth continues. CDOT will need to further investigate supply levels of the local aggregate mining industry and report, but at this time, do not expect significant changes to the current levels of travel on SH115. In general, CDOT has found that users, and neighbors, of this corridor want to preserve the rural character of the area while supporting growth at Fort Carson and movement of soldiers, commuters, freight, and tourists.

The study area is a five mile segment of SH115 located just south of Colorado Springs. The five mile segment was chosen because it connects existing 4-lane sections currently on CDOT's system. The section north of this corridor segment will likely be heavily impacted by the increased number of drivers associated with the anticipated growth on, and around, Fort Carson. The section south of this corridor segment will be less impacted than the northern section, but impacted none the less. Continuing an acceptable level of mobility and safety are CDOT's primary objectives here.

CDOT's improvement plan uses the proposed growth identified by Fort Carson traffic engineers, their traffic consultants, and Post security personnel, then analyzes traffic impacts to SH115 associated with that growth, as recommended in the Regional Transportation Plan prepared by the Pikes Peak Area Council of Governments (PPACG). Today CDOT finds the ingress and egress on the west side of Fort Carson is accomplished through Gate 1 (Nelson Blvd.), Gate 2 (O'Connell Blvd.), which is north of Gate 1, and Gate 5 (Titus Blvd.). Increased travel demands, resulting from the infill growth at Fort Carson, will require safety improvements to the existing Gate 5 (Titus Blvd.) location with a signalized intersection. Anticipating vehicle trips resulting from the establishment of Gate 6 (Wilderness Rd.) as a new access for decaled vehicles, will also require an improved intersection.

To meet anticipated traffic demands, the primary area of focus in this study was to identify necessary corridor improvements that include:

- Gradually smoothing roadway profiles to reduce vertical grades that are over 7% today.
- Flattening hillside side slopes to improve sight distance on curves and crest hills.
- Upgrading SH115 intersections by adding turn lanes, improving shoulders, controlling access, installing signals and lighting, widening, and extending and repairing drainage features.
- Using other modern approaches to improve the overall mobility and safety in the areas shown in Exhibit 1.

SH 115 CORRIDOR STUDY AREA

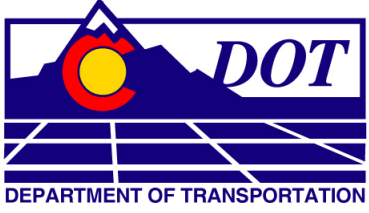
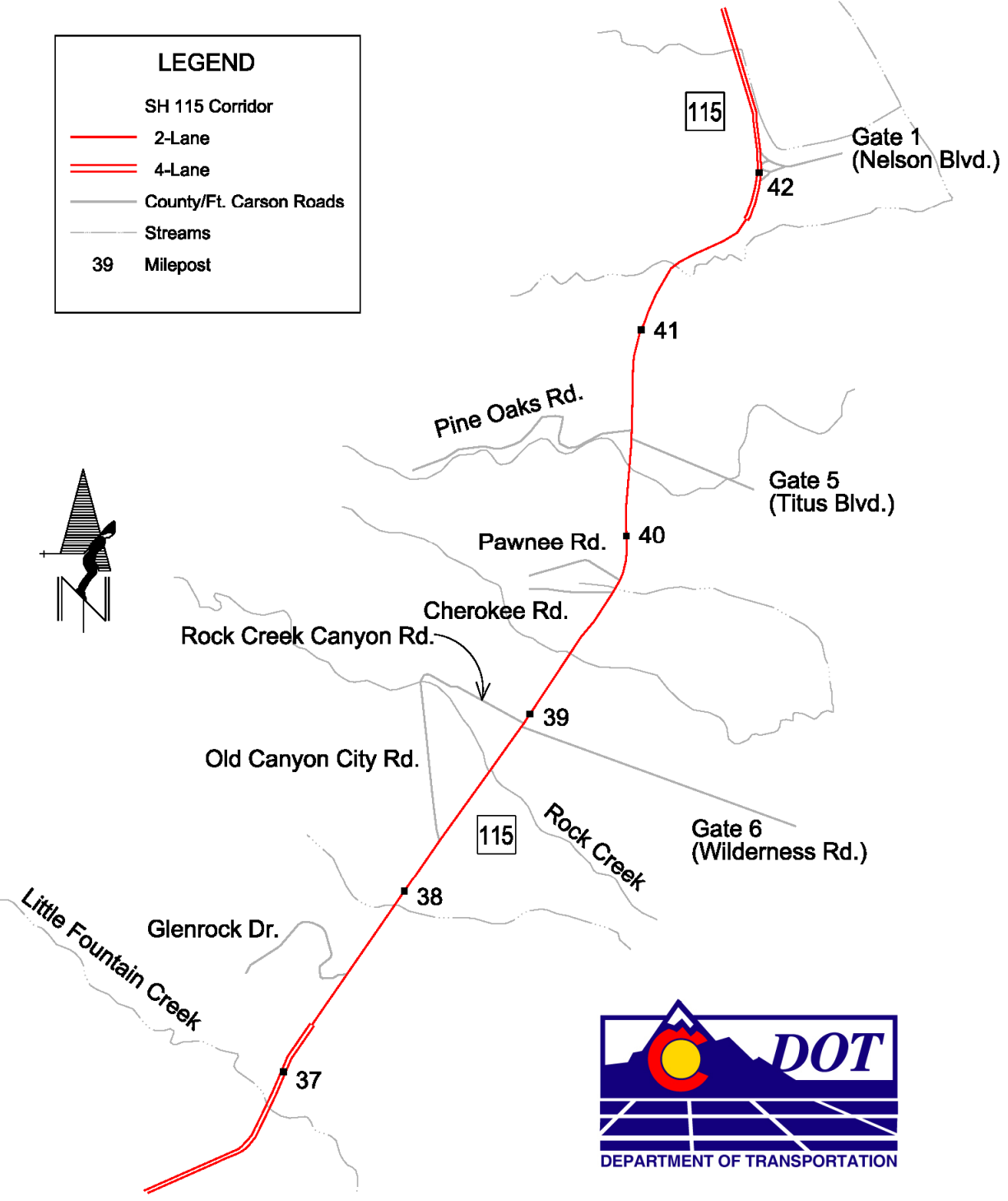


Exhibit 1

Area Background and Current Transportation System

Fort Carson (“The Mountain Post”) was established in 1942, following Japan's attack on Pearl Harbor. The City of Colorado Springs purchased land south of the city and donated it to the War Department for the establishment of Camp Carson. Today Fort Carson houses the 4th Infantry Division and a number of tenant units. The Butts Army Air Field (AAF) has an active runway and hangar facility used primarily by Army rotary wing aircraft for high altitude training of their helicopter pilots. Fort Carson currently employs about 25,000 and is estimated to grow to 35,000 by 2015.

SH115 runs along the west side of Fort Carson and is currently a two-lane, two-way highway with varying width shoulders along this corridor segment. North and south of this 5 mile corridor segment, it is already a four-lane divided highway. SH115 serves the needs of commuters, tourists, Fort Carson soldiers and their families, Fort Carson support services, recreational users, aggregate truck haulers, delivery trucks, and local residents. Northbound is the direction of increasing milepost numbering for SH115. The section of SH115 from MP (Milepost) 37 to MP 39 is located in the Central Front Range transportation planning region (TPR) and classified as a rural 2-lane undivided highway. The section north of MP 39, towards downtown Colorado Springs, is located in the PPACG metropolitan planning organization (MPO) area and classified as an urban 2-lane undivided highway. The average annual daily traffic (AADT) measured in May 2009 was 11,125 vehicles per day (VPD). Truck traffic was measured at about 14% of the total traffic with northbound volume almost double the southbound volume of trucks. The posted speed limit on SH115 in this area is 60 MPH.

From 2000 to 2005, CDOT held many public meetings with commuters and local residents along the corridor. Using this public input and recommendations provided in the 1999 safety study prepared by Parsons Transportation Group (Reference 1), substantial mobility and safety improvements to SH115 from Penrose to Colorado Springs were made. Regional travelers now experience driving many short 4-lane sections in both directions, created for safe passing and located about every four miles along the corridor. Deficient bridges were replaced, alignments improved, and high accident intersections were upgraded as part of those improvements.

After these improvements were made, CDOT and the PPACG’s Long Range Plans did not provide much funding for additional safety improvements to the SH115 corridor. In 2005, when Fort Carson could foresee the growth coming, they notified PPACG who then found funding for improvements to SH115 and placed them into their 2035 Long Range Plan and their Short Range Plan (the transportation improvement plan or TIP) which runs until 2013. CDOT knows the potential future impacts from growth at Ft. Carson are now driving the need for highway and other community improvements sooner than was initially anticipated. In cooperation with the PPACG, CDOT’s 2035 Statewide Plan now provides some safety funding for the Gate 5 and Gate 6 intersections, with expected completion of those improvements in time to accommodate the new troops expected to work at the new troop facilities inside Gate 6 in late 2011.

Traffic information provided by Fort Carson on SH115 at Gate 5 shows growth in troop strength projected to increase average daily traffic volumes 86%, from 3,027 (pre BRAC) to 5,641 in 2011.

At Gate 6, which is the location many of the new troops will use to access their work areas, traffic volumes will increase from zero (pre BRAC) to 3,548 in 2011. The existing SH115 pavement conditions at the two gate locations vary from Fair at Gate 6 to Poor at Gate 5 with deterioration expected to accelerate as volumes increase. Due to current deterioration and safety concerns at Gate 5, CDOT is well on their way to enhancing safety with a new intersection project at SH115 and Gate 5. The Environmental, ROW, and Utility clearances are expected to be issued for the project shortly. Advertisement for bids to construct the project will take place in the summer/fall of 2010, with expected completion by fall/winter 2011.

For the rest of this study, CDOT will assume improvements at Gate 5 will proceed and no major delays are anticipated. The remaining focus will be on the impacts and improvements to the remaining unimproved areas of this five mile segment. However, just south of the Rock Creek bridge (approx. MP 38.6) towards Fort Carson's Gate 7 (approx. MP 37), little will be analyzed and evaluated as part of this study. It is the lowest priority section on the corridor segment, because CDOT is not aware of any Fort Carson plans to open Gate 7. But a 4-lane highway in this area would be desirable to connect the existing 4-lane ends of this corridor segment together.

Data Collection Activities and Public Involvement

CDOT reviewed a number of documents for preparation of this report which are listed in chronological order in the References section of this report. These documents, which date back to 1999, included:

- Safety studies or assessments performed by or for CDOT
- Fort Carson Comprehensive Transportation Study by Gannett Fleming
- Traffic volume counts by Fort Carson at the SH115 gate locations
- Traffic volume and truck percentage counts by CDOT in 2009
- Traffic study and noise assessment at the SH115/Gate 5 intersection
- Presentations by Fort Carson staff at public meeting
- PPACG Phase 1 Fort Carson Regional Growth Plan
- PPACG Draft Phase II Fort Carson Regional Growth Plan which included a Transportation Technical Report by Felsburg Holt & Ullevig
- Initial geotechnical report for the SH115 corridor

In addition, CDOT met with Fort Carson and PPACG staff; made contacts with them, the City of Colorado Springs, and Colorado Springs Utilities via telephone and e-mail; and recorded field observations during numerous visits to the study area.

The public involvement process for this segment of SH115 is part of an ongoing communication program that began with the recent focus on CDOT's safety improvement project at Gate 5. The process involved targeting specific audiences like Fort Carson and the Rock Creek Mesa neighborhood. It began in 2008, and continued through late March, 2010, when CDOT went back out to acquire information from the public specifically addressing concerns about:

- Anticipated growth at Fort Carson.
- This Office of Economic Adjustment (OEA) study for the PPACG.
- SH115 improvements at Gate 5.
- Proposed SH115 improvements at Gate 6.
- PPACG's 2035 Long Range Plan for SH 115.
- Funding and schedule for desired improvements.
- Any new concerns the local traveling public may have regarding SH115 in general.

The meetings were held at the Rock Creek Water District Board Building and about 25 interested local residents of the area attended both. CDOT heard the following from our Pine Oaks and Rock Creek Mesa neighbors:

- We appreciate CDOT's efforts to realign Pine Oaks Rd and make the Gate 5 intersection safer for all. We look forward to the completion of those improvements by fall 2011.
- But, why is CDOT improving SH115 at Gate 6 for the Army when the need doesn't even exist yet, but leaving an unsafe situation for us at the Pawnee/Cherokee intersections?
- Why has the PPACG provided funding for the Gate 6 improvements a higher priority than ours at Pawnee/Cherokee? We have a safety need today at Pawnee/Cherokee because of

all the close calls when people try to make those left turns onto northbound SH115. Isn't CDOT aware of this?

- Garry and Sharon Dykes' Modlens sent CDOT a lengthy e-mail but it was returned for some reason and the content lost. She said to please use their names and that they had safety concerns at Pawnee/Cherokee, and were very disappointed the Army hadn't stepped up to fund the improvements at Gate 6 since they were the ones impacting the area significantly with the growth of their Post facility.

CDOT heard the following from Fort Carson staff:

- In recent years we have worked closely with the PPACG and CDOT anticipating this expansion. Gate 6 will be opened regardless. Fort Carson highly suggests we work together on this.
- We are most interested in the planned improvements at Gates 5 and 6. The improvements will help to mitigate the impacts we're already experiencing from the extensive construction on-post and arrival of additional soldiers.
- All of the newly constructed facilities and housing on Fort Carson that will accommodate the additional soldiers has led to more congested roads and will only get worse when all of the new troops are on-post and deployments end. We anticipate drivers (soldiers, family members, and staff) will choose SH115 as an alternate route to travel between the main cantonment area and Gate 6, or even Gate 5 north to Gates 1 and 2.

CDOT also interviewed Dave Yarbrough, a Senior Deputy with the El Paso County Sheriff's Office assigned to the Traffic Unit. Dave has worked for the Sheriff's Office patrolling SH115 the past 24 years. He is also a local resident, having lived the last 18 years in the Rock Creek Mesa neighborhood. Dave's comments were as follows:

- He likes the safety improvements CDOT made to SH115 from 2001 to 2005, which included 4-lane passing segments, bridge replacements, and intersection upgrades.
- He confirmed the need for more intersection safety upgrades, specifically at Gate 5 and Pawnee/Cherokee because of the many 'close calls' at those locations.
- He identified a high vehicle/animal strike area on SH115, just south of Pawnee/Cherokee, and would like to see more effort in the area to resolve animal/driver conflicts. For example, animal crossings, more signing, etc.
- He confirmed that many soldiers are living in the immediate area, and stated they drive daily onto post in the early am for physical training (PT), head home to shower and eat, and then drive back onto post around 8 am for their military duty mostly utilizing Gate 5. He stated that the soldiers put a very noticeable heavy burden on SH115, especially in the mornings.
- He stated there are 320 water taps for mobile homes and about 100 water taps for regular homes just up the hill from the intersection of SH115 and Pawnee Rd./Cherokee Rd. He regularly observes a driver waiting upwards of 5-15 minutes, looking to go north on SH115 from Pawnee Rd., and when they do, their maneuver has two unsafe parts. First, they shoot the gap and go straight to the far shoulder. Secondly, they look back, accelerate along the shoulder and merge with northbound traffic. He stated that this is not normal driver behavior at an intersection, but that the residents have become very good at it, and they find it the safest way for them to turn onto SH115 to travel north into Colorado Springs.

- He stated that these two intersections are very close to each other. Cherokee Rd. is a little bit safer than Pawnee Rd. because the sight distance is slightly better, but still not good.
- He stated that the neighborhood will probably not grow much in the next 20 years because there is limited water for residents to use at this time.
- He stated that there are a significant number of local residents living west of SH115, along Rock Creek Canyon Rd. across from Wilderness Rd. (Gate 6), and that at some time in the future upgrades to that intersection will need to be made.

SH115 Accident History and Traffic Analysis

In order to estimate future accidents on SH115, we must examine the current safety performance of SH115 with an analysis of the accident history to prioritize the areas needed for safety improvements. The most recent analyses were documented in CDOT's Safety Assessment Report, State Highway 115A Intersection Improvements, dated August 2008, and CDOT's Safety Assessment Report, Special Study Accident Projection Analysis, dated April 2010. Both reports, which examined SH115 between mileposts 38 and 42, are attached in Appendices A and B at the end of this report. The reports documented that the frequency of total accidents in the study area was higher than expected for this type of highway. That contrasts with the frequency of injury and fatal accidents which were lower than expected. In fact, between 2000 and 2008, no fatal accidents were recorded for this segment. The 2010 study noted that the frequency of both total accidents and injury/fatal accidents at Gate 5 were higher than expected while the frequency of total and injury/fatal accidents at Gate 1 were lower than expected. Keep in mind that Gate 5 has not been improved while Gate 1 has been improved.

We must also consider work done in a 1999 CDOT Safety Study of the entire SH115 corridor (milepost 0 to 46.3) which developed a priority list of 30 intersections along the corridor based on the total number of accidents. The study narrowed this priority list to six intersections based on limited funding for improvements and highest number of intersection accidents. Only one intersection from the shorter list was located in this current study's area - Gate 5/Pine Oaks Rd. The number of total accidents during this study's 1994 to 1998 timeframe gave this intersection a rank of 3 out of 6 and was split equally between property damage only accidents and injury accidents. Again, no fatal accidents took place at this intersection during the time considered for this study. The study did show Gate 6 in the initial intersection list but ranked this intersection very low for any type of safety improvements. The primary reason for its low ranking was likely the minimal use of this gate by Fort Carson at the time which has continued until now. This study did record one fatal accident at the Pawnee Rd./Cherokee Rd. intersections area during the afternoon in July 1997.

Based on the safety studies discussed above and comments received from the public, Gate 5/Pine Oaks Rd. and Pawnee Rd./Cherokee Rd. should be addressed first. However, given the recent information about expansion at Fort Carson and their intent to operate Gate 6 like Gates 1 and 5, it now makes sense to improve SH115 at Gate 6 before the new soldiers arrive.

Looking at the accident history before and after the 2007 intersection improvements at Gate 1, CDOT found this intersection to be currently performing at a lower than expected accident rate as stated earlier. CDOT's planned intersection improvements at Gates 5 and 6 are also expected to perform at a lower than expected accident rate upon completion of the improvements.

Fort Carson activities definitely contribute to traffic on SH115. In their Phase II Transportation Technical Report, FHU reported that as much as one third of all traffic today in the SH115 segment considered for this study is Fort Carson related, and in 2015, it may escalate to almost one half if growth continues on Post and planned improvements are completed. Other findings from their report included:

- FHU found that gate traffic counts were primarily a function of the number of soldiers on-post. Traffic counts for all Fort Carson gates increased 90% between 2005 and 2009 while soldiers on-post increased 137%. In their high travel demand scenario which assumed all projected soldiers due to be reassigned to Fort Carson are on-post by 2015, with none deployed, gate traffic counts increase another 30% over 2009 volumes.
- A gate capacity analysis of Gate 1 for 2009 traffic found peak hour volumes exceeded the high end gate capacity. This same analysis found peak hour volumes at Gate 5 were less than the low end capacity with no significant queuing issues. For the high travel demand scenario and 2015 traffic volumes, the analysis found the Gate 1 peak hour volumes exceeded capacity unless Gate 6 is opened. In 2015, the low end capacity of Gate 5 is higher than the projected peak hour volumes.

As FHU progressed with their study, CDOT provided information on the planned improvements to the SH115 study segment. Based on their extensive analysis, they recommended that CDOT continue their plans to improve SH115 from Nelson Boulevard (Gate 1) to Rock Creek Canyon Road (Gate 6).

In preparation for doing a noise assessment of the Gate 5 intersection on SH115, the CDOT Region 2 traffic staff conducted a traffic study of the existing and proposed intersection. Their study of 2008 existing conditions found that the morning peak hour is the most critical hour at this location. During this analysis, it was determined that the morning peak hour traffic volumes met the Manual of Uniform Traffic Control Devices (MUTCD) warrant for a traffic signal. Based on this result, the study included a traffic signal at the intersection for its 2012 and 2029 level of services (LOS) analyses. It also assumed that Pine Oaks Road had been realigned to meet Titus Blvd. and create a true 4-leg intersection unlike the existing conditions today. The most critical LOS for these existing conditions were for southbound left turns (LOS B), westbound left turns (LOS F), and westbound right turns (LOS B). Anticipating increased traffic volumes from the projected Fort Carson growth that would peak in 2012 and proposed improvements at the intersection that include a traffic signal, the study analyzed the resulting LOS again. The southbound left turns remained at LOS B while the westbound left turn improved from LOS F to C, and the westbound right turn improved from LOS B to A. The study's final analysis looked at LOS in 2029. The only change in LOS at the intersection took place on Pine Oaks Road where the LOS dropped from B to C. The study concluded that the level of service on SH115 will remain at LOS A or B through 2029. It also noted that the overall signal delay increased from 11.3 seconds in 2012 to 16.4 seconds in 2029.

Current and Future Safety Deficiencies

Feature	Current	Future
Sight Distances	Limited sight distance at Gate 6 and Pawnee Rd./Cherokee Rd. intersections. Both are on crest of vertical curves.	Sight distance at Gate 6 and Pawnee Rd./Cherokee Rd. intersections to be improved but will still have limitations due to rolling terrain.
Excessive Speeds	Speeds are too high for the current traffic volumes and existing road geometry	Driver tendencies will continue with excessive speeds without enforcement.
Intersection Lighting	No lighting in segment except for one street light next to fence at Gate 5 and Gate 1.	Lighting to be installed at Gate 5, Pawnee Rd./Cherokee Rd., and Gate 6 intersections when improved. Remainder of segment to remain unlighted due to rural nature of area.
Pedestrian/bicycle safety	Only pedestrian access in segment provided at Gate 1 for crossing to Cheyenne Mountain State Park. Limited variable width shoulders for cyclists.	Pedestrian access, other than Gate 1, to be provided when needs are identified. Cyclist experience much better as intersection improvements made.
Drainage	Erosion on the steep side slopes noticeable.	To be addressed when Gate 5 and 6 are improved but will always be a potential problem due to steep side slopes and limited ROW.
Climatic conditions	Road profile is rolling with steep grades and side slopes, with some widenings present for turn lanes. Turn lanes do not meet current CDOT design standards.	Road grades to be reduced to enhance stopping during inclement weather and sight distance as budget allows; intersections to be improved with turn lanes meeting current CDOT design standards where possible, but will cause visibility problems when snow covers the ground.
Emergency vehicles/access	Current traffic loads make accessing the road from intersections difficult. Acceleration lanes are short or don't exist.	Gate 5 and 6 intersections will be improved to move traffic easier. Gate 5 will be signalized. Both will be widened with acceleration

		lanes and deceleration lanes. Some areas won't be corrected but signing or speed reductions will help these areas.
Shoulder/edge delineation	Shoulders vary in width throughout segment causing inconsistent driver and cyclist expectations, making it difficult to pull over if necessary.	Shoulders to be increased to a consistent width as intersection improvements are completed at Gates 5 and 6. Remaining areas will need to be signed or delineated better.
Signs and markings	Current signing for traffic adequate, but lacking some for shoulder widths. Signs needed for wildlife hazard based on 2008 safety assessment findings. Southbound drivers ignoring No U-Turn sign just south of Gate 1 causing accidents. Striping worn from use, mostly at intersections.	Shoulder widths to be increased with Gate 5 and 6 improvements. Remaining areas should be signed for narrow or no shoulder. Striping to be updated with improvements to Gates 5 and 6. Projected increases of traffic at intersections may wear paint out sooner than present maintenance calls for. Transitioning from a two lane road to a four plus lane road at intersections during a snow storm may cause driver disorientation when striping is difficult to see.
Installed hazards	Narrow median between Academy Blvd (MP 43.8) and Gate 1 provides little reaction time to cross-over head on collisions. Steep side slopes on both sides of the road in places between Gates 1 and 5. In this same area, some culvert pipe ends not out of clear zone. Guard rail doesn't meet current design standards.	Guard rail could be installed on one side or the other to prevent head on collisions in the median area between Academy Blvd. and Gate 1 when warranted. Slope flattening and pipe extensions in the area between Gates 1 and 5 when this area is improved.

Environmental Resources and Mitigation Strategies

SH115 is a local and regional travel corridor in South Central Colorado. It serves more than 500,000 nearby residents and links the communities of Colorado Springs, Fort Carson, Canon City, Pueblo West, Penrose, and Florence. Fort Carson is the region's largest employer with SH115 being the major local highway on the west side for soldiers and their families accessing and leaving the Post. Fort Carson also offers services to all military personnel including recreational activities (i.e. a golf course, bowling lanes, rifle range, and hunting) and medical facilities (Evans Army Community Hospital). SH115 provides the transportation needs for commuters traveling from El Paso County to Fremont County which contain a large number of regional, state, and federal Correctional Facilities. This route is also used by the recreating public to gain access to the Pueblo Reservoir, Canon City, the Royal Gorge, Monarch Ski Area, and public lands along the Arkansas River for a variety of recreation including fishing, hunting, camping, white water rafting, and other outdoor activities. The newly opened Cheyenne Mountain State Park is located directly across from Fort Carson's Gate 1 and currently attracts over 50,000 visitors per year.

The National Environmental Policy Act (NEPA) requires any project with a federal nexus to undergo an environmental review process. Based on the proposed transportation improvements along this study corridor, and with only minor anticipated environmental concerns, the environmental review process requires a Class II (Categorical Exclusion) level of documentation. The following is a list of environmental resources potentially affected by the proposed SH115 improvements between Fort Carson Gates 1-7. Where appropriate consulting agencies and mitigation strategies are included. This list is only intended to provide an overview of resources known to occur or likely to occur in the project area. Class II documentation, if appropriate, will be done once highway improvement designs have been initiated and may result in additional resources being analyzed.

Socioeconomic: The project corridor has not been identified as going through any minority or low-income neighborhoods; therefore no mitigation is required.

Noise: The proposed improvements would widen SH115 and improve the intersections along the highway for safety. A recent Noise Study was completed for highway improvements at Fort Carson Gate 5/SH115. The results of this study did not predict any noise levels meeting or exceeding CDOT's 66dBA noise abatement criterion. Additionally, no receptor is predicted to experience a noise level increase of 10 db or more. Therefore, none of the Fort Carson residences are expected to experience noise levels requiring mitigation. Since the remaining project corridor has fewer receptors near the roadway and coupled with the fact that the residences that are adjacent to SH115 are further away from the highway than those in Fort Carson Housing at Gate 5, noise mitigation is not expected for any of the proposed highway improvements.

4(f) Evaluation: Section 4(f) was enacted as Federal law in an effort to set forth guidelines by which to preserve the natural beauty of the countryside, public parks and recreational lands, wildlife and waterfowls refuges, and historic sites. One 4(f) resource (Cheyenne Mountain State Park) and one potential 4(f) resource (Rock Creek Bridge, Structure J-17-X) have been

identified in the project corridor. Improvements at the Titus Blvd/Pine Oaks Rd intersection (Fort Carson Gate 5) required a Programmatic 4(f) Evaluation since State Park land was being used for a transportation use. This evaluation has been completed and will require CDOT to compensate Colorado State Parks for the value of the permanent and temporary easements acquired. No other SH115 improvements would take State Park Lands; therefore no additional 4(f) evaluation to Cheyenne Mountain State Park is anticipated to occur. The Rock Creek Bridge has been identified as potentially eligible for listing on the National Register of Historic Places (NRHP). If this structure is replaced or modified it would require a Programmatic 4(f) evaluation if the bridge is determined to be eligible for listing on the NRHP. Mitigation would be determined during the evaluation. FHWA approval is required for any Programmatic 4(f) Evaluation.

Visual Resource: Improvements to SH115 include widening the highway intersections from 2 lanes to 4 lanes for safety. This would increase the roadway prism and make it more visible to local residents. However, since SH115 already exists, and would remain on its current alignment, visual resources are not expected to change much. Additionally, roadway construction and design will try to minimize the removal of vegetation (i.e. grasses, shrubs, and trees) and require 70% vegetation cover of pre-existing conditions as part of any EPA or CDPHE Permits.

Air Quality: Future improvements along SH115 may add additional lanes (increase capacity) and add traffic signals at intersections; therefore air quality studies would be required to make sure the projects meet air quality conformity standards. The study showed that the SH115/Titus intersection would operate at a level of Service C or better during peak hours through 2029. Environmental Protection Agency guidance for hot spot modeling states that intersections which operate at level of service C or better are unlikely to cause a violation of the federal carbon monoxide standards. Therefore, hot spot modeling was not required.

Floodplains: Rock Creek and Little Fountain Creek have mapped FEMA floodplains. Any work within the mapped floodplains for these drainages will need a consultation with the El Paso County Floodplain Administrator.

Water Quality: Any construction project occurring along SH115 will have a Stormwater Management Plan (SWMP). This SWMP will include erosion control best management practices (BMPs) to prevent and minimize erosion during and after construction. Any project disturbing more than 1-acre of ground will require a CDPS permit from the Colorado Department of Public Health and Environment. A NDPS permit will be required from the Environmental Protection Agency (EPA) for work occurring on land owned by Fort Carson. It has been identified that segments of SH115 are located on an easement from Fort Carson.

Wetlands: Wetlands do occur within this corridor segment, and have been noted along both sides of SH115 north of Gate 6. Wetlands are also known to occur along the unnamed drainage just east of Gate 6. During design and construction wetland impacts will be minimized to the greatest extent possible. If impacts exceed 1000 square feet, a wetland finding will need to be performed by CDOT. Any impacted wetland will be mitigated at a ratio of 1:1. When possible, mitigation will be done on site. The US Army Corps of Engineers will be consulted to

determine if a Section 404 permit is required under the Clean Water Act for any work occurring in wetlands or drainages.

Vegetation and Wildlife: Widening SH115 will require clearing some vegetation in order to construct improvements. Vegetation to be cleared will include native grasses, shrubs, and trees. This vegetation may be used as habitat by local wildlife for nesting, foraging, and as travel corridors. During design and construction, impacts to vegetation will be minimized to the greatest extent possible. A revegetation plan will be developed for each project by a landscape architect and will utilize native plants. For safety reasons, it is not desirable to plant trees along the clear zone (typically 30 feet from the shoulder of the highway).

Impacts to live streams will require SB40 consultation with the Colorado Division of Wildlife. SH115 bisects' high quality deer, elk, and other wildlife habitat areas. More trips on the highway will result in more animal conflicts. The 2008 safety assessment study done for the SH115 Improvements at Gate 5 project identified collisions with wild animals as the predominant accident type during the 2000-2004 study period. Future roadway design will consider large mammal crossings wherever possible. Any existing bridge structures in the corridor that will be replaced or modified may be designed to adequately accommodate large mammal passage.

Noxious Weeds: A noxious weed management plan will be required for each construction project along the SH115 project corridor. This plan may incorporate BMPs to prevent future noxious weed outbreaks associated with new construction. For example, the plan may require all construction equipment to be washed prior to being used on site.

Threatened and Endangered Species: Several federal and state listed species (i.e. threatened, endangered, candidate and species of concern) are known to live near this corridor segment. A threatened and endangered species survey was completed for Fort Carson Gate 5/SH115. The survey did not reveal the presence of any listed species or any critical habitat in the project area. Future corridor projects will require an updated T&E survey. While not an exhaustive list of species to be considered, the following species will be observed and are known to occur near the project corridor: northern leopard frog, Western Burrowing Owl, Mexican Spotted Owl, Townsend's big-eared bat, black-tailed prairie dog, Arkansas Darter, and the greenback cutthroat trout. Based on the previous Gate 5 survey, it is not anticipated that any listed species will be impacted. However, if a listed species or its critical habitat is encountered, appropriate consultation with the Colorado Division of Wildlife and/or the US Fish and Wildlife Service will be made. All necessary mitigation will be determined at that time.

Historical Resources: Only one potentially historic property has been identified along this corridor segment. The Rock Creek Bridge has been identified as possibly eligible for the NRHP. Should this structure be modified or replaced, CDOT will determine the bridge's eligibility, and consult with the State Historic Preservation Officer. Potential mitigation will be determined at that time.

Archaeological Resources: Archaeological resources are known to occur near the project corridor. An archaeological survey conducted for the Fort Carson Gate 5/SH115 project did not reveal any archaeological resources. Additional surveys will be required for projects remaining

in the corridor along SH115. If archaeological resources are found, the State Historic Preservation Officer will be consulted to determine eligibility of the site. If archaeological resources are found, appropriate mitigation will be done including avoidance, protection in place, and consultation with the appropriate Native American Groups. Should any undiscovered resources be uncovered during construction, construction will stop immediately until CDOT staff has evaluated the site.

Paleontological Resources: Potential for paleontological resources exists within the corridor segment especially in the Pierre Shale strata. A recent survey was conducted for the Fort Carson Gate 5/SH115 project. The survey revealed a scarcity of well-preserved, rare, and/or chronologically-restricted fossils; therefore no mitigation was required. The project corridor from Fort Carson Gate 1 to Gate 7 provides other potential paleontological sites that will need to be surveyed prior to construction. Should any significant fossils be discovered, mitigation will be determined at that time and may include avoidance, protection in place, documentation and removal. Should any undiscovered fossils be uncovered during construction, construction will stop immediately until CDOT staff has evaluated the site.

Hazardous Waste and Materials: A preliminary records search of the corridor segment did not reveal any hazardous waste or material sites near SH115 that would affect any of the proposed highway improvements. However, an old building foundation near Pine Oaks Rd was investigated under an Initial Site Assessment for the Fort Carson Gate 5/SH115 project. Old siding was found scattered throughout the site. It was tested and shown to be positive for asbestos. A soil asbestos abatement plan has been prepared for the site and approved by the CDPHE. The plan will be implemented once CDOT acquires the property. While there is a low risk of finding any additional hazardous materials or waste along the SH115 project corridor, an initial site assessment (ISA) will be conducted prior to any additional roadway design and construction. Should any hazardous materials or waste be suspected or encountered, appropriate precaution and mitigation will take place depending on the type of contamination.

Land Use: Land use is not expected to change significantly should the SH115 improvements be constructed. Fort Carson is committed to increased troop levels, regardless if improvements are made or not. Furthermore no new access to SH115 will be allowed, only existing access points will be improved.

Right of Way Strategies

Several ROW impacts and mitigation strategies have been developed regarding improvements to this corridor segment. This is not a comprehensive list because many impacts do not apply here. The resource and actions addressed are as follows:

Right of Way - ROW will be required to expand intersections and improve safety:

- Properties and relocations will be planned for projects with as much lead time and agency coordination early on as possible.
- Highway widening will be to the east of the existing alignment so the impacts are to existing CDOT ROW and Fort Carson only.
- CDOT will comply with the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970 if necessary.
- No relocations are necessary or anticipated for this corridor segment at this time.

Environmental Justice - Residential and business property may be acquired:

- There are no disproportionate impacts to minority and low income populations.
- CDOT will comply with the Uniform Relocation and Assistance and Real Property Acquisition Policies Act of 1970 if necessary.

Neighborhoods - Any additional traffic entering and leaving Fort Carson to SH115 may impact Post security, public safety, increase street noise, and degrade air quality:

- Fort Carson's secured access points will not change.
- Fort Carson has no current plans to improve bicycle/pedestrian facilities connecting to SH115.
- CDOT will limit Gate pedestrian improvements to earthwork grading only.
- Capacity improvements will minimize congestion and thus help air quality.

Utilities

SH115 in the project study area is relatively clear of utilities that could influence its future development. The primary reason for this minor influence is that SH115 planners provided for right of way (ROW) in the original layout of the roadway that would allow growth of the existing two lane facility to a four lane facility. Although the overall influence is minor, there are several utilities located in the project study area that must be considered. Following is a description of each and its influence on the future development of SH115.

Water

Colorado Springs Utilities (CSU) will be installing a water line extension from a point located in JL Ranch Heights road which is the west leg of the SH115 intersection for Gate 1 to Fort Carson. The new 12 inch line will go south from the southwest corner of the intersection along the west shoulder, and then cross SH115 to the east shoulder. At this point the new line will connect in a meter pit to a new water line designed by the U.S. Army Corps of Engineers (COE). The COE water line will travel to the south roughly along the SH115 corridor, just inside the Fort Carson perimeter fence. It will cross Titus Boulevard, just inside the new Gate 5 to be built by CDOT, and proceed south to Gate 6. At this location, the new line will turn and proceed east along Wilderness Road to a new troop complex now under construction. At the Gate 1 location where the CSU water line crosses SH115, the existing road is a four lane divided facility and will not be affected by the new water line when construction is completed. The COE water line crossing at Gate 5 is being coordinated with CDOT's Gate 5 improvements to avoid any conflicts between the two projects.

CSU was also considering SH115 as one of several alternatives for their Southern Delivery System (SDS) project that will provide additional water to Colorado Springs and other local cities. This alternative would have installed a water supply line and pump stations in the SH115 ROW to the south of this project's study area. Other alternatives considered by the SDS project would have used SH115 ROW for a line that returned water to the Pueblo Reservoir. On March 20, 2009, the Bureau of Reclamation issued a Record of Decision for the SDS Final Environmental Impact Statement (FEIS). The approved alternative eliminated SH115 from consideration and use for the SDS project so this CSU project will not influence SH115 in the project area.

Located west of SH115 between Fort Carson Gates 5 and 6 is the Rock Creek Mesa Water District. It serves the neighborhood and residents who live west of SH115. All of its facilities are located west of SH115 and aren't anticipated to affect future improvements to the roadway.

Wastewater

No wastewater facilities are currently located in the SH115 ROW. Future development of property west of SH115 between Gates 5 and 6 may lead to extension of existing CSU wastewater lines that currently end in Cheyenne Mountain State Park north of Gate 5, to service this new development area. A second scenario would construct new lines from the new development to connect to the existing CSU lines in the state park.

Gas

In 2008, Colorado Springs Utilities installed a new high pressure natural gas line in the SH115 ROW between Fort Carson Gates 1 and 5, terminating at a regulator station just inside the Fort Carson perimeter fence at Gate 5. A COE project will extend this new gas line south from Gate 5 on Fort Carson property, inside the perimeter fence to Gate 6 where it will turn and go east along Wilderness Road to the new troop complex described earlier. The gas line installed in 2008 placed several valves in the SH115 ROW at Gate 5. The SH115 Gate 5 improvements designed by CDOT will provide access to these valves for maintenance by CSU. Location of the gas line itself was accounted for by CDOT in the design of the 115 Gate 5 improvements north of the intersection. This gas line must also be considered for future improvements of SH115 between Gates 1 and 5 when that section of roadway is expanded from a two lane to four lane facility. Finally, future development of property west of SH115 between Gates 5 and 6 may want to connect to the CSU gas line to service their facilities. This will require installing a connecting line under SH115 which CDOT will be expanded from two lanes to four lanes in 2010 and 2011.

Electric

An existing CSU overhead electric line is located in the project study area just outside the west ROW fence of SH115. In late 2009, CSU completed a maintenance project that replaced the wood utility poles and raised the height of the overhead lines. CSU will be installing a transformer and service for the CDOT 115 Gate 5 improvements project which will provide power for the new traffic signal and intersection lighting to be built by the project. Because of its location, this overhead line is not anticipated to influence future development of SH115 in the project study area.

Communications

Only one communications line is located in the SH115 ROW in the project study area, a Qwest telephone line. This line is located along the west ROW fence in the 115 Gate 5 improvements area and will be adjusted during construction of the Gate 5 improvements as the existing Pine Oaks Road intersection with SH115 is relocated further south to align with Titus Boulevard which is the access to and from Fort Carson. A service drop from this line will be provided by Qwest at the Gate 5 intersection so that CDOT staff can communicate with the new traffic signal to be installed at this location.

Utilities Summary

In summary, the influence of existing utilities on the future development of SH115 is minor. However, the recent installation of the CSU gas line may be a harbinger of utilities that need to be located in the SH115 ROW to support future development in the area and could result in a much larger influence on its future development. Although CDOT planners allowed for growth of the roadway from two to four lanes, no room was provided for a dedicated space within the ROW that doesn't fall within the roadway prism or supporting embankment. Because of the existing rolling terrain in the project study area, growth from two to four lanes must be done

without a center median, where utilities might be located, in order to stay within the existing ROW. Putting new utilities in the existing ROW is further complicated by new environmental water quality measures that limit the available space in CDOT ROW where utilities could be installed. And new communication facilities, particularly fiber optic lines, are being installed in more and more state highway right of ways because this “public” space is perceived to be available for utilities and easier to obtain than an easement on adjacent private land.

Recommendations

CDOT recommends the following improvements, in priority order, to address the needs discussed earlier in this report:

- SH115 Improvements at Gate 5. Widen SH115 from a 2-lane section to a 4-lane section. Provide acceleration and deceleration lanes, turn lanes, and signing and striping that meet CDOT design standards. Install a traffic signal and relocate Pine Oaks Road to align with Titus Blvd. to create a four leg intersection in place of the existing offset intersections.
- SH115 Improvements at Gate 6. Widen SH115 from a 2-lane section to a 4-lane section. Provide acceleration and deceleration lanes, turn lanes, and signing and striping that meet CDOT design standards. Coordinate construction with new security facility construction on Post.
- SH115 Improvements at Pawnee Road/Cherokee Road. Widen SH115 from a 2-lane section to a 4-lane section. Provide acceleration and deceleration lanes, turn lanes, and signing and striping that meet CDOT design standards.
- SH115 Improvements at Gate 1 South. Widen SH115 from a 2-lane section to a 4-lane section. Provide acceleration and deceleration lanes, turn lanes, and signing and striping that meet CDOT design standards.
- SH115 Improvements at Rock Creek Bridge. Replace structure J-17-X, a 2-lane section, with a 4-lane section structure.
- SH115 Improvements, Old Canyon City Road South. Widen SH115 from a 2-lane section to a 4-lane section. Provide acceleration and deceleration lanes, turn lanes, and signing and striping that meet CDOT design standards.

Completion of the above improvements will help mitigate the impacts anticipated from the growth at Fort Carson. The recommended improvements will extend the 4-lane typical section from its current terminus at Gate 1 south to the next 4-lane typical section just north of Gate 7. This 4-lane section will provide a consistent driver experience over this 5-mile segment and address the safety issues identified in the safety reports referenced by this study.

Current CDOT Funding Scenario and Cost Estimate

Available Funding

The current funding available for improvements to SH115 as documented in the State Transportation Improvement Program (STIP) is as follows:

Year	Amount
2008	\$1,000,000
2009	\$0
2010*	\$12,852,650
2011	\$1,000,000
2012	\$200,000
2013	\$2,000,000
Total*	\$17,052,650

* - includes \$652,650 of Public Lands Highway funds shown in the PPACG TIP but not currently shown in the STIP.

Cost Estimate:

CDOT developed planning level estimates for the recommended improvements as shown below:

MP 41.0 - 42.0	Gate 1 South	=	\$ 3.5 M
MP 40.0 - 41.0	Gate 5	=	\$ 5.5 M
MP 39.4 - 40.0	Pawnee Rd / Cherokee Rd	=	\$ 4.5 M
MP 38.7 - 39.4	Gate 6	=	\$ 4.5 M
MP 38.5 - 38.7	Rock Creek Bridge	=	\$ 3.5 M
MP 37.0 - 38.5	Old Canyon City Road South	=	\$ 4.5 M
	TOTAL	=	\$ 26.0 M

Implementation Schedule

Due to recent changes in the TIP by PPACG, and CDOT's STIP, we are now in a position to complete safety improvements at the Gate 5 and Gate 6 intersections along SH115. These projects are being completed in anticipation of the future growth at Fort Carson and mitigation of the impacts from that growth. There is very little money in future years of the short range plan to make further substantial upgrades to SH115 without the financial help of the OEA and Department of Defense. If funding is acquired by others in the near term, the schedule for improvements may look like this:

	<u>Start</u>	<u>End</u>
• SH115 @ Gate 5	Fall 2010	Fall 2011
• SH115 @ Gate 6	Spring 2011	Fall 2011
• SH115 @ Pawnee/Cherokee	Spring 2012	Fall 2012
• SH115 @ Gate 1 South	Spring 2014	Fall 2014
• SH115 @ Rock Creek Bridge	Spring 2015	Fall 2015
• SH115, Old Canyon Rd South	Spring 2015	Fall 2015

If funding is not acquired by others in the near term, the schedule for improvements may look like this if the PPACG deems this corridor still a priority:

	<u>Start</u>	<u>End</u>
• SH115 @ Gate 5	Fall 2010	Fall 2011
• SH115 @ Gate 6	Spring 2011	Fall 2011
• SH115 @ Pawnee/Cherokee	Spring 2013	Fall 2013
• SH115 @ Gate 1 South	Spring 2016	Fall 2016
• SH115 @ Rock Creek Bridge	Spring 2018	Fall 2018
• SH115, Old Canyon Rd South	Spring 2020	Fall 2020

The PPACG 2035 Long Range Plan currently shows this corridor as a four lane freeway. However, in verifying this classification with PPACG, CDOT learned that the corridor should have been classified as an expressway which alters the type and costs of the improvements which would have been required to meet the freeway classification. But given the buildup of troops, their dependents, and support staff, and Fort Carson's overall impact on the local area, CDOT concluded that decisions to fund improvements along this corridor will be driven by the growth of Ft Carson. We will continue to coordinate future efforts with Fort Carson, the PPACG, El Paso County, City of Colorado Springs, and local community as development of the SH115 corridor moves forward.

References

The following references, arranged in chronological order, were used in preparing this report.

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APPENDIX A

SAFETY ASSESSMENT REPORT

**State Highway 115A
Intersection Improvements
MP 38.00 - MP 42.00
Region 2**

August 18, 2008

APPENDIX B

SAFETY ASSESSMENT REPORT

**SH115A: MP 38.00 - MP 42.00
Region 2
Special Study
Accident Projection Analysis
April 2010**