



FINAL CORRIDOR CONDITIONS REPORT

US 24 PLANNING & ENVIRONMENTAL LINKAGES STUDY

December 2016





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List of Acronyms and Abbreviations

AST - Aboveground Storage Tank
ASTM - American Society for Testing and Materials
BFE - Base Flood Elevation
BGEA - Bald and Golden Eagle Protection Act
BO - Shortgrass Prairie Initiative Programmatic Biological Opinion
CBC - Concrete Box Culvert
CBGCP - Concrete Box Girder Continuous Prestressed;
CDOT - Colorado Department of Transportation
CDPHE - Colorado Department of Public Health and Environment
CEQ - Council on Environmental Quality
CERCLA - Comprehensive Environmental Response, Compensation, and Liability Act
CFR - Code of Federal Regulations
CI - Concrete on Rolled I-Beam
CMP - Corrugated Metal Pipe
CNHP - Colorado Natural Heritage Program
CO - carbon monoxide
COGCC - Colorado Oil and Gas Conservation Commission
CPG - Concrete Prestressed Girder (Precast)
CPGC - Concrete Prestressed Girder Continuous (Precast)
CPW - Colorado Parks and Wildlife
CSGC - Concrete Slab & Girder Continuous (Poured in Place)
CWA - Clean Water Act
dBA - A-weighted decibel
DMNS - Denver Museum of Nature and Science
DOT - Department of Transportation
DWR - Colorado Division of Water Resources
EA - Environmental Assessment
EO - Executive Order
EPA - Environmental Protection Agency
ERNSCO - Emergency Response Notification System
E-X - Expressway
ESRI - Environmental Systems Research Institute



- FEMA - Federal Emergency Management Agency
- FHWA - Federal Highway Administration
- FTA - Federal Transit Administration
- GHG - greenhouse gas
- HAP - Hazardous Air Pollutants
- HCM - Highway Capacity Manual
- HISTSWLF - Historical Solid Waste Landfills
- HSP - human service provider
- HWSG - Hazardous Waste Sites Generator
- LEP - limited-English proficient
- LOS - Level of Service
- LOSS - Level of Service of Safety
- LST - Leaking Underground Storage Tank
- LUSTTRUST - Leaking Underground Storage Tanks Trust Fund Sites
- LWCFA - Land and Water Conservation Fund Act
- MBTA - Migratory Bird Treaty Act
- MP - milepost
- mph - miles per hour
- MSATs - Mobile Source Air Toxics
- NAAQS - National Ambient Air Quality Standards
- NAC - Noise Abatement Criteria
- NEPA - National Environmental Policy Act
- NHPA - National Historic Preservation Act
- NO₂ - nitrogen dioxide
- NR-A - Non-rural regional highway
- NRCS - National Resource Conservation Service
- NRHP - National Register of Historic Places
- NWI - National Wetland Inventory
- O₃ - ground level ozone
- PCBC - Concrete Box Culvert Pre Cast
- PEL - Planning and Environmental Linkages
- PEM - palustrine emergent
- PFYC - Potential Fossil Yield Classification System



- PPACG - Pikes Peak Area Council of Governments
- PSS - palustrine scrub-scrub
- R-A - Rural principal highway
- RCRA - Resource Conservation and Recovery Act
- RCRAGR08 - Resource Conservation & Recovery Act - Generator
- RTP - Regional Transportation Plan
- SEMS - Superfund Enterprise Management System
- SGPI - Shortgrass Prairie Initiative
- SH - State Highway
- SHPO - State Historic Preservation Officer
- SO2 - sulfur dioxide
- SPF - Safety Performance Function
- SRHP - State Register of Historic Properties
- SWF - Solid Waste Facilities
- TAZ - Transportation Analysis Zone
- TES - Threatened and endangered species
- TTS - Timber Stringer-Timber Deck
- UCM - University of Colorado Museum
- ULT - Ute ladies' tresses
- US - United States
- US 24 - United States Highway 24
- USFS - United States Forest Service
- USFWS - United States Fish and Wildlife Service
- USGS - United States Geological Survey
- UST - Underground Storage Tank



INTRODUCTION

United States Highway (US) 24 east of Colorado Springs is an important highway providing transportation connectivity between Colorado Springs, Peterson Air Force Base, and the Colorado Springs Airport and the growing suburban community of Falcon and rural communities of Peyton, Calhan, and Ramah. Connecting with I-25 south of downtown Colorado Springs and with I-70 at Limon, the US 24 corridor provides regional mobility for the rural areas of El Paso County and serves as a primary truck route for freight movements between I-70 in eastern Colorado and Colorado Springs and southern Colorado.

The Colorado Department of Transportation (CDOT) initiated the US 24 Planning and Environmental Linkages (PEL) Study to examine existing transportation conditions and anticipated problem areas along the US 24 corridor in El Paso County between Powers Boulevard (State Highway [SH] 21) and the Town of Ramah. The study will identify and screen a reasonable range of potential transportation improvements to develop an implementation plan for projects to meet the operational, safety, and capacity needs along the corridor.

This transportation study will be conducted using the PEL approach. The PEL process is a study approach used to identify transportation issues and environmental concerns, which can be applied to make planning decisions and for planning analysis. PEL studies link planning to environmental issues and result in useful information that may ultimately be used to prepare a National Environmental Policy Act (NEPA) study and final design. An objective of this study is to work with stakeholders to analyze transportation issues and explore a range of short- and long-term actions along the US 24 corridor.

This Corridor Conditions Report documents the current and anticipated future transportation conditions along the corridor, developed from readily available data and a windshield survey. The information presented in this report will be used in the development and analysis of improvement alternatives, which will be documented in a subsequent report.

Study Area

The traffic study area and the environmental resource review area are illustrated in **Figure 1**. The traffic study roadway consists of US 24 from Powers Boulevard (SH 21) to Ramah Highway at the El Paso County line, a distance of approximately 40 miles, from milepost (MP) 311 to MP 350. The west end of the study corridor is in the City of Colorado Springs and the highway travels through the Towns of Calhan and Ramah to the east. The majority of the US 24 study corridor lies within unincorporated El Paso County.

The characteristics and needs along the 40-mile length of the US 24 study corridor are diverse. To effectively focus on improvements that could address the local transportation issues as well as needs of the overall corridor, the following five corridor segments were



identified based on adjacent land uses, current and future traffic volumes, and physical and operational characteristics:

- ✦ Powers Boulevard to Constitution Avenue (MP 311 - 314.6)
- ✦ Constitution Avenue to Falcon (MP 314.6 - 321)
- ✦ Falcon to Peyton (MP 321 - 330)
- ✦ Peyton to Calhan (MP 330 - 340)
- ✦ Calhan to Ramah (MP 340 - 350)

The environmental study area is focused on the most likely physical impacts of corridor transportation improvements. Generally, environmental resources were identified within 500 feet of the highway corridor (a total of 1,000 feet wide along the corridor). To take into account the potential for indirect or secondary effects to community or environmental resources as a result of the recommended improvements, relatively large and regional resources were identified outside of the 1,000-foot boundary.

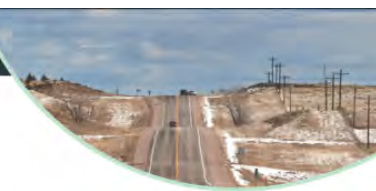
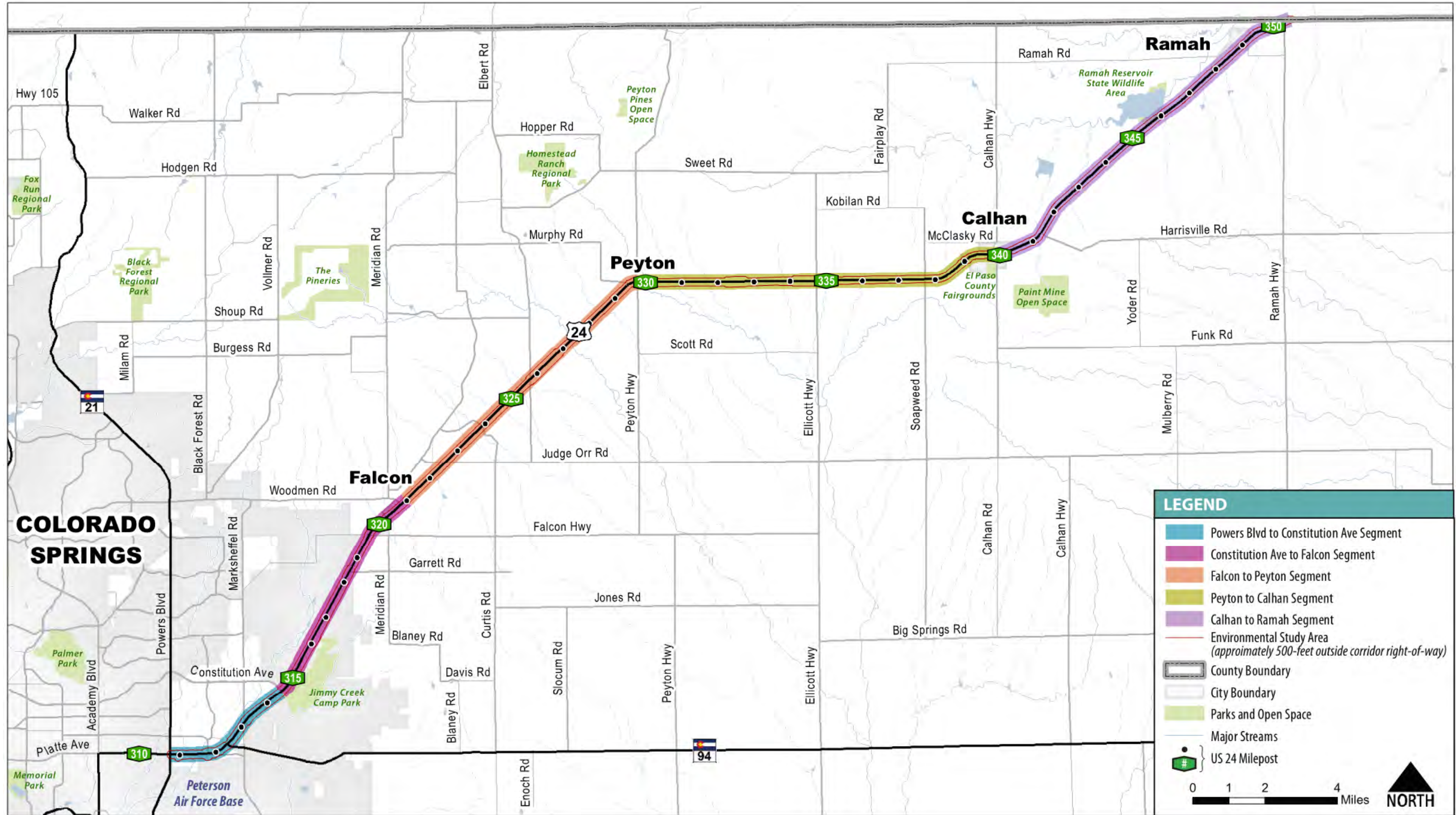


Figure 1: Study Area





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Regional Planning Context

The US 24 corridor serves as an important east-west travel route connecting Colorado Springs to eastern El Paso County and providing access to Limon, I-70, and other areas of eastern Colorado. The roadway is a designated critical freight corridor and is a vital part of the regional transportation system. The corridor and the surrounding area have been included in past studies with substantial transportation components. Relevant past planning studies were reviewed in relation to the transportation system within or in close proximity to the US 24 study corridor. The reviewed planning studies are:

- ✦ *US 24 Access Control Plan Peterson Boulevard to Elbert Highway* (2006), CDOT
- ✦ *Falcon/Peyton Small Area Master Plan* (2008), El Paso County
- ✦ *Major Transportation Corridors Plan* (2011 and updating currently), El Paso County
- ✦ *Transportation Plan Final Environmental Assessment* (2013), Peterson Air Force Base
- ✦ *Parks Master Plan Update* (2013), El Paso County
- ✦ *Park System Master Plan* (2014), City of Colorado Springs
- ✦ *Moving Forward 2040 Regional Transportation Plan* (2015), Pikes Peak Area Council of Governments (PPACG)

The *US 24 Access Control Plan Peterson Boulevard to Elbert Highway* was completed in 2006 for CDOT, El Paso County, and the City of Colorado Springs to provide a binding document guiding the surrounding agencies' decisions regarding the future access conditions of US 24 between Peterson Boulevard (MP 311.746) and Elbert Highway (MP 325.81). The purpose of the access control plan was to provide the coordinated regulation of vehicular access to US 24 to maintain the efficient and smooth flow of traffic, to reduce the potential for traffic accidents, to protect the functional level and optimize the traffic capacity, and to provide an efficient spacing of traffic signals. The access control plan includes an intergovernmental agreement outlining the location and control for the existing and future accesses along the corridor. Key highlights of the access control plan include:

- ✦ Closure/consolidation of individual property accesses with alternate access via side streets and/or frontage roads
- ✦ Restriction of individual property accesses to right-in/right-out operations
- ✦ Future interchange at Constitution Avenue/Banning Lewis Parkway (MP 314.67)
- ✦ Future frontage road connection between Garrett Road and Falcon Highway
- ✦ Realignment of Meridian Road to the south with a new signalized intersection at MP 320.66
- ✦ Future frontage road connection between Woodmen Road and Rio Lane, as well as other individual properties on south side of US 24
- ✦ Realignment of Judge Orr Road and Blue Gill Road intersection with a new signalized intersection at MP 322.50
- ✦ Future frontage road connection between Judge Orr Road/Blue Gill Road and Stapleton Road
- ✦ Future frontage road connection between Stapleton Road and individual properties on north side of US 24



- ✦ Future roadway extensions to signalized intersections for future surrounding development:
 - » North Carefree (MP 316.42)
 - » Barnes Road (MP 317.69)
 - » Stetson Hills (at Garrett Road) (MP 318.99)
 - » Dublin Road (at Falcon Parkway)(MP 320.29)
 - » Stapleton Road (MP 323.74) (completed)
 - » Rex Road (MP 324.72)
- ✦ Future signalized intersection at Elbert Highway (MP 325.81)

The *Falcon/Peyton Small Area Master Plan* (El Paso County, 2008) provides a framework for future land use within the unincorporated areas of Falcon and Peyton. This small area master plan is one of nine small area plans El Paso County has developed for areas within its unincorporated area. US 24 is the major transportation corridor within the area providing access to I-25 and I-70. The following goals relevant to this study are identified in the plan:

- ✦ Recognize US 24 as a roadway serving existing and future needs
- ✦ Allow for commercial development at US 24 and Woodmen Road
- ✦ Maintain the Rock Island Trail
- ✦ Complete proposed trail extension along US 24 and proposed trails on Black Squirrel Creek, at Stapleton Drive/Curtis Road, and at Judge Orr Road

The *Major Transportation Corridors Plan* (El Paso County, 2011) is a long-range transportation plan that outlines roadway improvement needs through 2040. An extensive public outreach process was completed to obtain input from the community about their values as they relate to transportation. The current update, which is scheduled for completion by December 2016, will review the prioritized improvements, funding, right-of-way, and non-motorized needs. A number of improvements were identified through the 2011 plan:

- ✦ Capacity expansion along US 24 from four to six lanes from Powers Boulevard to Woodmen Road and from two to four lanes from Elbert Road to Calhan Highway
- ✦ Capacity expansion at intersecting roadways from two to four lanes on Garrett Road from US 24 to Meridian Road and on New Meridian Road from US 24 to McLaughlin Road
- ✦ Capacity expansion at intersecting roadways from four to six lanes along Constitution Avenue from Powers Boulevard to US 24
- ✦ Roadway improvements at intersecting roadways Meridian Road, Judge Orr Road, Stapleton Road, and Soap Weed Road from US 24 to two miles north of Judge Orr Road

The *Peterson AFB Transportation Plan* (Peterson Air Force Base, 2013) completed an Environmental Assessment (EA) of implementing their transportation plan. Alternatives were evaluated to meet two different goals: process traffic at the gates with reasonable delay, and provide 7,600 spaces of remote parking to meet growth projections. The preferred alternative includes the following:

- ✦ Remote parking in two locations served by a shuttle system (one location at the southwest corner of Space Village Avenue and Marksheffel Road and one location off-base north of Stewart Avenue and between Powers Boulevard and Perimeter Road)
- ✦ Use of existing gates as well as an additional gate on Marksheffel Road



- ✦ Road expansion of a number of on-base roads and one off-base road (Marksheffel Road to increase one to two lanes)

The *El Paso County Parks Master Plan* (2013) updated an existing master plan to provide guidance on parks, trails, open space, and recreation and cultural services. This document is used across departments to work towards a cohesive and connected parks system. Within this plan is an implementation plan, which highlights priorities for the next five to ten years, broken into short, mid- and long-term frameworks. A number of priorities are located within the study area:

- ✦ Regional trails proposed include: Eastonville Road Trail, Rock Island Trail (to continue north along US 24 from Peyton), Black Squirrel Creek Trail (to provide access from Ellicott to Pinerias Open Space crossing US 24 between Elbert Road and Peyton Highway), Falcon Vista Trail, and Meridian Ranch Trail
- ✦ A number of proposed bicycle routes have been identified in the area: Curtis Road, Elbert Road, Falcon Highway, Garrett Road, US 94, Judge Orr Road, Marksheffel Road, Meridian Road, Peyton Highway and Woodmen Road
- ✦ A number of candidates for open space lands were identified: Falcon/Garrett Road, Judge Orr Road, Riser at Calhan, and Big Sandy Creek near Ramah

The *Park System Master Plan* (City of Colorado Springs, 2014) combined and updated the *Parks, Recreation and Trails 2000-2010 Master Plan* and the *Open Space Plan* from 1996. This master plan looks ten years into the future, with a number of recommendations outlined in an action plan for immediate implementation. The following concepts are included in their vision: secure diverse funding sources, link trails, fill gaps in the open space rings, “Complete Creeks” network, demonstrate champions of the outdoors designation, expand recreation opportunities, maintain/make improvements, and increase safety/security. A number of recommendations were identified within this study area:

- ✦ Trail extension from Powers Boulevard/Constitution Avenue intersection to Constitution Avenue/US 24 intersection to connect with Jimmy Camp Creek Park
- ✦ Trail extension from Constitution Avenue on west side of US 24 to connect with Rock Island Trail
- ✦ Trail extension from Jimmy Camp Creek Park to south of SH 94 with connections to the north side of Peterson AFB

In 2015, PPACG updated their Regional Transportation Plan (RTP) through the *Moving Forward Plan*. Overall, the plan examines tradeoffs between different transportation modes, land use changes and growth forecasts, socioeconomic factors, as well as environmental conditions. The planning process followed a PEL approach to transportation decision-making, considering economic, community, and environmental goals early in the planning stage and taking a broader, interregional perspective with communication and coordination between area transportation agencies, environmental resource agencies, and the public.

US 24 East (between I-25 and Elbert Road) was identified in the *Moving Forward Plan* as a strategic corridor and a Congestion Management Corridor Plan was developed for the US 24 corridor from Powers Boulevard to Peyton Highway to assist local communities and PPACG in developing projects to manage congestion. The Vision Statement developed for this section of US 24 focuses on increasing mobility and improving safety to maintain system quality. Goals and objectives are to increase travel reliability and improve mobility for all modes of



travel, to support commuter travel, to accommodate growth in freight transport, to reduce crash rates, and to preserve the existing transportation system. The US 24 (Powers Boulevard to Peyton Highway) Congestion Management Corridor Plan provided in the *Moving Forward Plan* includes the following strategies:

- ✦ Add general purpose lanes
- ✦ Consolidate and limit access, continue to develop and implement access management plans
- ✦ Improve geometrics
- ✦ Construct intersection/interchange improvements
- ✦ Add turn lanes
- ✦ Add/improve shoulders
- ✦ Construct separated bicycling and pedestrian facilities
- ✦ Bridge repairs/replacement
- ✦ Reconstruct roadways
- ✦ Consolidate and limit access

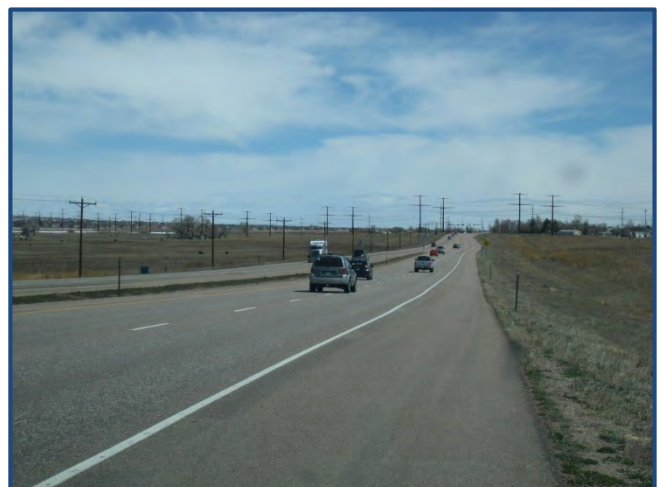
Surrounding Land Use

This section describes the existing and future land use conditions along the US 24 corridor. Development of former agricultural land to residential and employment uses has been occurring as the Colorado Springs metropolitan area continues to grow. The demand for transportation facilities and services rises in proportion to increases in population, employment, and improved economic conditions. In 2010, about 650,000 people lived in the Pikes Peak region and by 2040 the region will grow by more than 350,000 people. This study utilized the travel demand model developed by PPACG to project future traffic volumes along the US 24 study corridor.

Current Land Use

East of the Powers Boulevard (SH 21) interchange in Colorado Springs, US 24 crosses through an industrial and commercial area serviced via limited access intersections and frontage roads north and south of the highway. A campground with recreational vehicle storage south of US 24 is the only residential use in the area adjacent to the highway. About one mile east of Powers Boulevard (SH 21), the Peterson Road interchange provides direct access to Peterson Air Force Base south of US 24 with primarily residential development to the north of the highway. SH 94 provides access to Schriever Air Force Base, about 8.5 miles east of US 24.

The area surrounding US 24 remains rural in nature between Constitution Avenue and Falcon Highway.



US 24 east of Constitution Avenue



At the Meridian Road and Woodmen Road intersections, there are a number of commercial centers serving the community of Falcon, anchored by retailers like Safeway and Walmart, along with community resources like the High Prairie Library, Falcon Legacy Campus, and Rock Island Trailhead.



US 24 at Falcon

East of Woodmen Road to Judge Orr Road, US 24 travels through more Falcon residential subdivisions to the north and rural properties to the south. The Meadow Lake Airport is southeast of the US 24/Judge Orr Road intersection. East of Judge Orr Road to Peyton, the area north of the highway is primarily undeveloped/agricultural properties while the area adjacent to the highway to the south is rural residential development.

The town development of Peyton lies north of US 24 with the post office, a restaurant, and a general store along the highway. East of Peyton, the area along US 24 is characterized primarily by agricultural uses. A variety of commercial establishments and single family residential houses line the US 24 highway through the Town of Calhan. The Calhan Auction Market is located on the east side of Calhan, at the corner of US 24 and Yoder Street, and the El Paso County Fair and Events Complex is located along the south side of town. The Paint Mine Open Space is located approximately two miles southeast of Calhan off of US 24. The Ramah Reservoir State Wildlife Area is located north of US 24 with an access four miles west of Ramah. The Town of Ramah is north of US 24 with access points to the highway at Commercial Street, Cedar Street, 3rd Street, and Ramah Road.

Future Land Use

Socioeconomic data from the PPACG 2010 and 2040 regional travel demand models (adopted 2040 Small Area Forecast dataset) were compiled for the Transportation Analysis Zones (TAZs) partially or fully located approximately four miles north and south of the US 24 highway corridor. The household and employment totals for year 2010 and forecasted year 2040 are shown in Table 1. As shown, employment in the area surrounding the corridor is forecasted to increase by over 28,000 jobs by year 2040, an increase of 122% over the 2010 totals, equating to an annual increase of 2.7%. Population in the area is forecasted to increase by over 39,000 households, an increase of 130% over the 2010 totals. This equates to an annual increase of 2.8%.

Table 1: Travel Demand Forecasting Land Use Growth

	HOUSEHOLDS	EMPLOYMENT
Year 2010	30,344	23,190
Year 2040	69,782	51,568
Absolute Growth	+ 39,438	+ 28,378
Percent Growth	130%	122%
Annual Growth	2.8%	2.7%

Source: PPACG 2010 and 2040 (adopted Small Area Forecasts) regional travel demand models



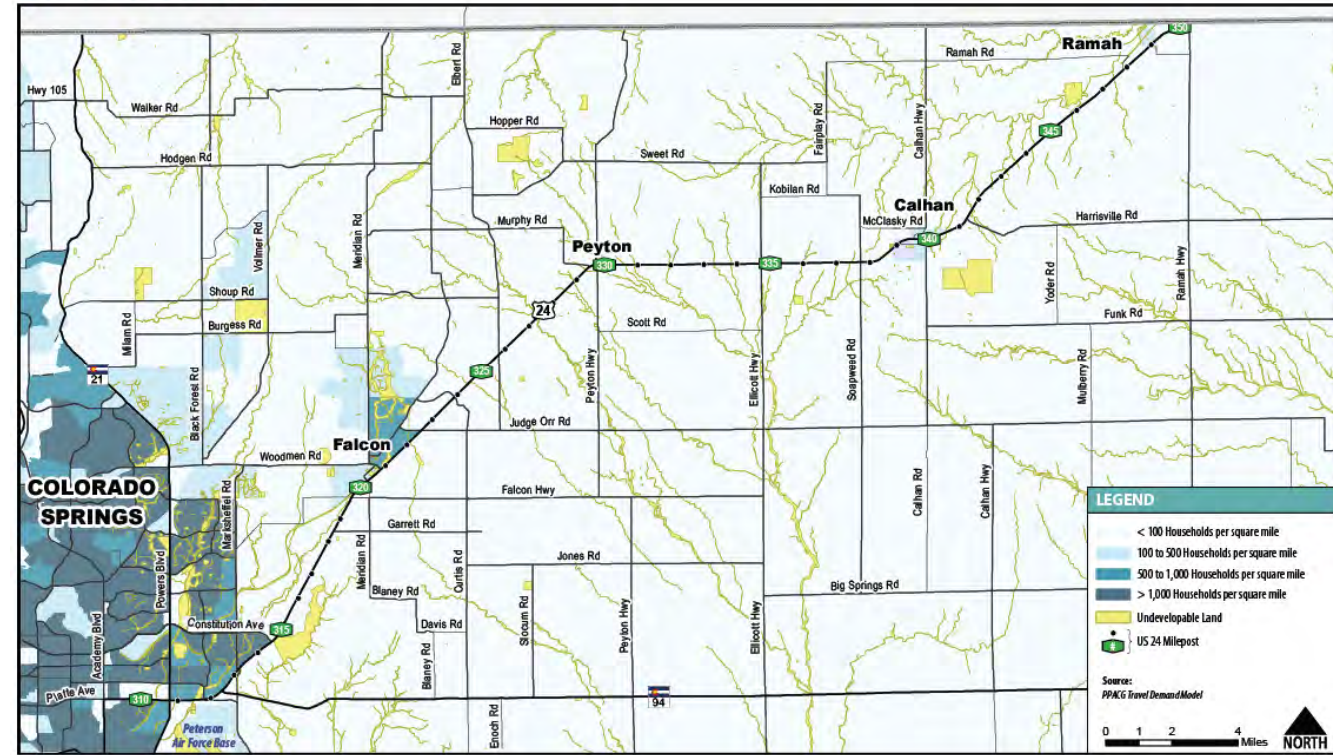
The 2010 and 2040 household and employment densities for each TAZ are illustrated in **Figure 2**. In general, the darker the color, the greater the density of households and employment located in each TAZ. As shown, increased household and employment is expected with planned large-scale community development east of Colorado Springs, growing past the Falcon community towards Peyton.

The existing undeveloped area between Constitution Avenue and Falcon Highway is filled with increases in both households and employment. Population and employment density increases substantially in Falcon, particularly from Meridian Road to Elbert Road. Most of this relatively dramatic increase in density is based on preliminary developer plans, which may be revised with lower densities and/or different types of land uses with more developer and agency coordination during the development approval process. East of Peyton, the area surrounding the US 24 corridor is expected to remain low-density rural development and agricultural.

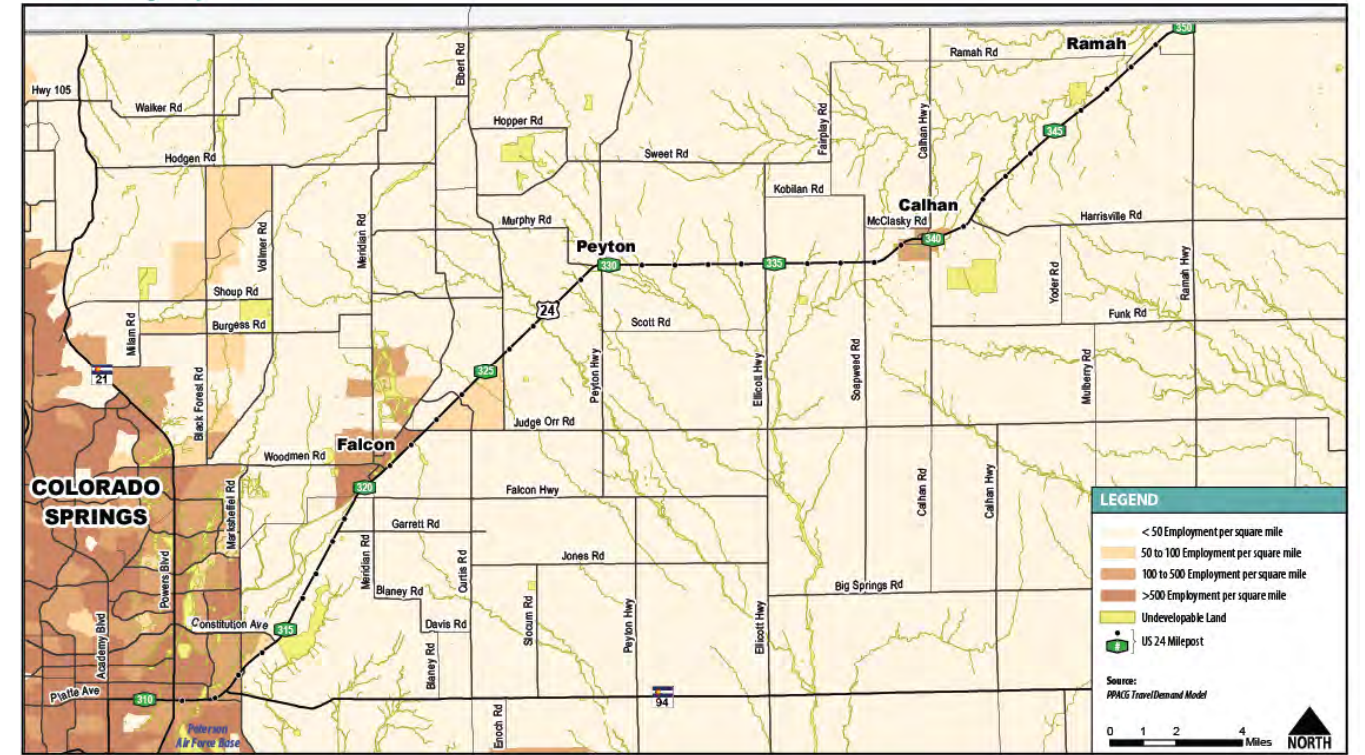


Figure 2: 2010 and 2040 Households and Employment

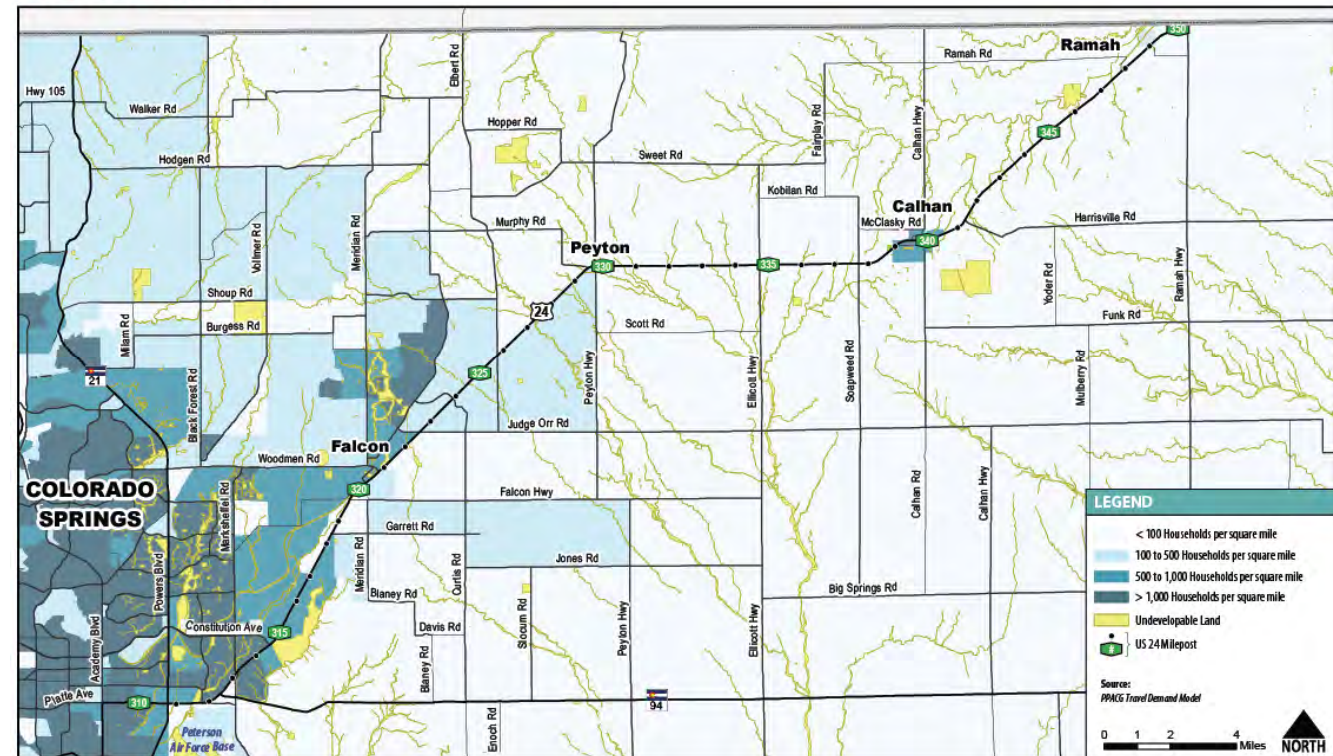
2010 Households



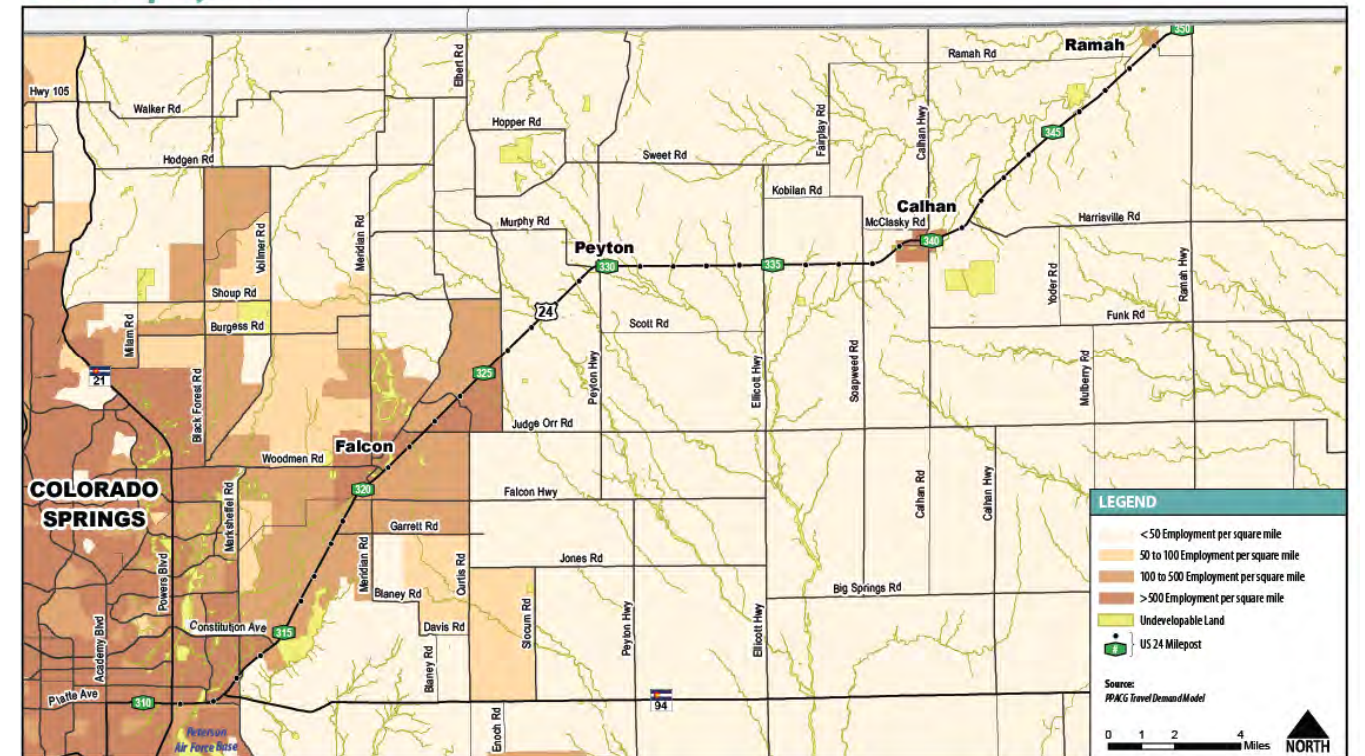
2010 Employment



2040 Households



2040 Employment





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EXISTING TRANSPORTATION SYSTEM

This chapter summarizes data collected as part of this study effort and data already available from CDOT, El Paso County, and other agencies, to describe the physical condition of the US 24 study corridor in the study area.

US 24 Roadway Characteristics

US 24G is a section of the US 24 highway beginning at the interchange with Powers Boulevard (SH 21) in Colorado Springs. The US 24G corridor travels through El Paso County and Elbert County and ends at an interchange with I-70 east of Limon at Exit 363. At the Powers Boulevard (SH 21) interchange, the US 24 highway follows Powers Boulevard to the south before turning west as Fountain Boulevard through Colorado Springs and continuing west through the mountains.

The geometric characteristics of the US 24 study corridor are highly variable. The US 24 study corridor consists of two-lane, three-lane, and four-lane cross-sections with right-of-way ranging from 100 feet east of Peyton to as wide as 250 feet between Peterson Road and Garrett Road. Typical right-of-way along the majority of the corridor is 100 to 170 feet. The pavement along the corridor is asphalt.

US 24 from Powers Boulevard (SH 21) to Garrett Road is four lanes with a depressed median, except at the intersections with the frontage road immediately east of Powers Boulevard (SH 21), where there are raised median islands. There are two through lanes in the westbound direction and a single through lane in the eastbound direction between Soap Weed Road and Calhan. The remainder of the corridor has a single travel lane in each direction.

Typical cross-sections are shown in **Figure 3**, along with speed limits, access categories, and structure locations. Shoulder widths vary significantly along the corridor, but all shoulders that exist are paved. The speed limit along US 24 through the majority of the study area is 65 miles per hour (mph). The speed limit is 55 mph through the more urbanized areas of Colorado Springs (west of SH 94), Falcon (between Garrett Road and Judge Orr Road), Peyton, and Ramah. Through downtown Calhan, the speed limit is 35 mph with sections outside of the town at 45 mph and 55 mph.



US 24 at Powers Boulevard (SH 21)



Auxiliary lanes exist at some major signalized and stop-controlled public street intersections, but many key intersections do not have auxiliary lanes for all deceleration and acceleration movements. The lane configurations at key intersections along the corridor are shown in **Figures 4 through 8**.



Figure 3: US 24 Roadway Characteristics

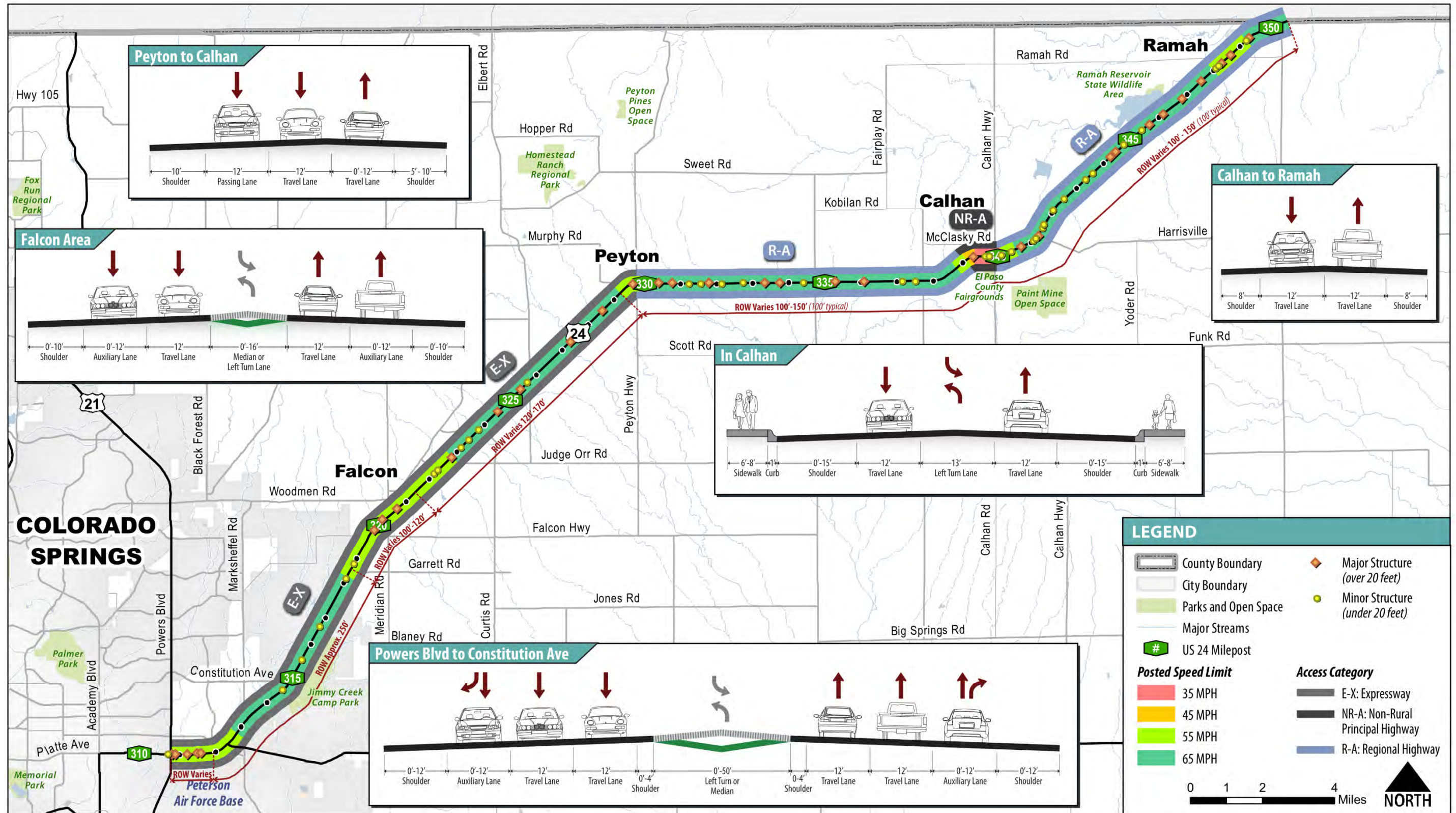




Figure 4: Intersection Lane Configurations - Powers Blvd to Constitution Ave

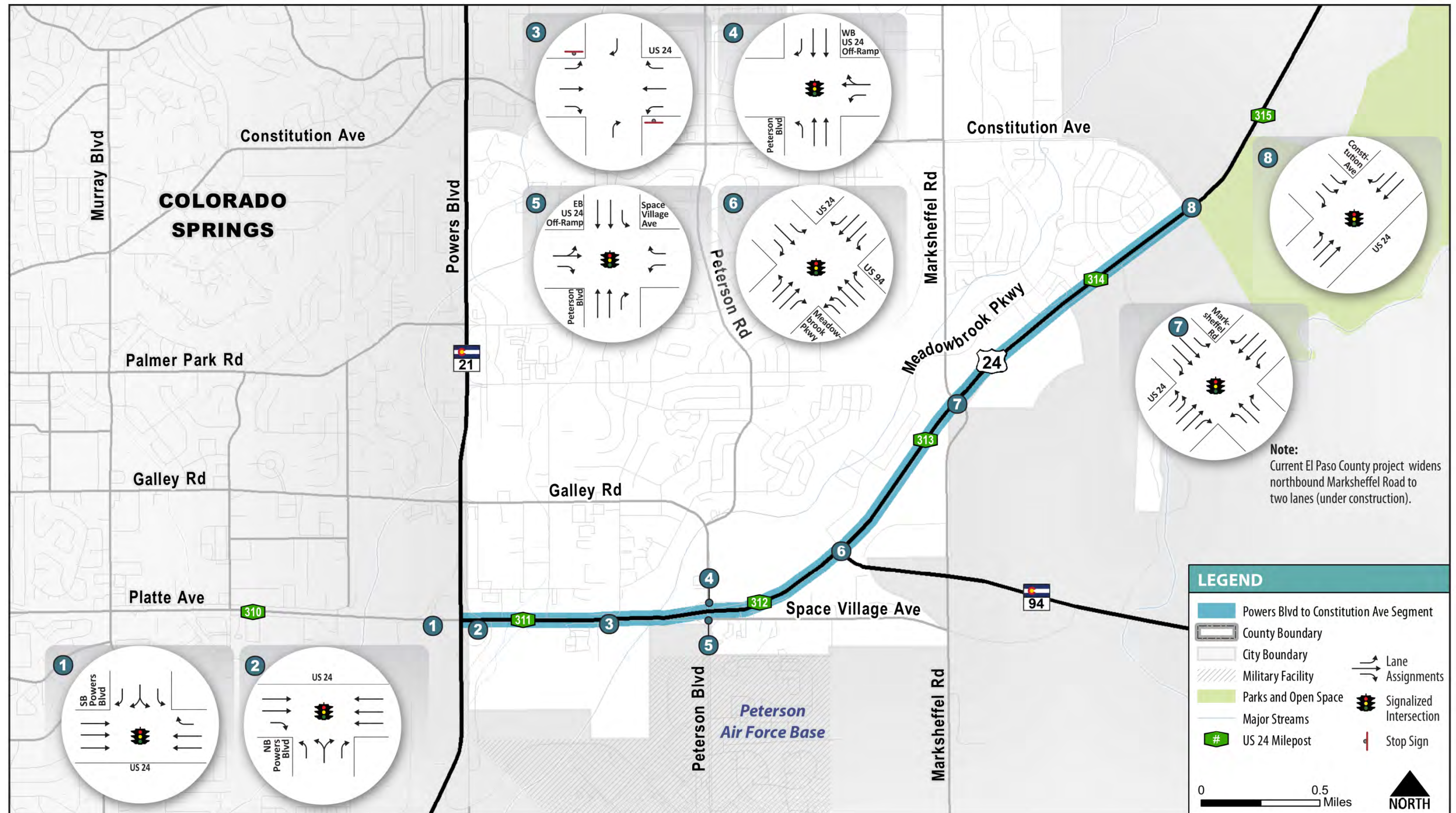
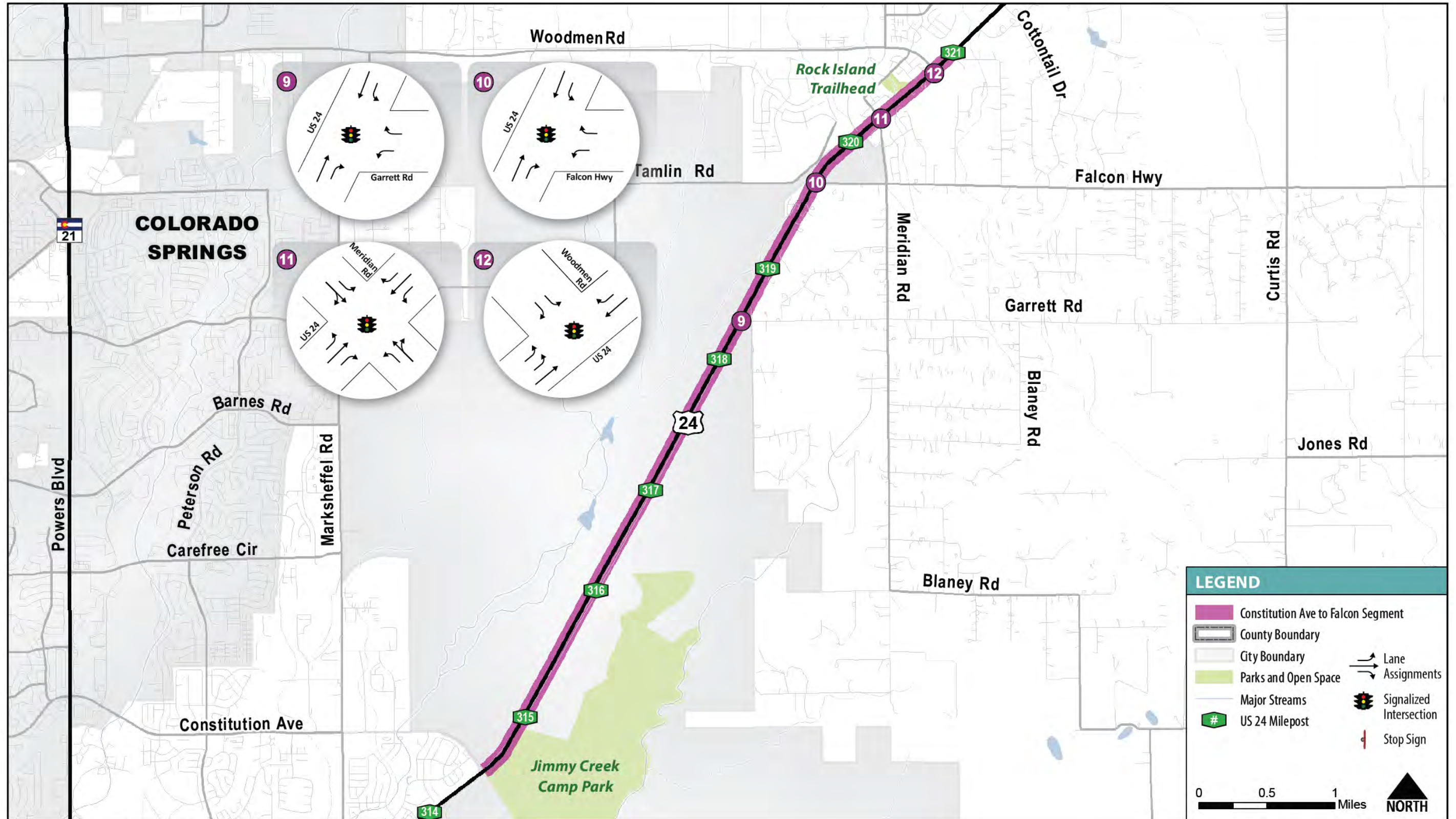




Figure 5: Intersection Lane Configurations - Constitution Avenue to Falcon



LEGEND

- Constitution Ave to Falcon Segment
- County Boundary
- City Boundary
- Parks and Open Space
- Major Streams
- US 24 Milepost
- Lane Assignments
- Signalized Intersection
- Stop Sign

0 0.5 1 Miles

NORTH



Figure 6: Intersection Lane Configurations - Falcon to Peyton

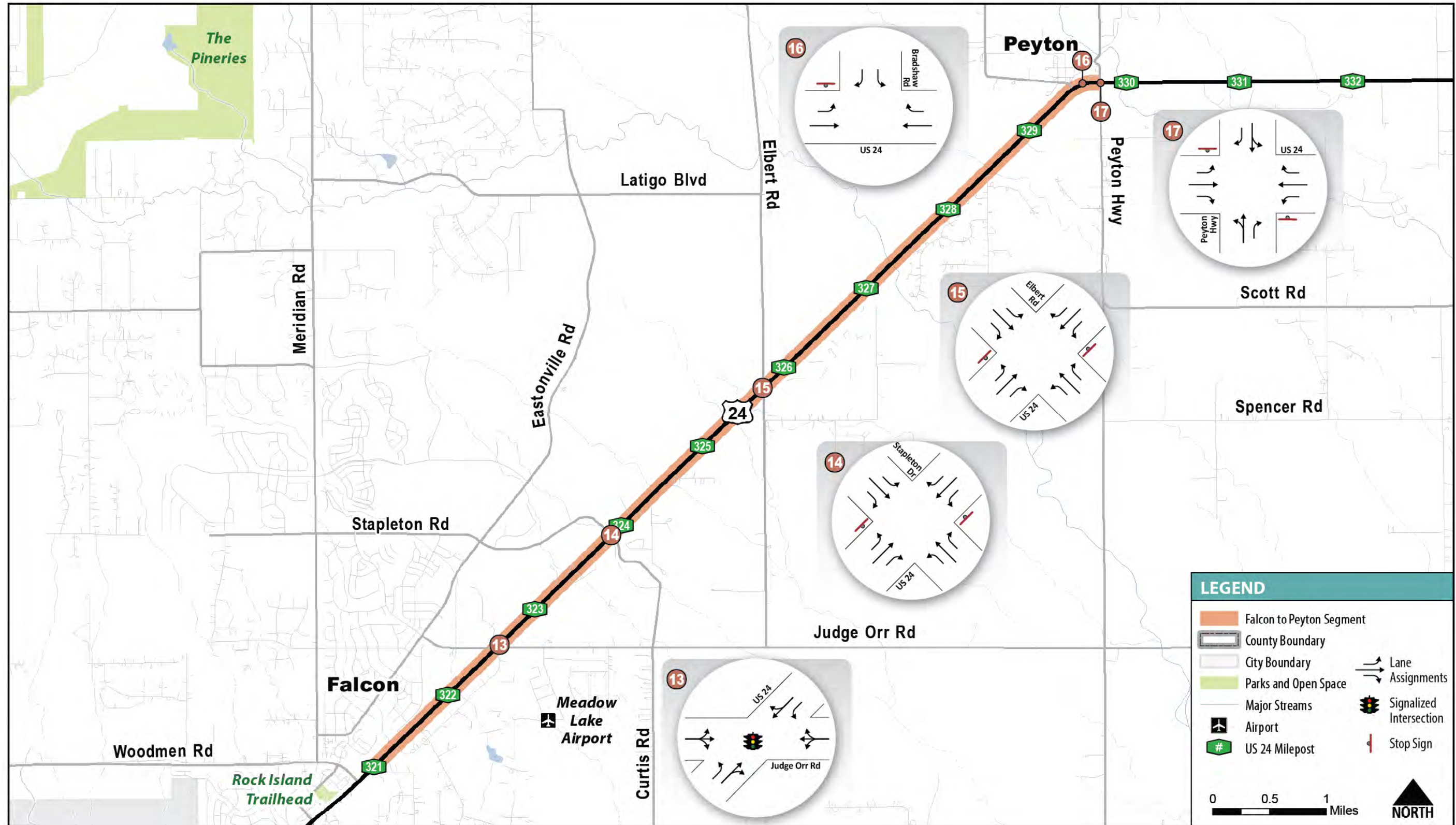




Figure 7: Intersection Lane Configurations - Peyton to Calhan

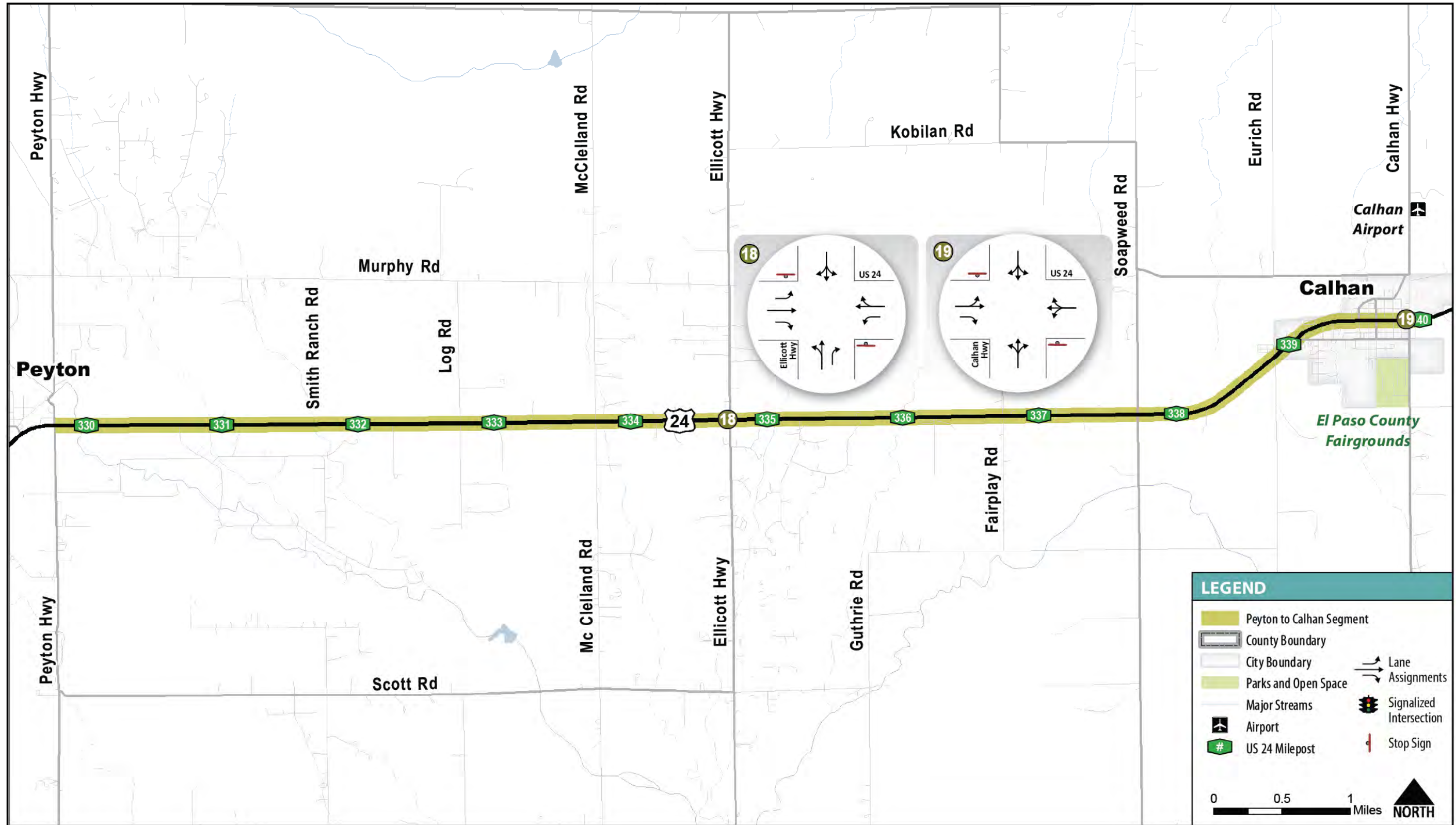




Figure 8: Intersection Lane Configurations - Calhan to Ramah





Access Categories

CDOT has assigned access categories for all segments of each state highway in Colorado. These categories relate to the requirements and thresholds for access spacing and auxiliary lane requirements documented in the *State Highway Access Code*. The section of US 24 east of Powers Boulevard (SH 21) is currently classified as an Expressway (E-X) to Peyton (MP 329.98). Between Peyton and Calhan, it is classified as Regional Highway (R-A). Through Calhan, the highway is categorized as Non-Rural Principal Highway (NR-A). East of Calhan, the highway is categorized as R-A. The characteristics associated with each of these access categories are described in **Table 2**.

Table 2: Access Category Characteristics

CATEGORY	SPEEDS	VOLUMES	TRIP TYPE	ACCESS PER PARCEL	TYPICAL FULL-MOVEMENT ACCESS SPACING
E-X	High	High	Interstate, Interregional, Intra-regional, Intercity	0 ⁽¹⁾	1 mile (public ways only) ⁽²⁾
R-A	Moderate/High	Moderate/High	Interregional, Intra-regional, Intercity	1 ⁽³⁾	½-mile
NR-A	Moderate/High	Moderate/High	Interregional, Intra-regional, Intercity, Intra-city	1 ⁽³⁾	½-mile

Source: CDOT *State Highway Access Code*

⁽¹⁾ Unless other reasonable access to general street system cannot be provided.

⁽²⁾ ½-mile spacing of public ways may be permitted when no reasonable alternative access exists

⁽³⁾ If reasonable access cannot be obtained from the local street or road system

Intersecting Roadways

There are a number of important roadway facilities that intersect the US 24 study corridor. The following is a description of these roadways.

- ✦ **Powers Boulevard (SH 21)** - Powers Boulevard is a north-south arterial highway extending from Interquest Parkway and SH 83 on the north side of Colorado Springs, and traveling east of downtown Colorado Springs and along the west side of the Colorado Springs Municipal Airport before ending at I-25 at the Mesa Ridge Parkway interchange on the south side of the metropolitan area. At the US 24 partial cloverleaf interchange, Powers Boulevard (SH 21) is a divided six-lane highway with a raised median, variable shoulders, and a 55 mph speed limit.
- ✦ **Peterson Road** - Peterson Road is a north-south four-lane arterial providing access to Peterson Air Force Base with a gate less than 1,000 feet south of the US 24 interchange. The arterial serves residential neighborhoods for more than five miles north of US 24. At the US 24 modified diamond interchange, Peterson Road is divided with a raised median.
- ✦ **SH 94** - SH 94 intersects with US 24 at a signalized intersection. SH 94 is an east-west two-lane highway extending from a signalized intersection at US 24 to US 40/US 287 almost 90 miles to the east. The highway provides access to Schriever Air Force Base, located about nine miles east of US 24. The speed limit on SH 94 begins at 55 mph and increases to 65 mph less than one mile east of US 24.



- ✦ **Marksheffel Road** - Marksheffel Road is a north-south arterial providing access to residential developments in eastern Colorado Springs and the Falcon community from Woodmen Road. South of US 24, Marksheffel Road extends east of Peterson Air Force Base and the Colorado Springs Municipal Airport as a two-lane and four-lane divided roadway to the south side of the metropolitan area.
- ✦ **Constitution Avenue** - Constitution Avenue is an east-west arterial connecting US 24 and Powers Boulevard (SH 21). The roadway is a four-lane facility serving the residential neighborhoods, businesses, and community resources in Cimarron Hills in eastern Colorado Springs. West of Power Boulevard (SH 21), Constitution Avenue continues as a four-lane facility to just west of Union Boulevard.
- ✦ **Meridian Road** - Meridian Road is an important north-south County arterial providing access for the community of Falcon. South of US 24, Meridian Road is a two-lane facility surrounded by rural residential development, ending about three miles south of US 24. North of US 24 with a realigned connection, it is a four-lane divided roadway for approximately three miles, then it narrows to two lanes north of the Meridian Ranch neighborhood. Meridian Road continues north intersecting with Hodgen Road, which intersects I-25 at Baptist Road on the north side of Colorado Springs.
- ✦ **Woodmen Road** - Woodmen Road is an east-west arterial connecting US 24 at the community of Falcon with I-25, about 11 miles to the west. It is a four-lane divided facility with grade-separated interchanges at Powers Boulevard (SH 21) and Academy Boulevard, as well as I-25.
- ✦ **Judge Orr Road** - Judge Orr Road is a County two-lane paved roadway extending about 25 miles east of US 24. West of US 24, it provides direct access for the Meridian Ranch residential development. The Meadow Lake Airport is located immediately southeast of the US 24/Judge Orr Road intersection.
- ✦ **Elbert Road** - Elbert Road is a County two-lane paved roadway leading from US 24 to Elbert County and the towns of Elbert and Kiowa to the north. Elbert Road terminates at Judge Orr Road, about 2 miles south of US 24.
- ✦ **Peyton Highway** - Crossing US 24 on the east side of Peyton, Peyton Highway is a two-lane paved County roadway. It becomes unpaved approximately three miles north of US 24, providing access to residential properties. Approximately seven miles south, the roadway provides access to rural properties and terminates at Falcon Highway.
- ✦ **Calhan Highway** - Calhan Highway crosses US 24 on the east side of Calhan Highway as Yoder Street. It is a two-lane paved County roadway and becomes unpaved at the Elbert County line, about six miles north of US 24. South of US 24, Calhan Highway provides access to Paint Mine Open Space and becomes unpaved south of Judge Orr Road. With a jog to the east at Big Springs Road, Calhan Highway is again paved and connects to SH 94.
- ✦ **Harrisville Road** - Harrisville Road intersects with US 24 east of Calhan as a two-lane paved roadway. It becomes unpaved at Blasingame Road, about three miles east of US 24 and terminates in Elbert County, about 16 miles to the east. With a short jog to the south, the road provides access to SH 71, which leads to Limon and I-70.
- ✦ **Ramah Highway** - Ramah Highway crosses US 24 about one mile east of Ramah as an unpaved two-lane County road. North of US 24, Ramah Highway travels through Elbert County and connects to SH 86. South of US 24, it connects to SH 94 almost 20 miles south of Ramah.



Bridge/Structure Conditions

There are 33 structures along the US 24 study corridor. Major structures are greater than 20 feet in length, and minor structures are less than 20 feet in length. The structures are listed in **Table 3** along with the year built, structure type, sufficiency rating, and considerations for potential repairs. Reasons for bridge and structural repair or replacement include:

- ✦ **Functional Status** - CDOT classifies each structure on its system on the basis of recurring inspection reports. Structures which have been classified as “Functionally Obsolete” or “Structurally Deficient” along US 24 in the project area have been identified.
- ✦ **Load Rating** - To allow the passage of oversized loads, CDOT inspectors also evaluate the ability of each roadway structure to carry loads which require permitted passage along highways. Structures along US 24 in the project area with failing permit load ratings have been identified.
- ✦ **Potential Minor Repairs** - Each structure’s inspection report has been analyzed, and certain components of some structures have been identified as potentially needing minor repairs within the next 15 years. These have also been identified.

Individual structures were not evaluated for the ability to widen for additional improvements. This assessment will be completed during the alternatives analysis and included in the accompanying documentation.

Table 3: US 24 Structure Summary

STRUCTURE	YEAR BUILT	LOCATION	MILEPOST	STRUCTURE TYPE ⁽¹⁾	SUFFICIENCY RATING	FUNCTIONALLY OBSOLETE / STRUCTURALLY DEFICIENT	FAILING PERMIT LOAD RATING	POSSIBLE REPAIRS WITHIN 15 YEARS
I-18-AC	2000	Powers Blvd (SH 21)	310.934	CBGCP	98			None noted
I-18-BK	1995	Sand Creek	310.944	CBC	82.6			None noted
I-18-BF	2000	E Fork Sand Creek	311.363	CBC	96.6			None noted
I-18-AT	1967	Peterson Rd	311.68	CSGC	93.1	X		Expansion joint repair
I-18-AU	1967	Peterson Rd	311.679	CSGC	93.1	X		Expansion joint repair
I-18-O	1999	Draw	319.973	CBC	99.4			None noted
I-18-R	2000	Draw	320.363	PCBC	99.4			None noted
I-18-BB	1999	Draw	320.89	CBC	99.4			Scour mitigation
I-18-BQ	2010	Draw)	322.099	CBC	99.4			None noted
I-18-J	1932	Draw	324.455	TTS	70.2	X		Repair girder(s), overlay
I-18-BL	1995	Draw	325.413	CPG	97.7			None noted
H-18-AD	2012	Black Squirrel Creek	327.258	CPGC	96.6			None noted
H-19-K	1935	Draw	328.754	TTS	74.0	X		Repair girder(s), overlay



STRUCTURE	YEAR BUILT	LOCATION	MILEPOST	STRUCTURE TYPE (1)	SUFFICIENCY RATING	FUNCTIONALLY OBSOLETE / STRUCTURALLY DEFICIENT	FAILING PERMIT LOAD RATING	POSSIBLE REPAIRS WITHIN 15 YEARS
H-19-A	1935	Brakett Creek	329.905	TTS	73.0			Repair girder(s), overlay
H-19-L	1935	Draw	330.584	TTS	65.4		X	Replace railing, repair deck and wingwalls, scour mitigation
H-19-B	1935	Draw	330.878	TTS	60.7			Repair railing, repair girder(s), repair columns
H-19-C	1935	Draw	331.948	CI	51.6	X		Rehab deck, install guardrail transitions, rehab pier cap
H-19-E	1959	Draw	333.31	CBC	96.3			Install railing, rehab wingwall(s)
H-19-F	1959	Draw	333.814	CBC	96.3			Install railing
H-19-G	1959	Draw	335.08	CBC	95.6			Install railing, rehab wingwall(s)
H-19-M	1959	Draw	336.006	CBC	95.6			Install railing, scour mitigation
H-19-Q	1935	Draw	339.419	TTS	73.2			Replace railing
H-19-J	1935	Draw	340.847	TTS	58.7		X	Rehab pile, rehab wingwall, scour mitigation
H-19-P	1935	Draw	341.175	TTS	66.1			Rehab piles, rehab wingwall, scour mitigation
H-20-CU	1990	Draw	344.696	CMP	99.0			None noted
H-20-L	1990	Draw	344.296	CMP	99.0			None noted
H-20-P	1935	Draw	345.78	TTS	75.3			Repair piles, repair crossbracking, repair guardrail
H-20-Q	1935	Draw	346.161	TTS	76.2			Repair columns
H-20-R	1935	Draw	346.903	TTS	74.6			Repair columns, repair guardrail transitions
H-20-S	1935	Draw	347.403	TTS	64.6			Repair pile
H-20-T	1935	Draw	348.364	TTS	77.4			Repair columns, repair girders
H-20-U	1935	Draw	348.602	TTS	77.4			Repair wingwalls
H-20-CT	1990	Draw	349.333	CBC	89.5			None noted

Source: CDOT

(1) Structure Type abbreviations:

- CBC = Concrete Box Culvert;
- CBGCP = Concrete Box Girder Continuous Prestressed;
- CI = Concrete on Rolled I-Beam;
- CMP = Corrugated Metal Pipe;
- CPG = Concrete Prestressed Girder (Precast);
- CPGC = Concrete Prestressed Girder Continuous (Precast);
- CSGC = Concrete Slab & Girder Continuous (Poured in Place);
- PCBC = Concrete Box Culvert Pre Cast;
- TTS = Timber Stringer-Timber Deck



Roadway Constraints and Potential Issues

Along this 40-mile corridor, several constraints and deficiencies exist which could warrant repair or reconstruction as a part of future projects. Through the windshield survey and records search efforts, a variety of roadway design criteria were evaluated:

- ✦ **Clear Zone** - A roadway facility must have a clear space defined outside of the traveled way. This clear zone provides a safe area for motorists to recover if they veer outside the travel lane. Where clear zone is not provided or space is not available to provide clear space, guardrail is used to keep drivers within the traveled way.
- ✦ **Access** - The classification of a highway as an arterial, expressway, or other facility dictates what level of direct access will be allowed to that facility. As allowable speeds increase, the amount of allowable direct access decreases. As speeds decrease, the number of accesses may increase.
- ✦ **Roadway Geometrics** - The radii of curves in the road directly impact what the posted and design speed limits should be for that section of roadway. Higher speed limits require larger radii.
- ✦ **Structural Deficiencies** - Noted with discussion in bridge/structure conditions section.

Roadway and bridge conditions and potential deficiencies are shown in **Figures 9 through 13**. Specific elements noted within each project segment include:

- ✦ **Powers Boulevard to Constitution Avenue**
 - » Access management may need to be addressed in between the Powers Boulevard and Peterson Road interchanges. The number of accesses and the proximity of the accesses to each other and to the interchanges may not meet criteria.
 - » The bridges at the Peterson Road interchange do not meet minimum requirements for functional status.
- ✦ **Constitution Avenue to Falcon**
 - » Several locations may have side slopes that are too steep or shoulders that are too narrow to meet clear zone requirements.
 - » A bridge just south of the US 24 intersection with Woodmen Road may require minor repairs.
 - » Access and intersection movements at the intersection of US 24 with Meridian Road should be evaluated for proximity and safety.
 - » The curve near the intersection of US 24 and Falcon Highway should be evaluated for design speed.
- ✦ **Falcon to Peyton**
 - » Several locations may have side slopes that are too steep or shoulders that are too narrow to meet clear zone requirements.
 - » Two bridges in this segment do not meet minimum requirements for functional status.
 - » The proximity of the Blue Gill Drive and Judge Orr intersections with US 24 has been noted in other previous studies. Access to these streets and the overlap of space for the intersection turning movements should be evaluated.



- » A portion of US 24 falls within the Runway Protection Zone (RPZ) for the Meadow Lake Airport, which poses a safety issue for potential conflict between errant air traffic and US 24 motorists.
- » Access to US 24 should be evaluated at the east side of Peyton, near the US 24 intersection with Peyton Highway, to evaluate conflicts between local access and intersection turning movements.
- » The curve on the west side of Peyton should be evaluated for design speed.
- ✦ **Peyton to Calhan**
 - » Several locations may have side slopes that are too steep or shoulders that are too narrow to meet clear zone requirements.
 - » Crest vertical curves should be evaluated for design speed.
 - » Existing guardrail on the west side of Calhan should be evaluated against current design criteria.
 - » Several bridges in this segment do not meet minimum requirements for functional status or permit loads. Additional bridges in this segment may require minor repairs.
 - » Shoulder width along the eastbound passing lane between MP 332 and 333 may be insufficient.
 - » Uncontrolled access should be evaluated near the intersections of US 24 with Ellicott Highway and Yoder Street to prioritize movements and eliminate conflicts.
- ✦ **Calhan to Ramah**
 - » Several locations may have side slopes that are too steep or shoulders that are too narrow to meet clear zone requirements.
 - » One bridge in this segment does not meet minimum requirements for permit loads. Additional bridges in this segment may require minor repairs.
 - » Crest vertical curves in the US 24 alignment throughout this segment should be evaluated for design speed.
 - » Intersection layouts near Ramah should be evaluated for safety and consistency due to the skew of the intersecting roadways with US 24.



Figure 9: Roadway Conditions and Potential Deficiencies (Powers Blvd to Constitution Ave)





Figure 10: Roadway Conditions and Potential Deficiencies (Constitution Ave to Falcon)





Figure 11: Roadway Conditions and Potential Deficiencies (Falcon to Peyton)

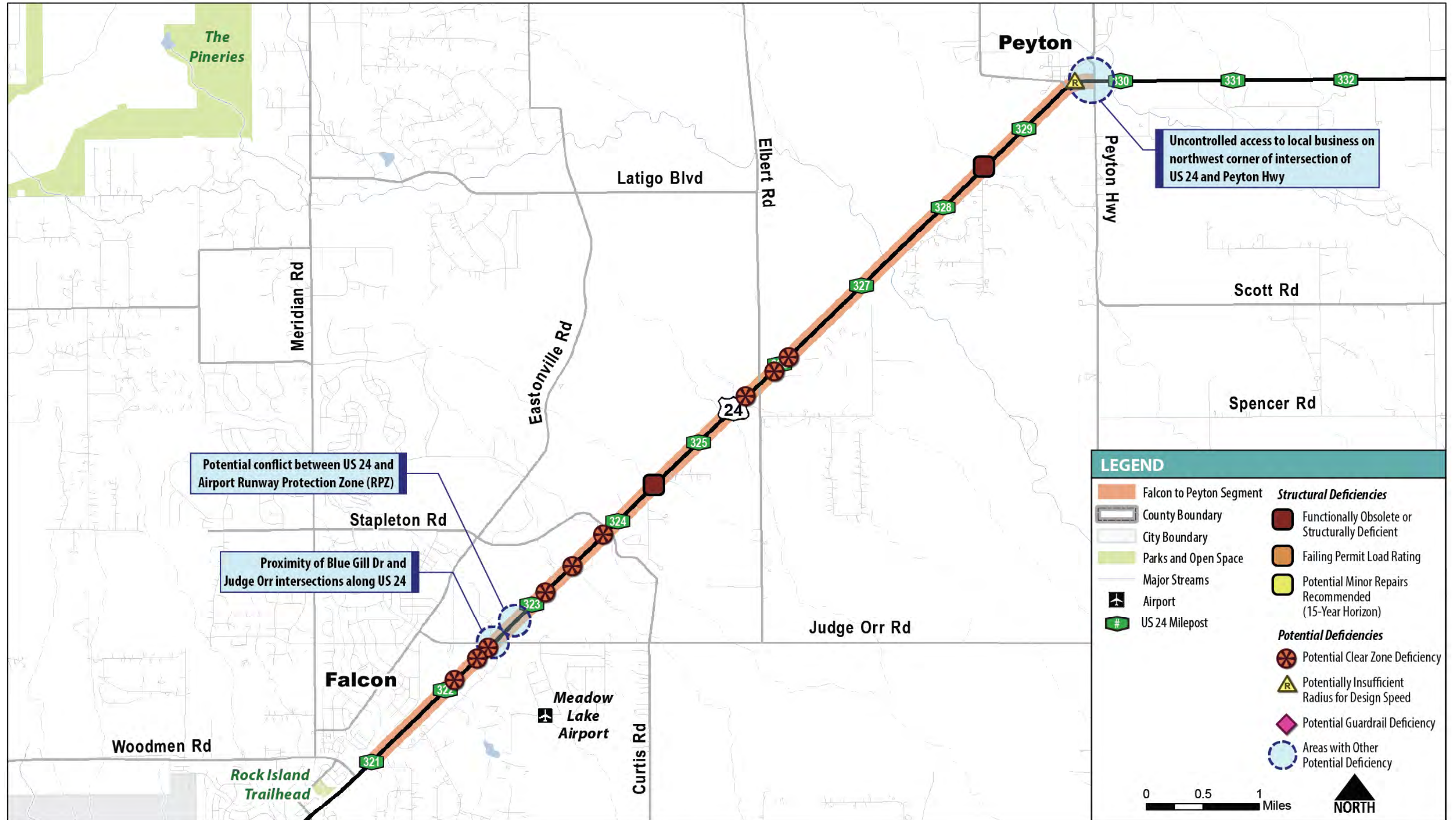




Figure 12: Roadway Conditions and Potential Deficiencies (Peyton to Calhan)

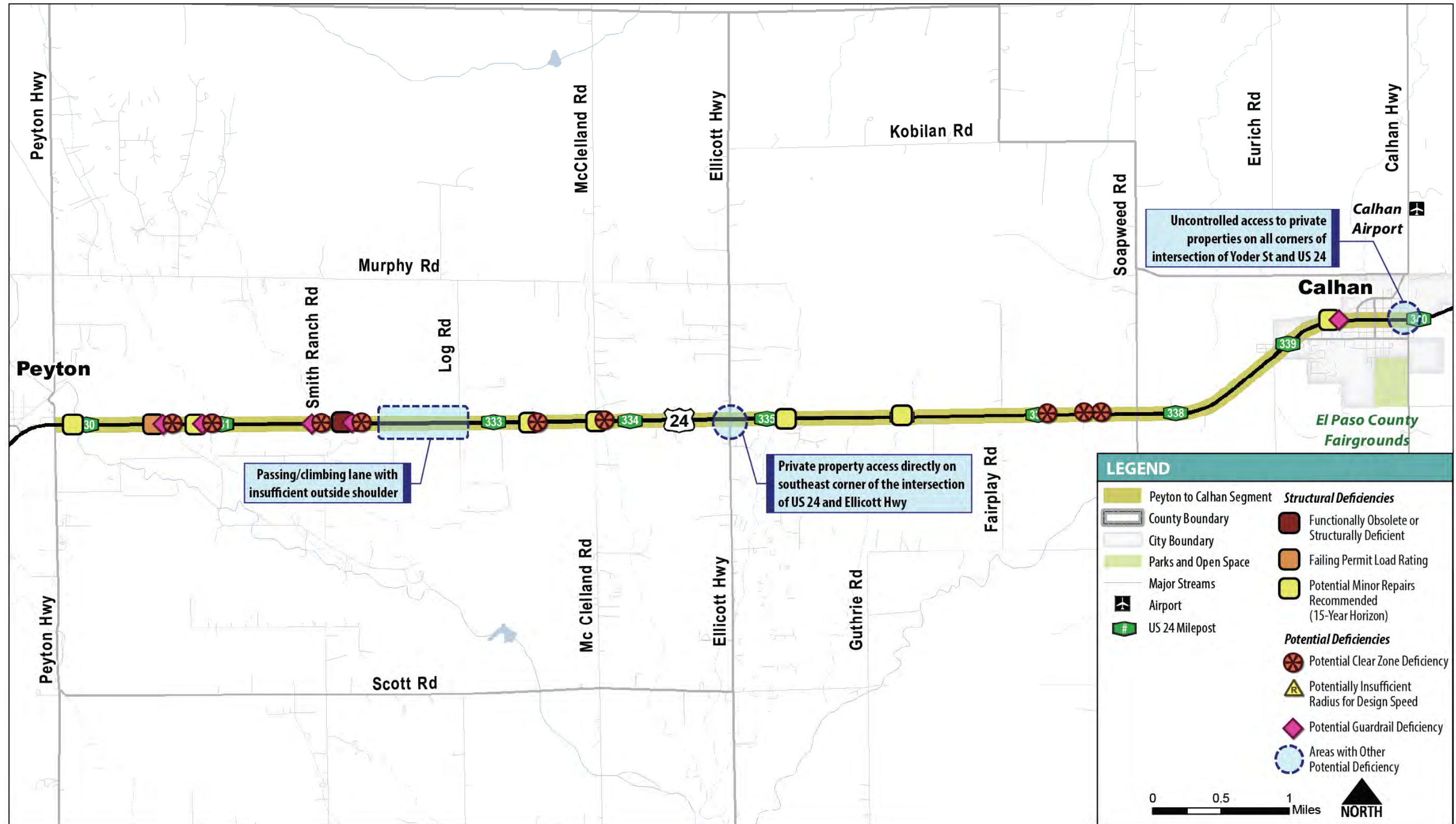
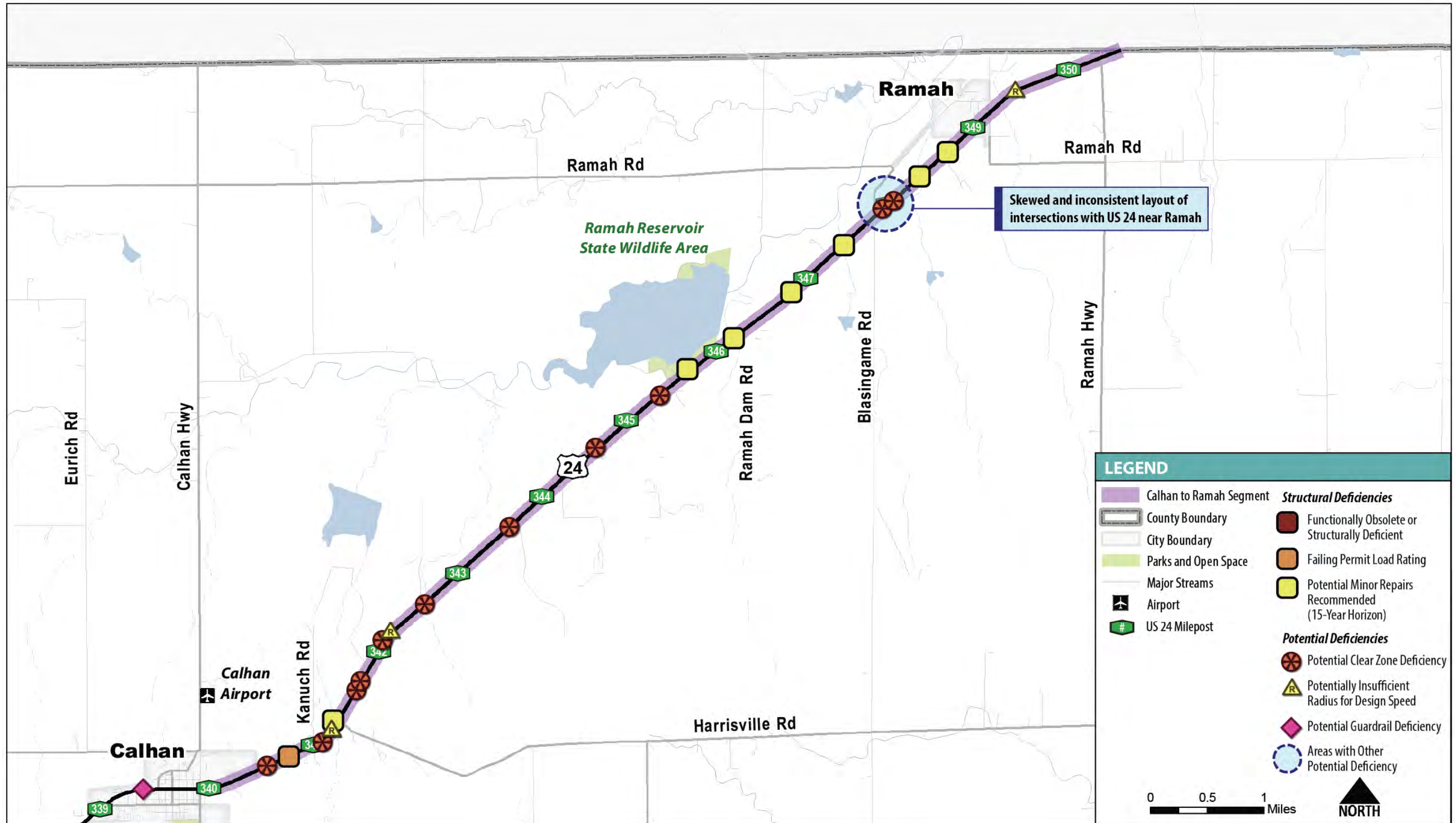




Figure 13: Roadway Conditions and Potential Deficiencies (Calhan to Ramah)





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Existing Vehicular Traffic Operations

This section describes the existing intersection and roadway traffic operations to identify locations with operational problems and recurring congestion issues. Intersection and corridor operational analyses were completed for the US 24 study corridor utilizing methods outlined in the latest *Highway Capacity Manual* (HCM 2010) and using Synchro/SimTraffic and Highway Capacity Software traffic analysis software. The existing intersection and corridor lane configurations and balanced peak hour traffic volumes for the existing (2016) condition were used to analyze the Levels of Service (LOS) at each key study intersection and corridor segment for the AM and PM peak hours.

For intersections, LOS is directly related to control delay and is a measure of traffic flow and level of congestion at an intersection measured on a scale of A to F. LOS A describes conditions with essentially uninterrupted flow and minimal delay. LOS F describes a breakdown of traffic flow where there exists excessive congestion delay. Signalized intersection capacity analysis results in an overall LOS representative of all movements through the intersection. Unsignalized intersection capacity analysis produces LOS results for each vehicle movement that yields the right-of-way to conflicting traffic. **Table 4** summarizes the signalized and unsignalized LOS thresholds used in this analysis.

Table 4: Intersection LOS Criteria

LOS	Signalized Delay Range (sec)	Two-Way Stop Control Delay Range (sec)
A	0 - 10	0 - 10
B	10 - 20	10 - 15
C	20 - 35	15 - 25
D	35 - 55	25 - 35
E	55 - 80	35 - 50
F	> 80	> 50

Source: Highway Capacity Manual (2010)

The LOS of a highway facility can be measured based on the average travel speed of vehicles along a specified corridor segment. In urban areas, travel speed is calculated based on the traffic volumes, influence of intersection control and density, and congestion along a corridor, measured on a scale of A to F. For the US 24 study corridor, the segment from Powers Boulevard to Woodmen Road was considered urban due to its higher volumes and the impact that the signalized intersections have on roadway operations. LOS A describes primarily free-flow operations with travel speeds exceeding 85% of the base free-flow speed. LOS F is characterized by heavy congestion, high delay, and extensive queuing with travel speeds at 30% or less of the base free-flow speed. **Table 5** summarizes the LOS thresholds for vehicles on an urban arterial segment.



Table 5: Urban Streets LOS Criteria

LOS	Travel Speed as a Percentage of Base Free-Flow Speed (%)
A	> 85%
B	> 67 - 85%
C	> 50 - 67%
D	> 40 - 50%
E	> 30 - 40%
F	<= 30%

Source: Highway Capacity Manual (2010)

East of Woodmen Road, the US 24 study corridor was considered to be a two-lane rural highway, and the LOS was calculated based on the average travel speeds and the percent of time spent following slower vehicles. This method incorporates roadway characteristics like shoulder and lane width, the number of accesses per mile, and the percent of no-passing zones or passing lanes within the segment. **Table 6** summarizes the criteria used to determine the LOS for a rural two-lane highway.

Table 6: Rural Two Lane Highway LOS Criteria

LOS	Average Travel Speed (mph)	Percent Time Spent Following (%)
A	> 55	< 35
B	> 50 - 55	> 35 - 50
C	> 45 - 50	> 50 - 65
D	> 40 - 45	> 65 - 80
E	< 40	> 80

Source: Highway Capacity Manual (2010)

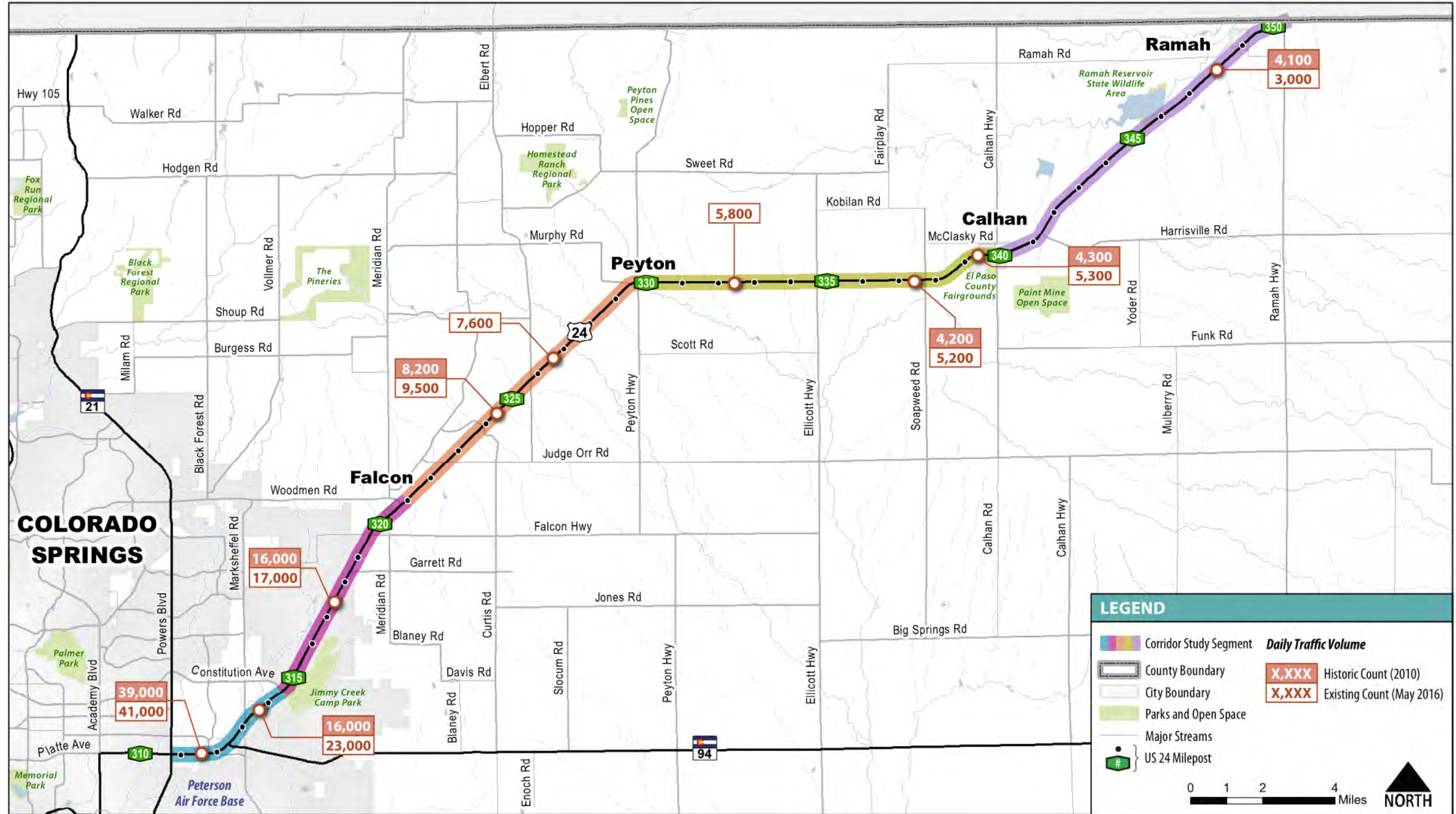
Traffic Volumes

Traffic count data were collected along the US 24 study corridor in May 2016. Current and historical traffic count data were also compiled as available from El Paso County and CDOT. The traffic count data are included in **Appendix A**.

Daily traffic provides a perspective on how traffic levels compare for a road facility type. The daily traffic counts collected for the study are shown in **Figure 14**. The daily traffic volumes are the average for two days of weekday data collection. Historical CDOT traffic count data from 2010 were compiled for locations along US 24 and are shown at the same locations as the daily counts for comparison. As shown, traffic along US 24 has remained fairly steady with moderate growth in daily traffic. Traffic volumes east of Marksheffel Road have grown substantially with local residential development, with traffic volumes increasing over 40% between 2010 and 2016.



Figure 14: US 24 Daily Traffic Volume Counts



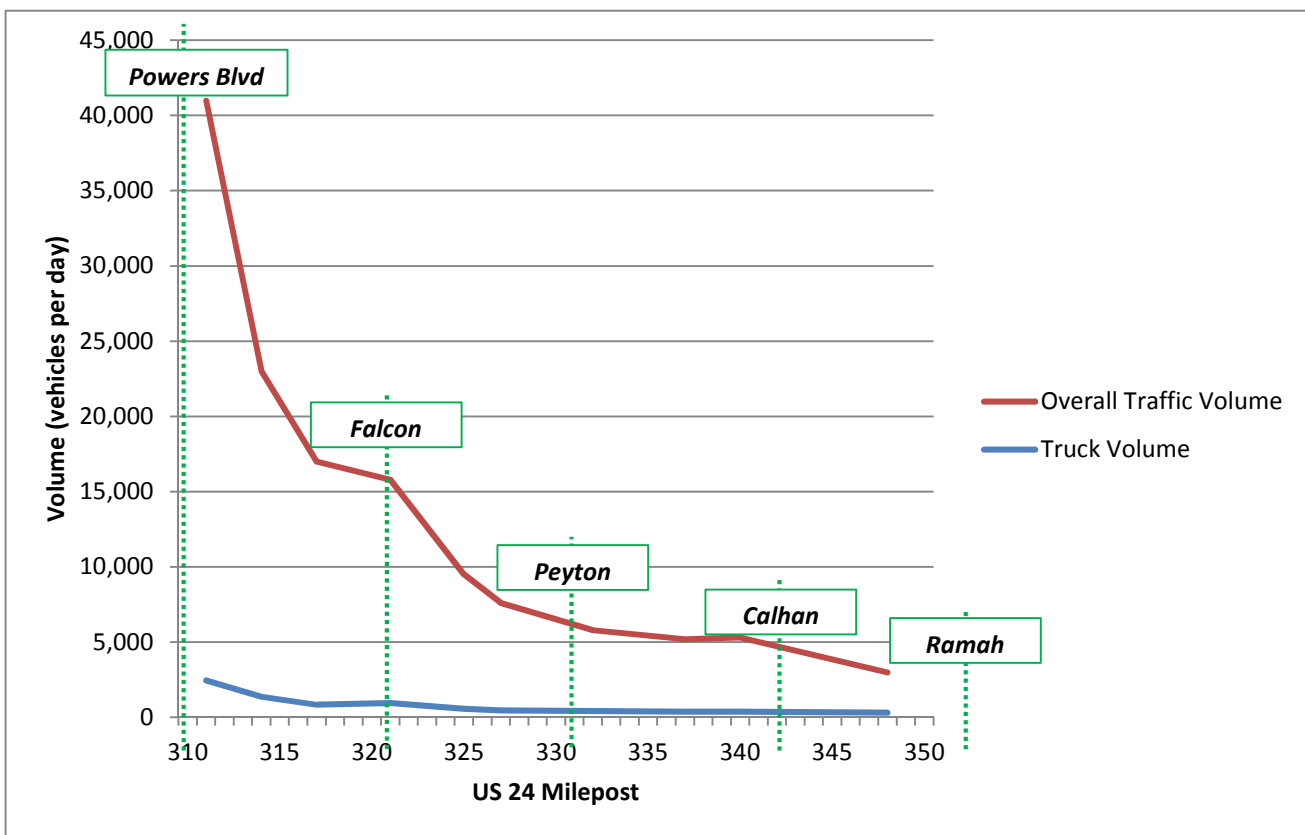


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Traffic volumes along the corridor are greatest just east of Powers Boulevard at approximately 41,000 vehicles per day. Volumes decrease to less than 20,000 vehicles per day east of Constitution Avenue and less than 10,000 vehicles per day east of Falcon. The US 24 study corridor is a designated critical freight corridor serving freight movements between I-70 in eastern Colorado and Colorado Springs and southern Colorado. Daily traffic volumes and truck volumes along US 24 are outlined in **Figure 15**. Though the truck volumes are greatest between Powers Boulevard and SH 94, the percentage of truck traffic to the overall daily volume is greatest at the east end of the corridor with 10% of vehicles being trucks near Ramah.

Figure 15: US 24 Daily Traffic and Freight Volumes



Peak hour intersection traffic volumes are used to evaluate and quantify traffic operations and capacity of a roadway system. Peak hour intersection counts were collected for this study at 20 locations along the US 24 study corridor.

Existing Traffic Operations

Existing peak hour volumes and traffic operations for intersections and corridor segments are illustrated by study corridor segment in **Figures 16 through 20**. Existing operation reports are included in **Appendix B**. Turning movement traffic counts were collected at major intersections along the US 24 study corridor in May 2016. Due to construction and road



closures on Marksheffel Road south of US 24 while the traffic counts were collected, the existing traffic counts at and surrounding the Marksheffel Road intersection were compared to counts in previous years and adjusted, as needed, to portray existing conditions without construction impacts.

The intersections at the west end of the study corridor, at the Peterson Road interchange and at Marksheffel Road, operate poorly at LOS E and F during the AM or PM peak commute hours. All other intersections along the corridor operate at LOS D or better during both peak hours.

Considering corridor operations, the US 24 study corridor performs near or at capacity in the westbound direction approaching the Woodmen Road and Meridian Road intersections in Falcon and the Marksheffel Road intersection during the AM peak hours. Between Stapleton Road and Peyton, the corridor operates at LOS D in both directions during the AM and PM peak hours. The other sections of the corridor operate at LOS C or better during peak hours.



Figure 16: Existing Peak Hour Traffic Volumes and Operations (Powers Blvd to Constitution Ave)

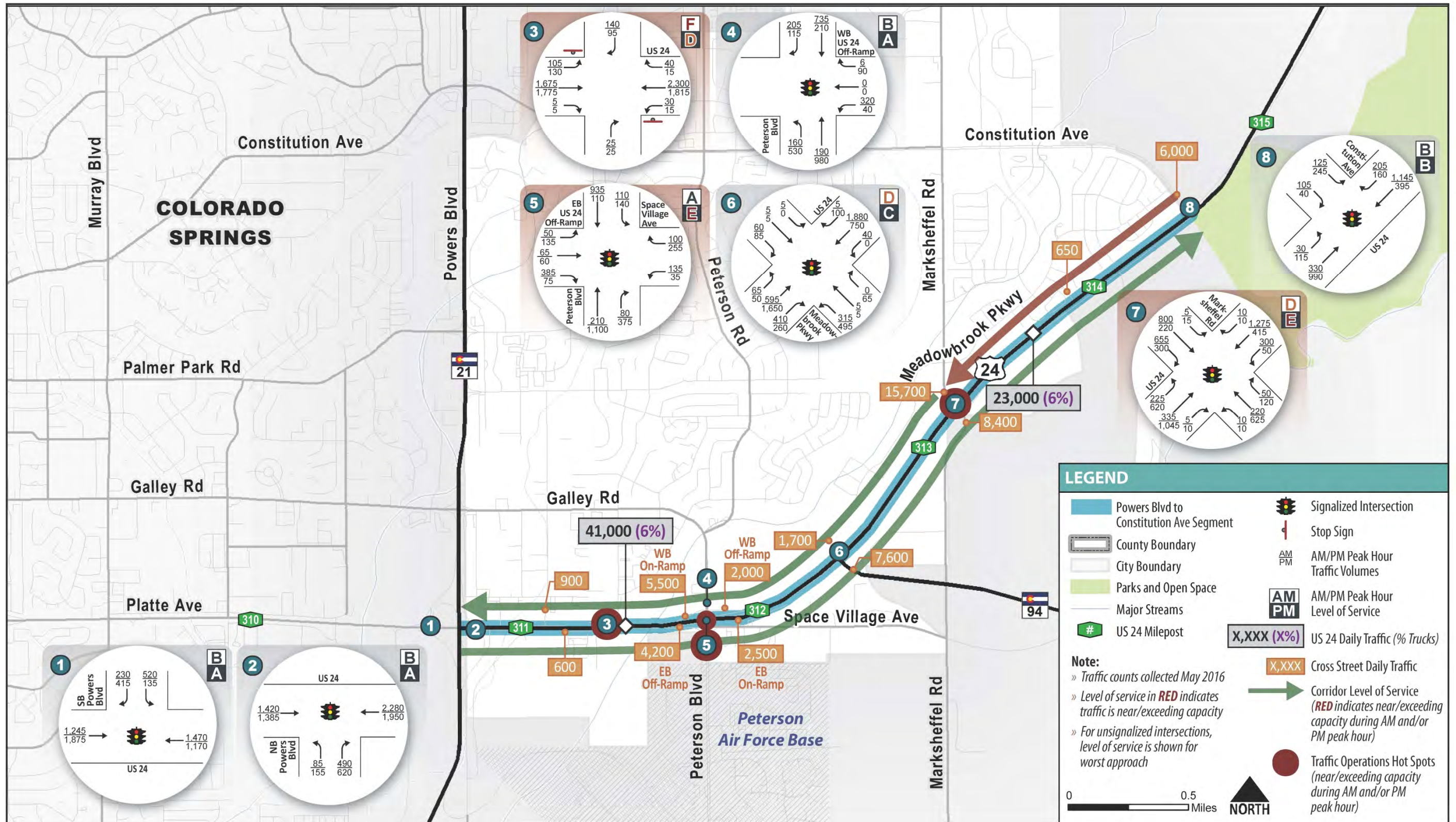




Figure 17: Existing Peak Hour Traffic Volumes and Operations (Constitution Ave to Falcon)

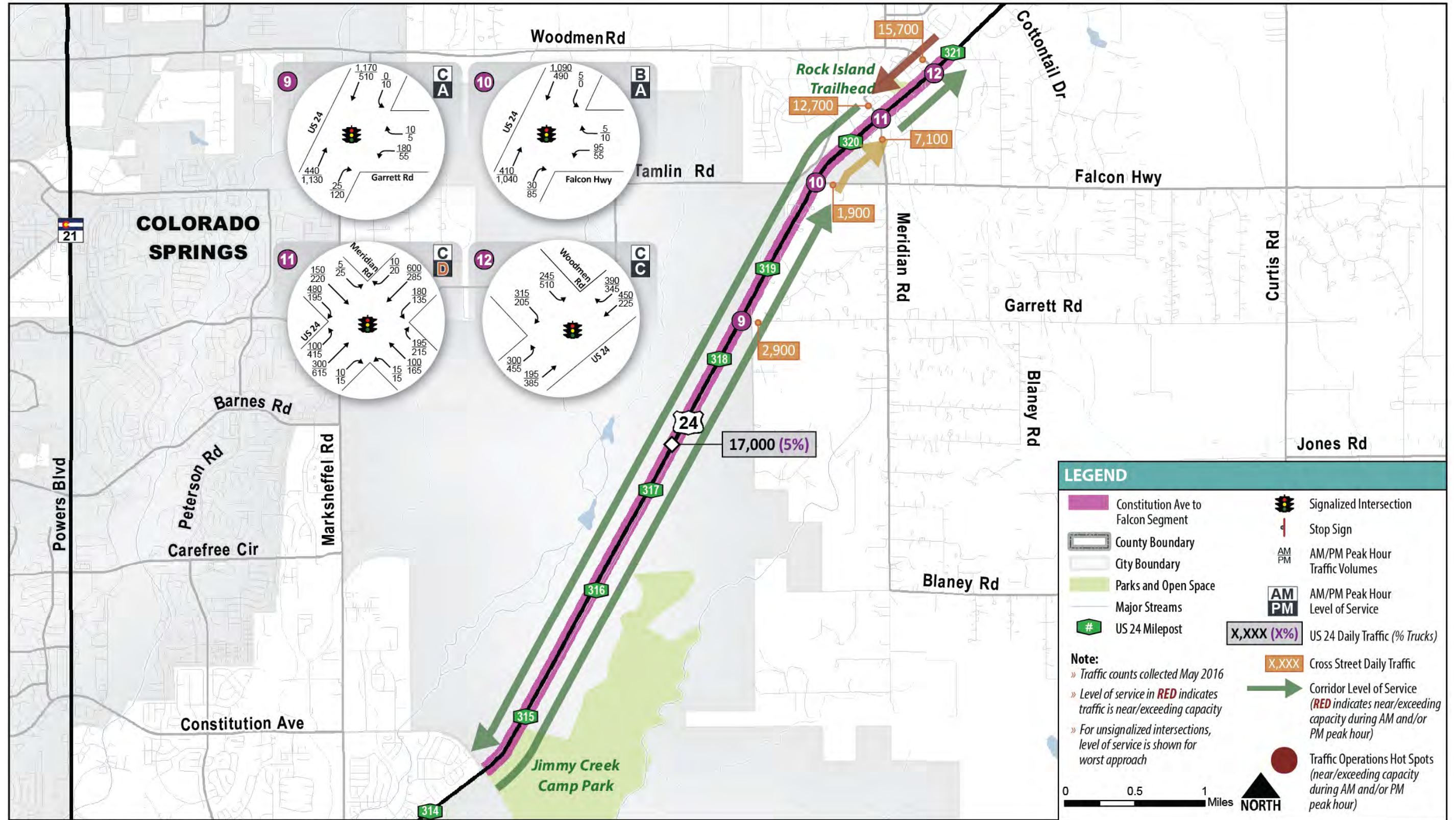




Figure 18: Existing Peak Hour Traffic Volumes and Operations (Falcon to Peyton)

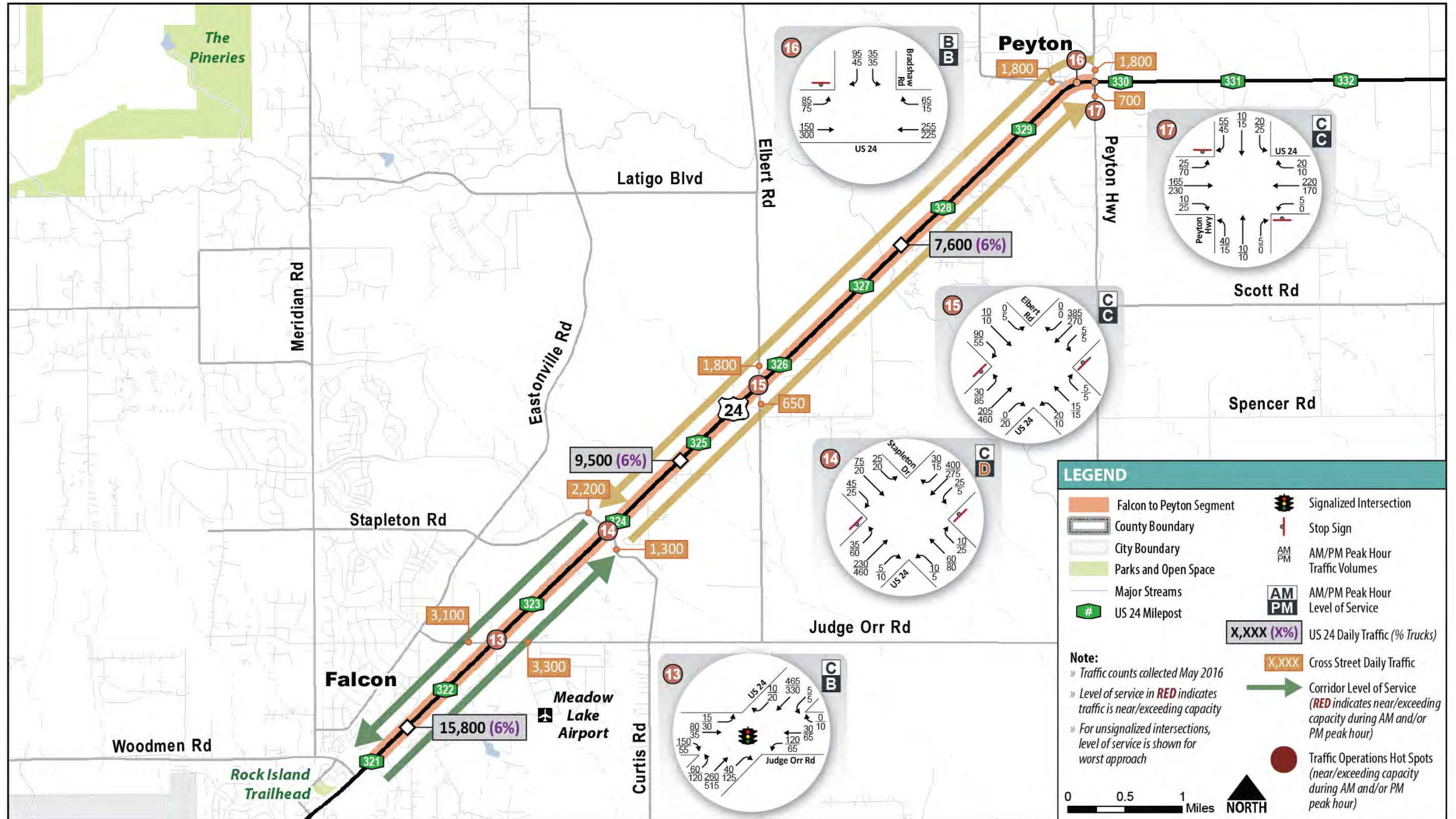




Figure 19: Existing Peak Hour Traffic Volumes and Operations (Peyton to Calhan)

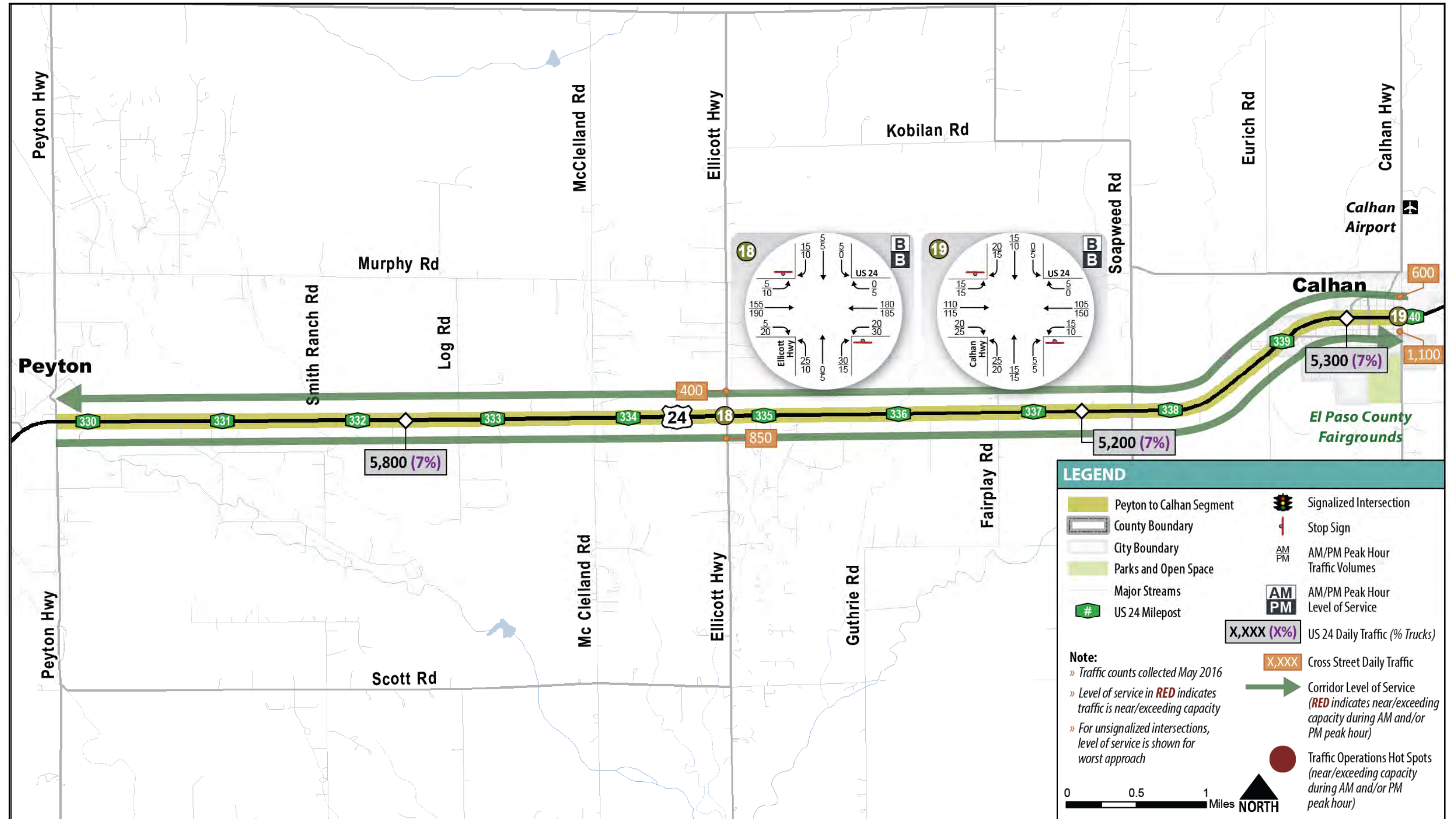
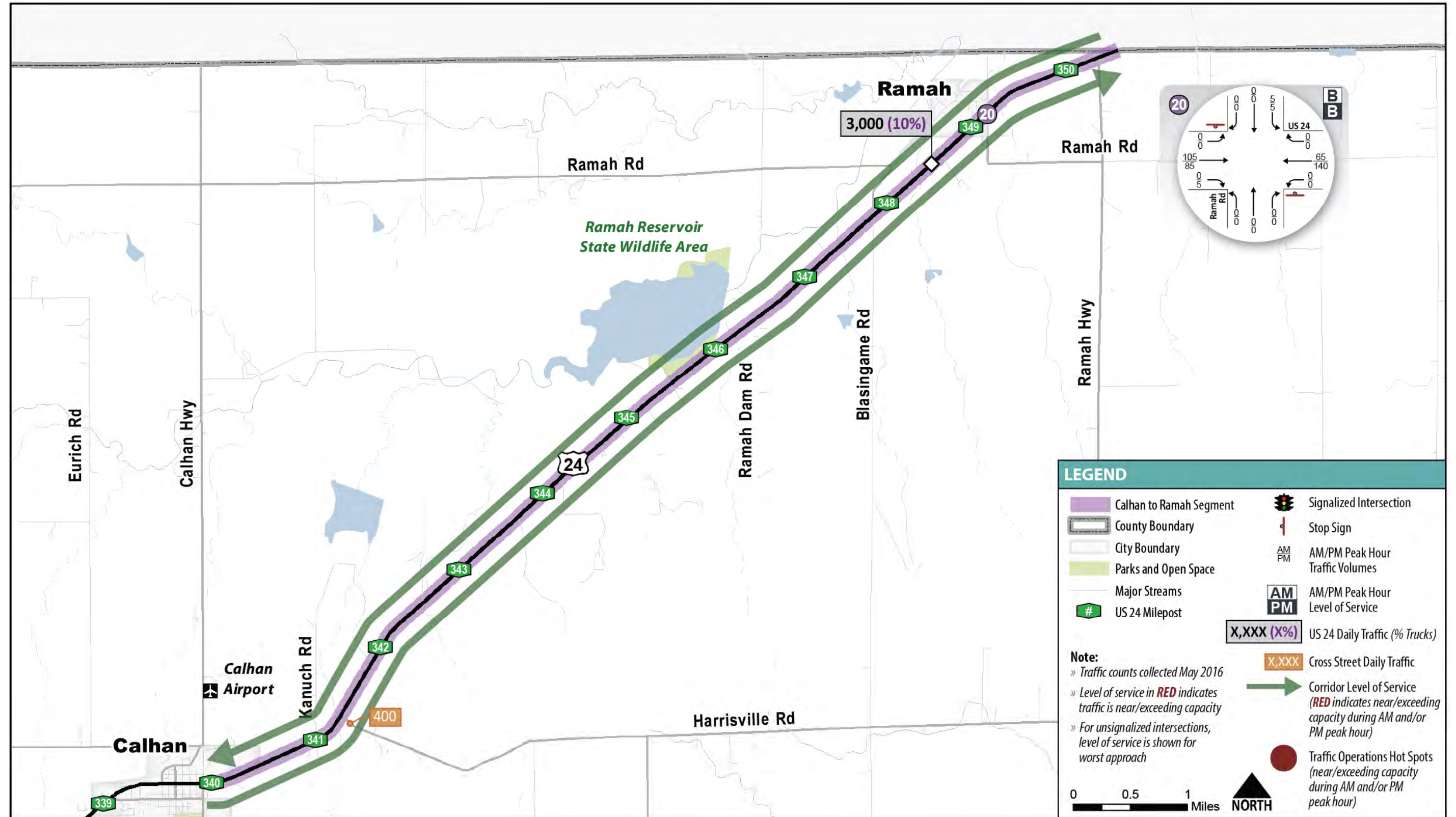




Figure 20: Existing Peak Hour Traffic Volumes and Operations (Calhan to Ramah)





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Crash Data Analysis

In order to identify general crash trends, CDOT crash data for the US 24 study corridor was evaluated for a five-year period from July 2010 through June 2015.

Overall Corridor Crash History

Within the five-year period for the provided data, there were a total of 674 crashes, or an average of 135 crashes per year for the nearly 40-mile long corridor. In the five year period, the crash severity was broken out as follows:

- ✦ 6 fatal crashes (1% of total)
- ✦ 260 injury crashes (39% of total)
- ✦ 404 property damage only (PDO) crashes (60% of total)

Of the six fatal crashes, one was a broadside at the Powers Boulevard interchange, and the others were rural non-intersection crashes. Of the rural crashes, one involved a pedestrian near Falcon Highway, two were run-off-road crashes, one was a head on crash, and one occurred while a driver was making a u-turn. During the years analyzed, no crashes were reported involving bicyclists and the only pedestrian crash was the fatality near Falcon.

Overall on the corridor, the most prevalent crash types were rear-end (38%), fixed object (14%), and broadside crashes (12%). **Table 7** lists the number and severity of crashes at intersections along the corridor with more than five reported crashes. The intersections with the most crashes were Meridian Road, Woodmen Road, SH 94, and Marksheffel Road. These intersections are all signalized and all had rear end crashes as the most frequent crash type.

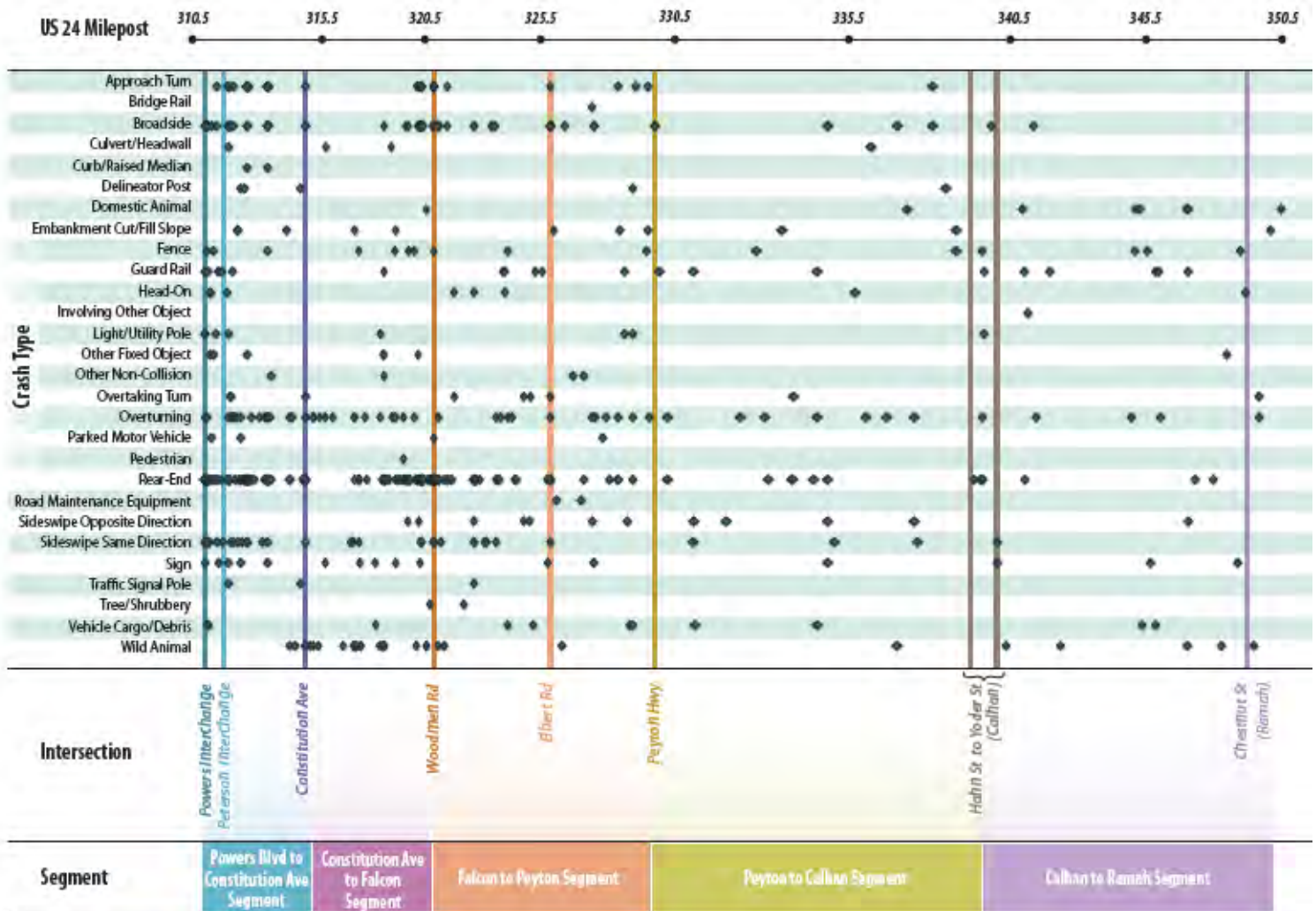
Table 7: Intersection Crashes by Severity

INTERSECTING ROAD	MILEPOST	PDO	INJURY	FATAL	TOTAL	FREQUENT CRASH TYPES
Powers Boulevard Interchange	311	13	14	1	28	Rear end (16), Broadside (9)
Peterson Road Interchange	311.75	12	10	0	22	Rear end (8), Broadside (5)
SH 94	312.43	23	10	0	33	Rear end (19), Approach Turn (8)
Marksheffel Road	313.18	13	19	0	32	Rear end (16), Approach Turn (6)
Constitution Avenue	314.59	3	5	0	8	Rear end (2), Broadside (2)
Garrett Road	318.44	8	5	0	13	Rear end (9)
Falcon Highway	319.62	8	3	0	11	Rear end (9)
Meridian Road	320.29	31	10	0	41	Rear end (24), Broadside (10)
Woodmen Road	320.87	26	15	0	41	Rear end (25), Approach Turn (10)
Rio Lane	321	4	3	0	7	Rear end (3), Broadside (4)
Judge Orr Road	322.54	14	6	0	20	Rear end (13)
Elbert Road	325.84	6	9	0	15	Rear end (4), Broadside (7)



Figure 21 depicts where each crash occurred along the corridor as it relates to crash type and milepost. The highest density of approach turn and broadside crashes occurred between Powers Boulevard and Marksheffel Road, then again between SH 94 and Meridian Road. The rear end crashes have the highest density in the two western segments, which is where the corridor is typically most congested during peak hours.

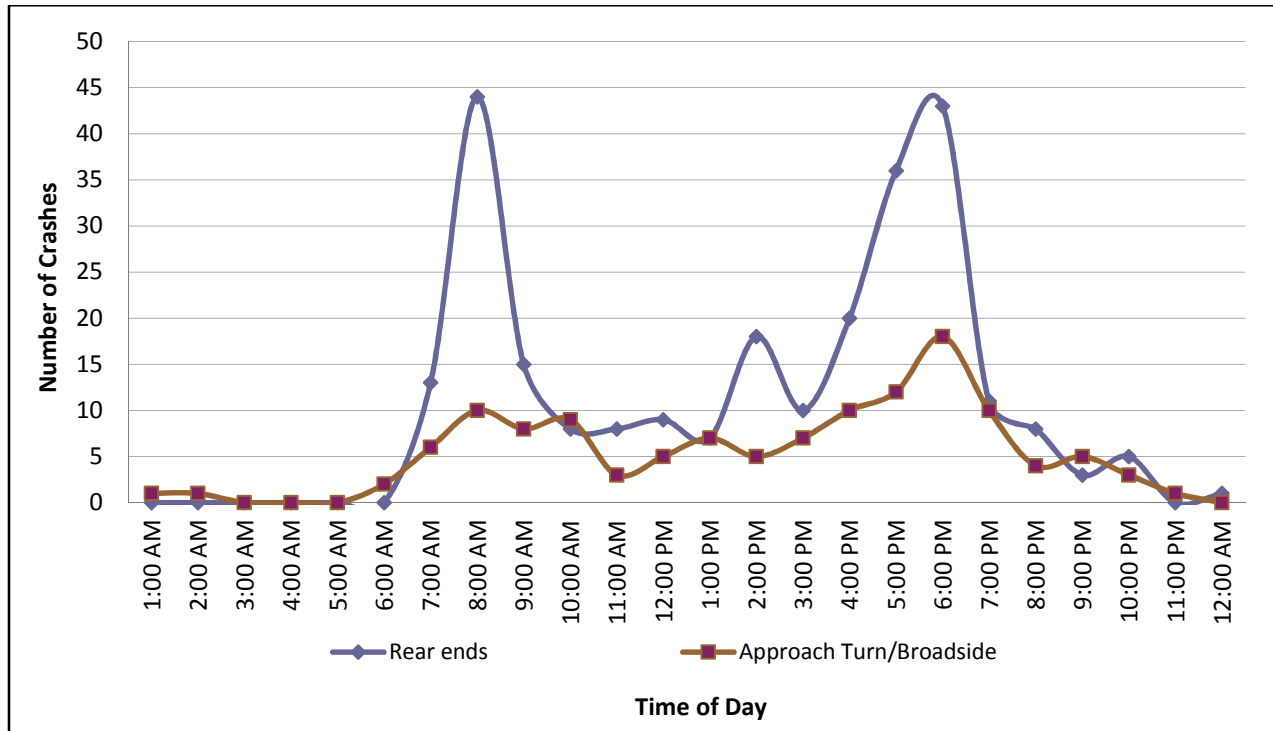
Figure 21: Intersection Crashes by Severity



The total rear end and approach turn/broadside crashes were analyzed by time of day for the entire corridor. As seen in **Figure 22**, the majority of the rear-end crashes occurred during the morning and evening peak hours, when the congestion on the corridor is highest. The approach turn and broadside crashes also peak during the evening peak hour, but are more evenly distributed throughout the daytime hours.



Figure 22: Rear end and Approach Turn/Broadside Crash Summary



One driveway access on the corridor had a notable number of crashes. The Diamond Shamrock convenience store access immediately west of Meridian Road recorded nine crashes during the five-year period. Broadside crashes were the most frequent crash type (with five crashes) that occurred when a driver was making a northbound left turn out of the Diamond Shamrock access.

Crash History by Corridor Segment

An additional analysis was performed to determine the types of crashes by segment and to calculate the likelihood of implementing crash reduction measures. Figure 23 shows the breakout of crash type for each corridor segment. Over two-thirds of the crashes that occurred in the five-year period were in the western segments between Powers Boulevard and Falcon. The most prevalent types of crashes between Powers Boulevard and Peyton were rear-end crashes, which is typical for the more congested portion of the corridor. East of Peyton, the most prevalent type of crash was a fixed object, which are oftentimes single vehicle crashes.

Level of Service of Safety

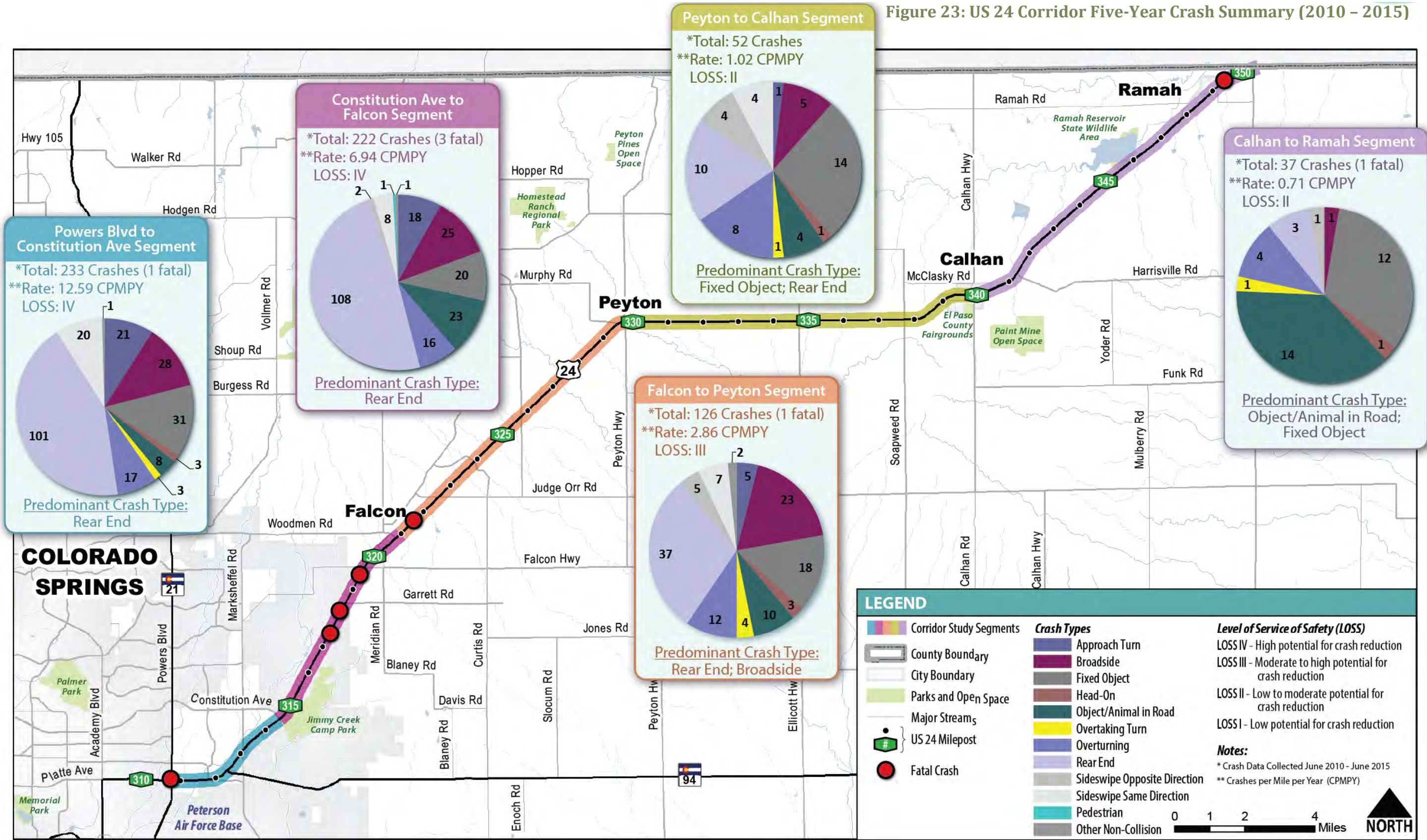
CDOT has developed Highway Segment Safety Performance Functions (SPFs) to estimate the average crash frequency for a specific site type as it relates to the annual average daily traffic of the segment. These SPFs are used to predict the potential that a corridor has for crash reduction based on the observed versus the predicted crash frequency, which is called the Level of Service of Safety (LOSS). It was determined that both the Powers Boulevard to Constitution Avenue and the Constitution Avenue to Falcon segments have a high potential for



crash reduction measures to be implemented. From Falcon to Peyton, there is a moderate to high potential for crash reduction, and for the segments between Peyton and Calhan and from Calhan and Ramah there is a low to moderate potential for crash reduction. The LOSS and number of crashes per mile per year for each segment are shown in **Figure 23**.



Figure 23: US 24 Corridor Five-Year Crash Summary (2010 - 2015)





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Corridor Multimodal Mobility

This section describes alternative modes of transportation surrounding the US 24 study corridor, including bicycle, pedestrian, and transit services and infrastructure. The relatively rural environment surrounding the corridor offers fewer options than more urban parts of El Paso County, but multimodal users can utilize the Rock Island Trail, shoulders along US 24, and a number of specialized transportation services.

Bicycle Conditions

The US 24 study corridor provides limited on-street and off-street facilities for pedestrians and bicyclists. Both users may utilize the Rock Island Trail that parallels US 24 between Falcon and Peyton. In addition to using the trail, bicyclists can also use the shoulders along US 24, as designated on the *Colorado Bikeways and Scenic Byways Map*. Sidewalks and low-volume residential roads provide a comfortable pedestrian environment within the developed communities along US 24.

Off-Road Connections

The Rock Island Trail and a neighborhood trail are the two existing trails within the study area. The Rock Island Trail runs along the north side of US 24 between Falcon and Peyton. As part of the national movement to convert inactive rail lines to regional trails, this portion of the trail was constructed on the former Rock Island Railroad Line and part of the America the Beautiful Trail. El Paso County has future plans to continue the trail from Peyton to Ramah parallel to US 24. The 12-foot wide trail consists of a hard-packed dirt surface. There is virtually no tree canopy along the path, but benches provide resting spots for users. Trail bridges provide continuous access for trail users across area drainageways, although a number of bridges were washed out in flooding in Spring of 2015.



Beginning of the Rock Island Trail in Peyton

Just north of MP 321 near the US 24/Woodmen Road intersection, the Rock Island Trail connects to a paved neighborhood trail that provides access through a residential area, as well as the Woodmen Hills Elementary School.

The Rock Island Trail crosses a number of unpaved driveways and paved roadways. No infrastructure is present at the unpaved driveways. Crossings at paved roadways (such as Judge Orr Road, Stapleton Road and Elbert Road) have stop signs for path users, but no roadway signage to warn drivers of the potential for



Rock Island Trail crossing Judge Orr Road



pedestrian or bicyclist crossings. Only Stapleton Road has a marked crosswalk for path users.



Rock Island Trail underpass at Woodmen Road

One underpass provides grade-separated trail access at the US 24/Woodmen Road intersection. This underpass provides uninterrupted access along the Rock Island Trail and sidewalk connections to Woodmen Road allow path users to easily access locations off the trail. At the entrance of the underpass, the width is approximately 8.5 feet.

Strava is an app that many bicyclists use to track their rides. It collects and stores a variety of statistics for individuals, such as speed, distance, vertical feet, and number of rides. The Strava Global Heatmap is an anonymous aggregation of users to show concentrations of popular riding locations. Although it is not a complete data set, since it requires riders to have and use the app, the crowd sourced data can provide some anecdotal information on the level of use of a particular route. **Figure 24** shows a screenshot from the Strava Global Heatmap on a segment of US 24 and Rock Island Trail in Falcon from Woodmen Road to Judge Orr Road. Red shows a higher concentration of bicyclists riding on the US 24 highway than the Rock Island Trail. Although the Rock Island Trail provides an off-road facility, the washed-out trail bridges and the unpaved surface may make the on-road connection more popular for bicyclists seeking a connected paved surface.

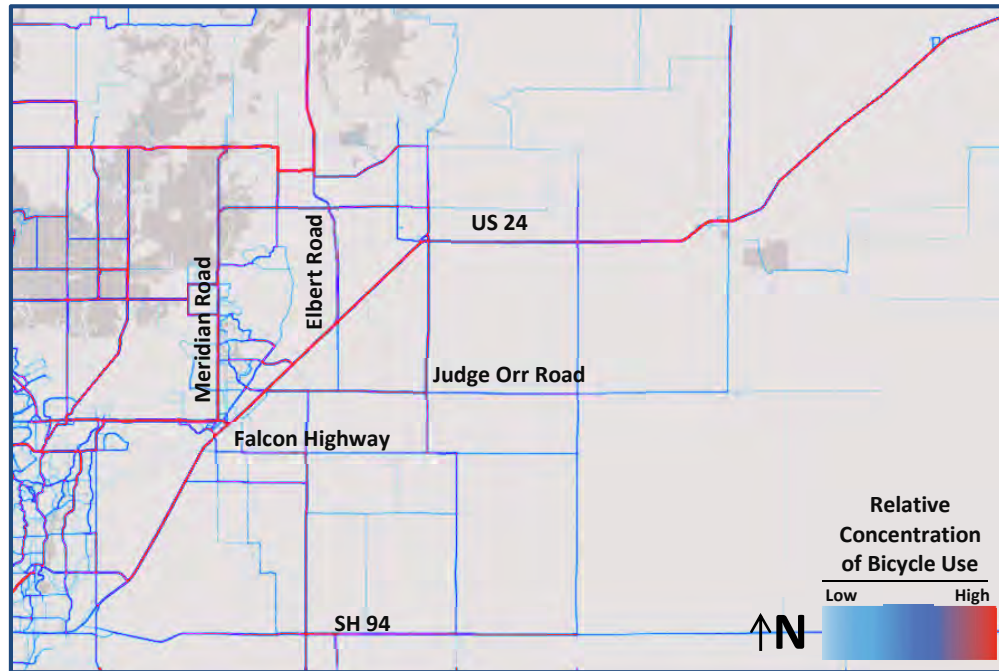
Figure 24: Strava Heatmap for Rock Island Trail





The Strava Heatmap for the entire US 24 study corridor (**Figure 25**) shows high concentrations of bicycle use on US 24, Woodmen Road, and Meridian Road. Lower concentrations of bicyclists can be found southeast of US 24 on SH 94, Curtis Road, Judge Orr Road, and Elbert Road. Calhan Highway north of US 24 also shows a higher concentration of bicyclists.

Figure 25: Strava Heatmap for the US 24 Study Corridor



On-Road Connections

US 24 is identified as rideable shoulders in the *Colorado Bikeways and Scenic Byways Map*. However, in many places the shoulders are less than four feet wide and nonexistent across many of the highway bridges. In addition to variable shoulder width, there is a moderate level of truck traffic and vehicles travel fast along the US 24 highway, with a posted speed of 65 mph along most of the study corridor. Within the communities along US 24, slower vehicle speeds and more residential streets provide much more comfortable riding environments.

Planned Improvements

A number of planned trails and bicycle routes have been identified for future implementation throughout the area surrounding the US 24 study corridor. A number of bicycle route improvements were identified in the *El Paso 2011-2020 MTCP*:

- ✦ SH 94 from US 24 east to Enoch Road
- ✦ Marksheffel Road from US 24 north to Falcon Highway
- ✦ Falcon Highway from US 24 east to Peyton Highway
- ✦ Meridian Road from US 24 north to Hodgen Road
- ✦ Stapleton Road connecting the Rock Island Trail to the future Eastonville Road Trail
- ✦ Judge Orr Road from US 24 east to Peyton Highway
- ✦ Peyton Highway just north of Peyton to Sweet Road



These bicycle routes will provide a much improved experience for bicyclists throughout the study area, especially in providing improved access north and south of US 24. Other planned bicycle routes have been identified in the area, not included in the *2011-2020 MTCP*.

Three major regional trails are planned within the study area:

- ✦ Continuation of the Rock Island Trail north of Peyton to Ramah
- ✦ Creation of the Eastonville Road Trail traveling northeast from Falcon
- ✦ Creation of Black Squirrel Creek Trail between Falcon and Peyton
- ✦ Creation of Big Sandy Creek Trail from the Ramah Reservoir State Wildlife Area west to the Homestead Ranch Regional Park

There were no reported crashes involving bicyclists along the US 24 study corridor from 2010 to 2015.

Pedestrian Connections

Pedestrians have little sidewalk access immediately parallel to US 24 throughout the study corridor. All of the communities along the corridor do provide some sidewalks and marked crosswalks for pedestrians. Two areas in Calhan provide sidewalks parallel to US 24, in addition to three unsignalized pedestrian crosswalks across US 24 (at Golden Street and Boulder Street).



Striped pedestrian crossing at Boulder Street in Calhan

There was one fatal crash involving a pedestrian along the US 24 study corridor from 2010 to 2015. It occurred at milepost 319.4, which is just south of the intersection with Falcon Highway. This crash occurred when a vehicle traveling at 60 mph collided with a pedestrian at about 9:30 PM. No impairment was noted for either the vehicle or the pedestrian.

Transit Services

Mountain Metro Transit is the transit service provider in Colorado Springs, which operates as part of the City of Colorado Springs. Coverage is provided throughout the metropolitan area and supported with a number of specialized transportation providers. These services provide flexible rides without a set route or schedule in smaller buses and vans that run on demand response systems. Riders set up recurring and/or one-time trips and the routes are determined by the riders origins and destinations. Oftentimes, different services are restricted to different populations and/or geographies due to funding requirements and limitations. For example, some providers only give rides to people with disabilities or seniors.



Route 23 is the only Mountain Metro Transit route that operates within close proximity to the US 24 study corridor. The route originates at the Citadel Mall Transfer Center then travels east along Galley Road until Peterson Road. At this point, it travels north along Peterson Road and Tuft Boulevard until Stetson Hills Boulevard and then travels south on Powers Boulevard until Barnes Road and west until Morning Sun Avenue. With only this one fixed transit route providing access in the area, most people who need help with transportation rely on specialized transportation services.

A number of human service providers (HSPs) offer specialized transportation along and around the US 24 study corridor. These HSPs provide rides and sometimes walking assistance to a number of different populations within the community including: seniors, people with low income, people with disabilities or a combination of these characteristics. The rider restriction relates directly to the guiding mission statement and funding sources of the organization. While the Colorado Springs area offers a one-stop call resource for riders unsure about the appropriate service, the following information details some of the providers:

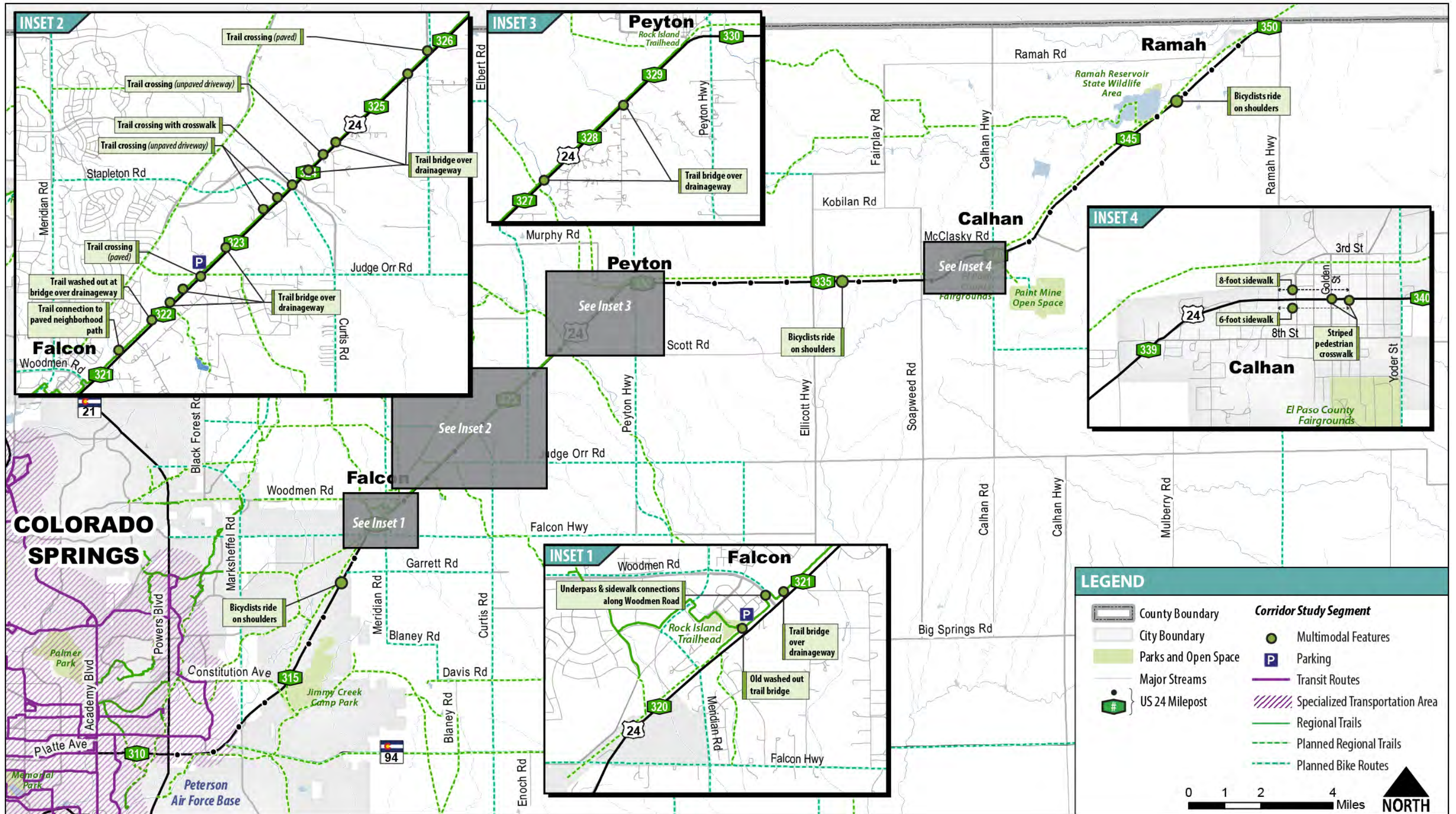
- ✦ **Metro Mobility** is the federally mandated supplemental service that Mountain Metro Transit must provide within $\frac{3}{4}$ of a mile of their fixed route. This service is eligible only to people who register through their process and cannot ride fixed route service due to a disability. During the month of May, within the $\frac{3}{4}$ of a mile of Route 23, Metro Mobility provided 3,474 trips to 302 riders. This represents about 36 percent of total registered riders in the area.
- ✦ **Silver Key** is a HSP in the Colorado Springs area for seniors. While they provide rides close to the service area, they try not to provide rides east of Marksheffel Road due to inability to meet the demand. They access clients on a case-by-case basis in this area, to see if they are able to meet the demand.
- ✦ **Amblicab** provides service in the Colorado Springs area during weekdays from 7:00 AM to 5:30 PM. They provide rider services to a number of different populations: people with disabilities, people 60 and over, as well as people receiving Medicaid. Out of approximately 8,100 trips provided from January-mid June 2016, only four occurred near the US 24 study corridor (by Peterson Road).
- ✦ **Community Intersections** is a transportation program for people with disabilities within the Common Works non-profit based in Colorado Springs. From July 2015-June 2016, this service averaged about 185 monthly trips near and within our study area.
- ✦ **Calhan Senior Services/Fountain Valley Senior Center** provides transportation services as part of El Paso County's Department of Human Services. Riders 60 and over can make reservations for rides on Tuesdays, Thursdays and every other Monday.



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Figure 26: US 24 Area Multimodal Features



LEGEND

County Boundary	Corridor Study Segment
City Boundary	Multimodal Features
Parks and Open Space	Parking
Major Streams	Transit Routes
US 24 Milepost	Specialized Transportation Area
	Regional Trails
	Planned Regional Trails
	Planned Bike Routes

0 1 2 4 Miles **NORTH**



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FUTURE TRANSPORTATION CONDITIONS

The horizon year for this study is 2040, consistent with the horizon year for the current PPACG 2040 *Moving Forward* Regional Transportation Plan and regional travel demand model.

No Action Alternative

Under the No Action Alternative, only improvements that are already planned and funded by CDOT, El Paso County, or the local municipalities are included. Each of these programmed projects is shown in **Figure 27**. These projects will be considered as part of the base condition when improvement alternatives are identified for the corridor.

The No Action Alternative would not provide any improvements beyond the existing transportation system and the identified funded projects. However, the No Action Alternative includes safety and maintenance activities that are required to sustain the transportation system.

The No Action Alternative includes only those projects that have committed funding sources and those projects would be built regardless of other improvements that are identified as part of this study. Those projects include:

- ✦ **Marksheffel Improvements:** Improvements along Marksheffel Road south of US 24, including an additional northbound through lane at the US 24 intersection. (*El Paso County project - currently under construction*)
- ✦ **US 24 Pavement Overlay Constitution - Garrett:** Highway overlay and traffic signal improvements at the US 24 and Garrett Road intersection. (*CDOT project - scheduled for 2017*)
- ✦ **Meridian South Park-n-Ride with New Meridian Connection:** Realignment of Meridian Road with a new traffic signal on US 24, shifting the intersection south of the existing location, and construction of a new park-n-ride facility. (*El Paso County project - planned by 2025*)
- ✦ **Judge Orr Channel Improvements:** Drainage improvements at Judge Orr Road north of US 24, including stabilizing channel erosion. (*El Paso County project - construction anticipated 2016*)
- ✦ **US 24 Passing Lane West of Peyton:** Widening along US 24 west of Peyton to provide a westbound passing lane. (*CDOT project - scheduled for 2020*)
- ✦ **7th Street Improvements:** Roadway overlay. (*Town of Calhan project - scheduled for 2016-2017*)
- ✦ **8th Street Improvements:** Roadway overlay. (*Town of Calhan project - scheduled for 2016*)
- ✦ **Ramah Local Streets Chip and Seal:** Roadway chip and seal paving for local streets. (*Town of Ramah project - scheduled for 2016-2017*)



Travel Demand Model

The PPACG utilizes a travel demand model to estimate future transportation demand in the region. A travel demand model is a planning tool for assessing alternative improvements to a transportation system, given projected future demand. The model uses future population and economic forecasts and other variables, including land use patterns and densities and estimates of future activity from local governments. The model provides output in the form of estimated traffic volumes on the roadway system.

The PPACG 2040 Small Area Forecasts travel demand model was used to develop 2040 traffic forecasts for the US 24 study corridor and intersecting roadways. The travel demand model output was provided by PPACG staff. Due to the complexity of real-world travel behavior and individual roadway characteristics, travel demand forecasting models cannot be expected to result in precise representations of traffic volumes on each roadway. A common technique used to improve the reliability of travel demand forecasts is referred to as post-processing adjustment. This technique uses comparisons of the base year model's predicted traffic volumes versus actual traffic counts. These comparisons provide estimations of the error associated with the model's representations of existing conditions. The model-produced forecasts are then adjusted to account for the errors found in the model to provide more reliable forecasts. This post-processing adjustment methodology, as prescribed in the National Cooperative Highway Research Program (NCHRP) Report 255 and NCHRP Report 765 (an update to 255), was applied to the US 24 corridor traffic forecasts.

2040 Traffic Conditions

Traffic forecasts for the year 2040 along the US 24 study corridor are shown on **Figures 28 through 32**, along with the projected levels of service for the intersections and corridor segments.

Traffic along the US 24 study corridor is projected to increase substantially along the west end of the corridor to 80,000 vehicles per day west of SH 94, almost double the traffic experienced today. East of Marksheffel Road, the traffic volume is expected to drop to 45,000 vehicles per day. East of Stapleton Road in Falcon, the volume along US 24 is expected to reach 23,000 vehicles per day and exceed 10,000 east of Peyton. In Calhan, traffic is expected to increase to 9,000 vehicles per day, an almost 70% increase over the volumes experienced in 2016. West of Ramah, traffic volumes are projected to reach 6,000 vehicles per day.

Without highway improvements, congestion along the US 24 study corridor is expected to worsen by 2040 with longer intersection delays, slower speeds, and extended queues, as well as new areas of congestion east of Falcon. Traffic operations at intersections along the corridor are expected to degrade with almost all of the primary intersections west of Peyton operating poorly at LOS E and F during the AM or PM peak commute hours. The US 24 study corridor is expected to exceed capacity west of Peyton and operate at LOS D in both directions during the AM or PM peak hours between Peyton and Calhan.



Figure 27: Funded Area Projects

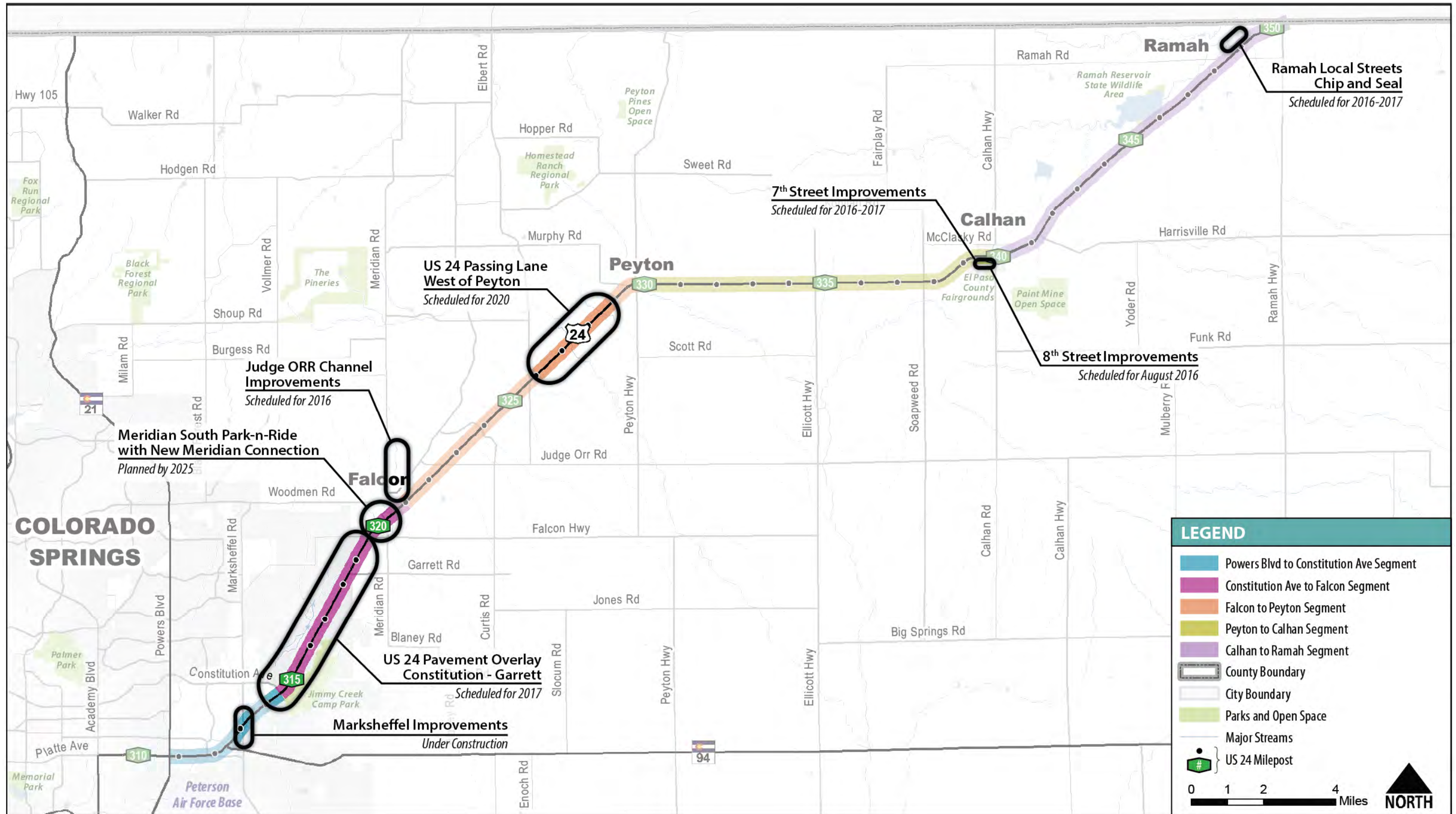




Figure 28: Projected 2040 Traffic Volumes and Operations (Powers Blvd to Constitution Ave)

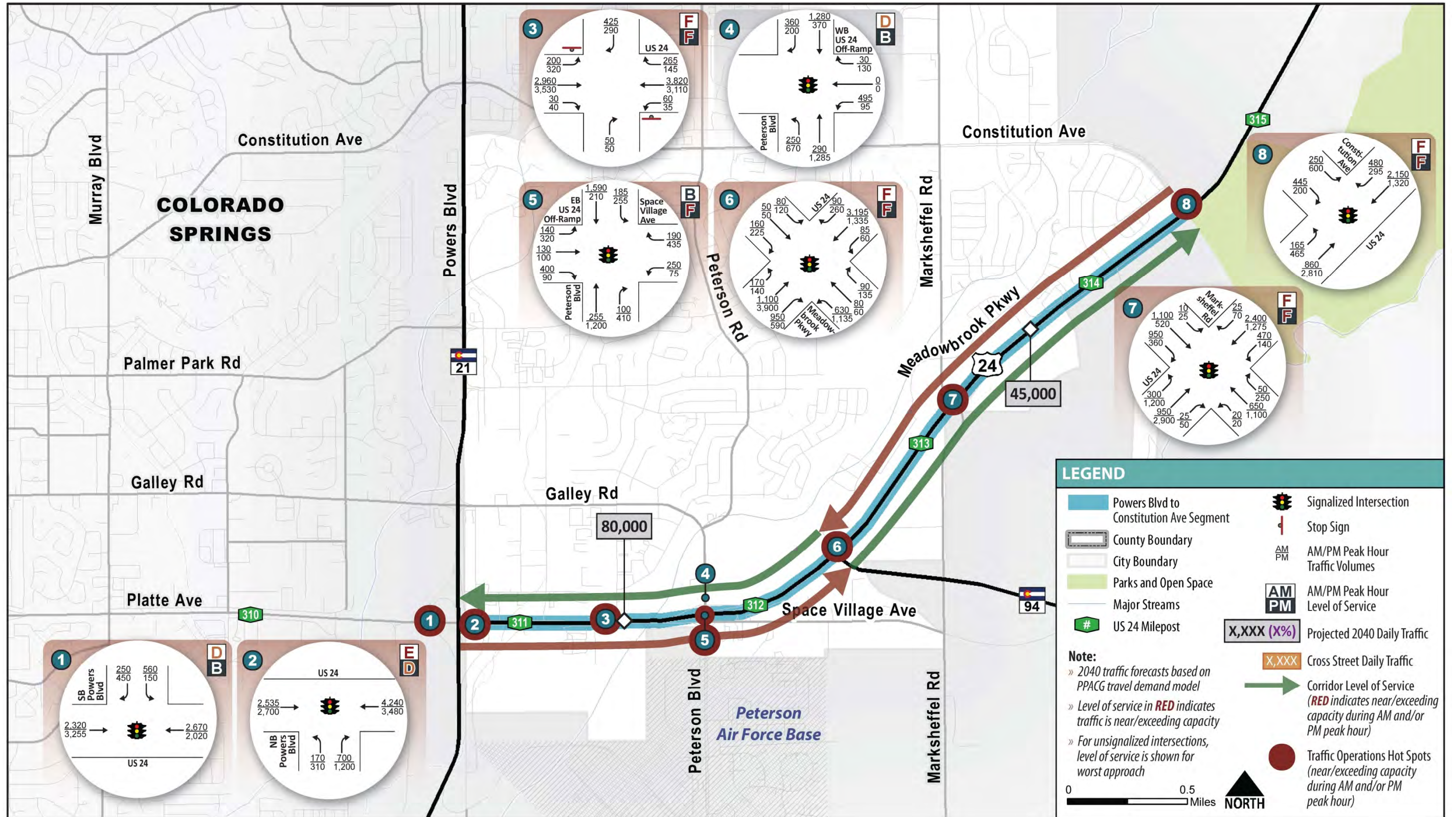




Figure 29: Projected 2040 Traffic Volumes and Operations (Constitution Avenue to Falcon)

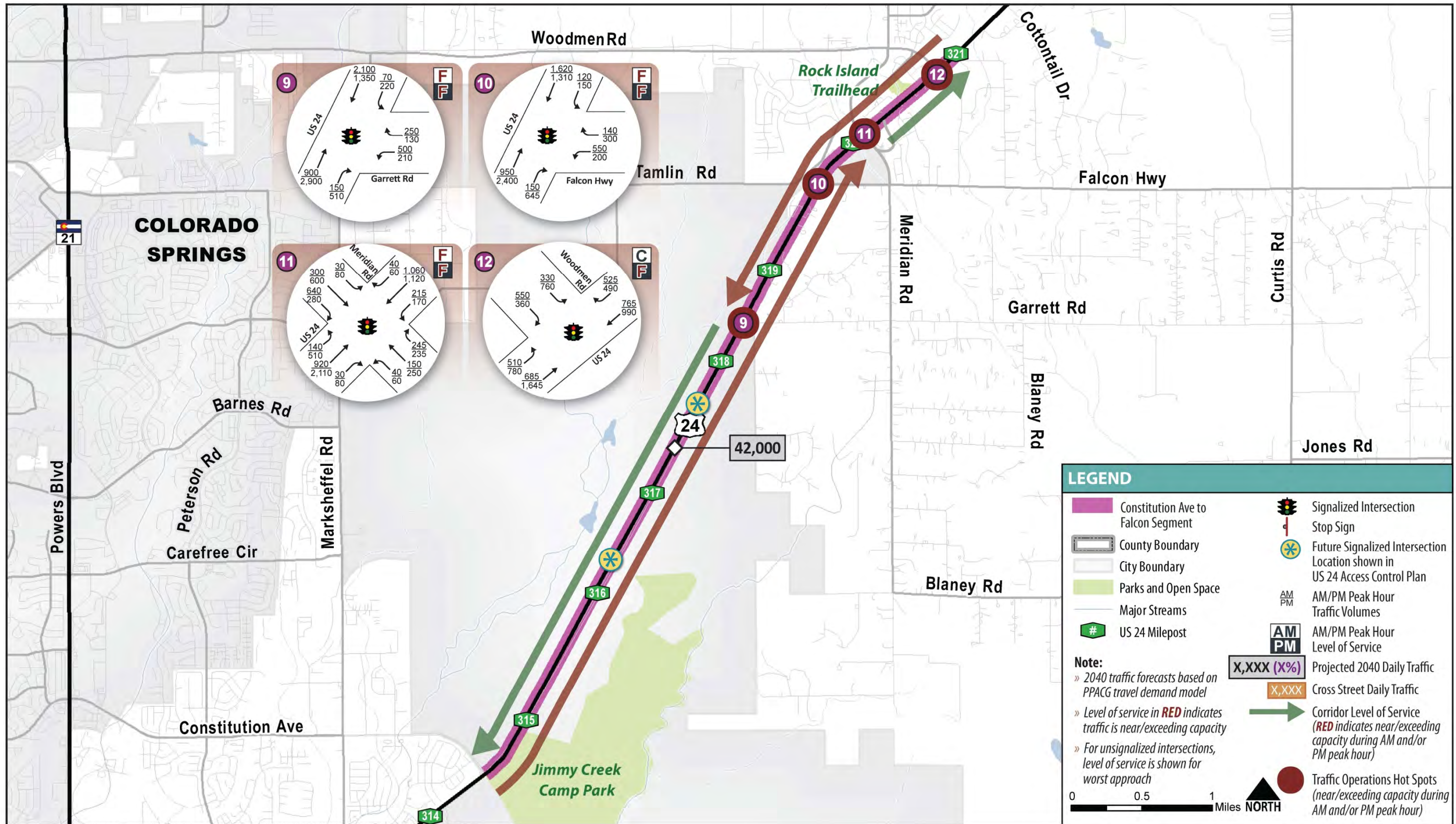




Figure 30: Projected 2040 Traffic Volumes and Operations (Falcon to Peyton)

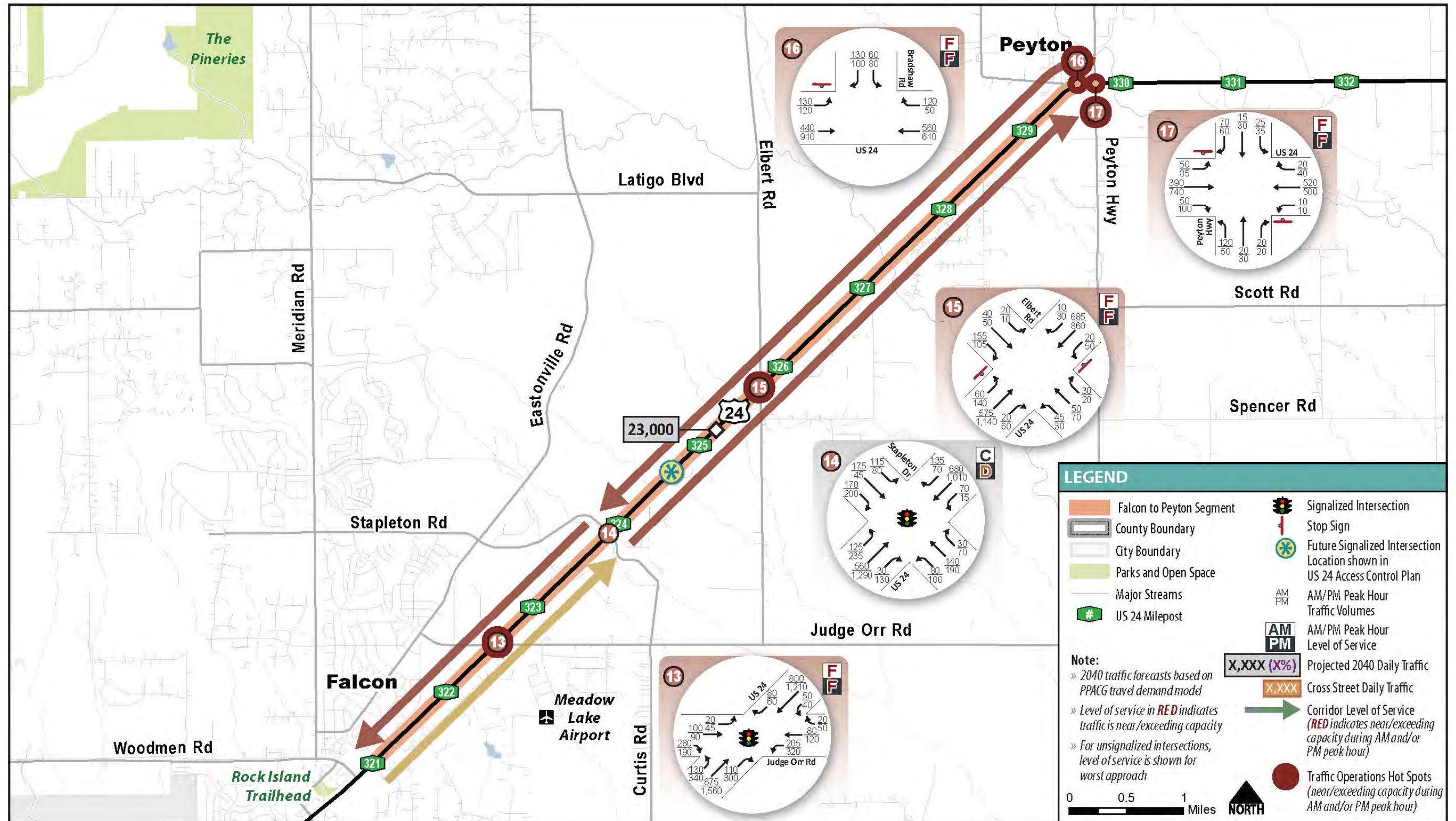




Figure 31: Projected 2040 Traffic Volumes and Operations (Peyton to Calhan)

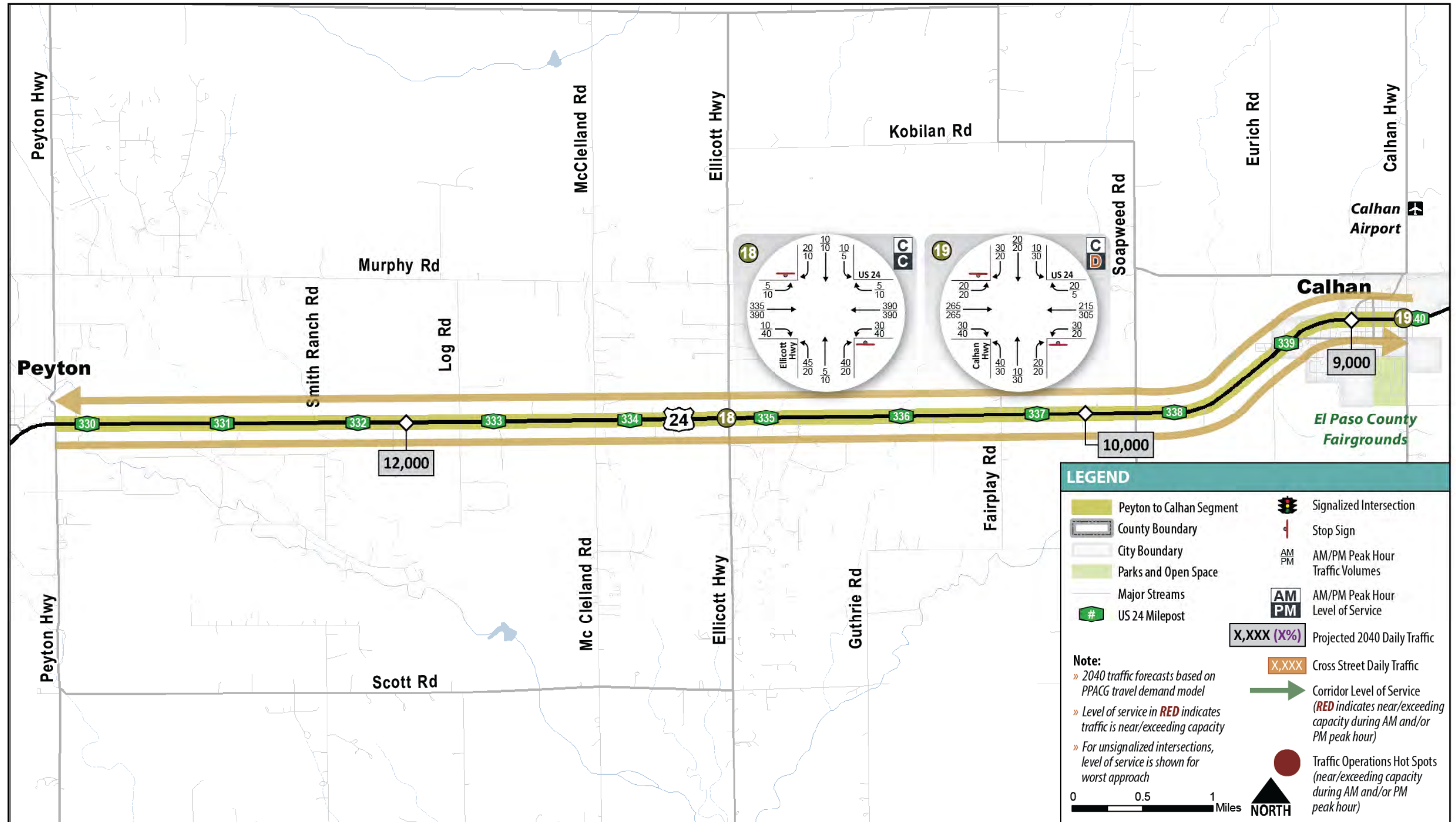
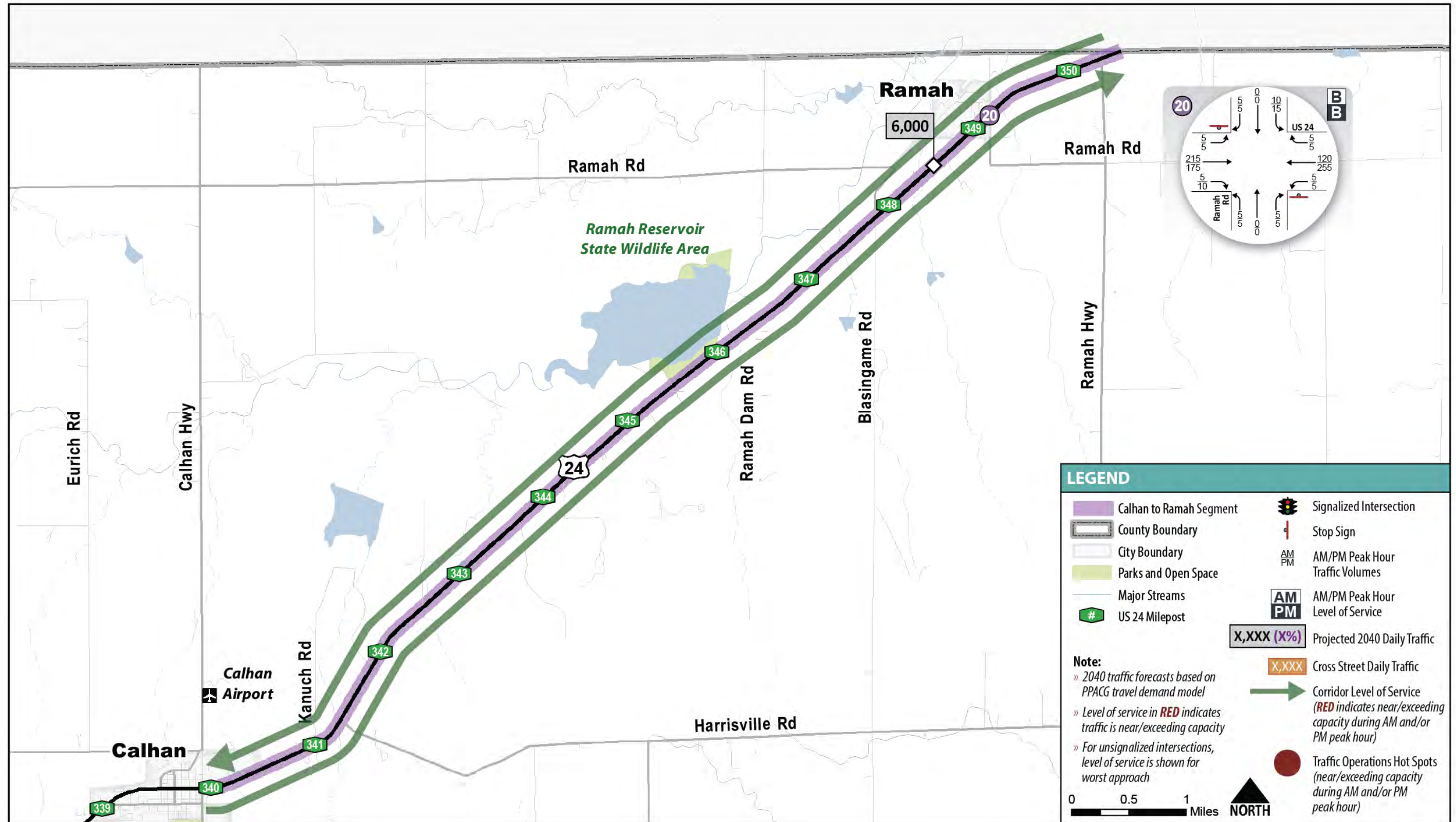




Figure 32: Projected 2040 Traffic Volumes and Operations (Calhan to Ramah)





ENVIRONMENTAL OVERVIEW

This chapter summarizes the existing environmental conditions of the US 24 study corridor. The environmental resources that were studied were selected based on the characteristics of the study area and on input from stakeholders. The resources that were considered are generally consistent with NEPA, its implementing regulations, and the Federal Highway Administration (FHWA) and CDOT guidelines. The following resources were considered and illustrated as part of the built and natural environment surrounding the US 24 study corridor:

- ✦ Built Environment:
 - » Parks and Recreational Resources
 - » Community and Social Resources, including Environmental Justice
 - » Air Quality
 - » Noise
 - » Hazardous Materials
 - » Mines
 - » Cultural Resources
 - » Paleontological Resources
 - » Section 4(f) and Section 6(f)
 - » Prime and Unique Farmlands
 - » Floodways and 100-year Floodplains
 - » Wells
- ✦ Natural Environment
 - » Wetlands and Waters of the U.S.
 - » State and National Forests and Wildlife Reserves
 - » Barrier Effect (presence of impediments to the natural movement of wildlife to support their life-cycle requirements)
 - » Critical Habitat and Threatened and Endangered Species

Within each resource section, the resource is introduced and followed by the methodology and existing conditions. The environmental study area surrounding the US 24 corridor is focused on most likely physical impacts of corridor transportation improvements. Generally, environmental resources were identified within 500 feet of the highway corridor (a total of 1,000 feet wide along the corridor). To take into account the potential for indirect or secondary effects to community or environmental resources as a result of the recommended improvements, relatively large and regional resources were identified outside of the 1,000-foot boundary.



Built Environment

The resources for the built environment are illustrated in **Figures 33 through 37.**

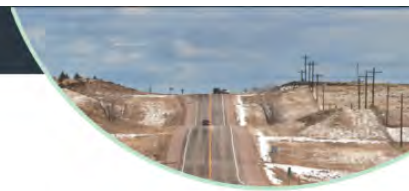


Figure 33: Environmental Resources – Built Environment (Powers Blvd to Constitution Ave)

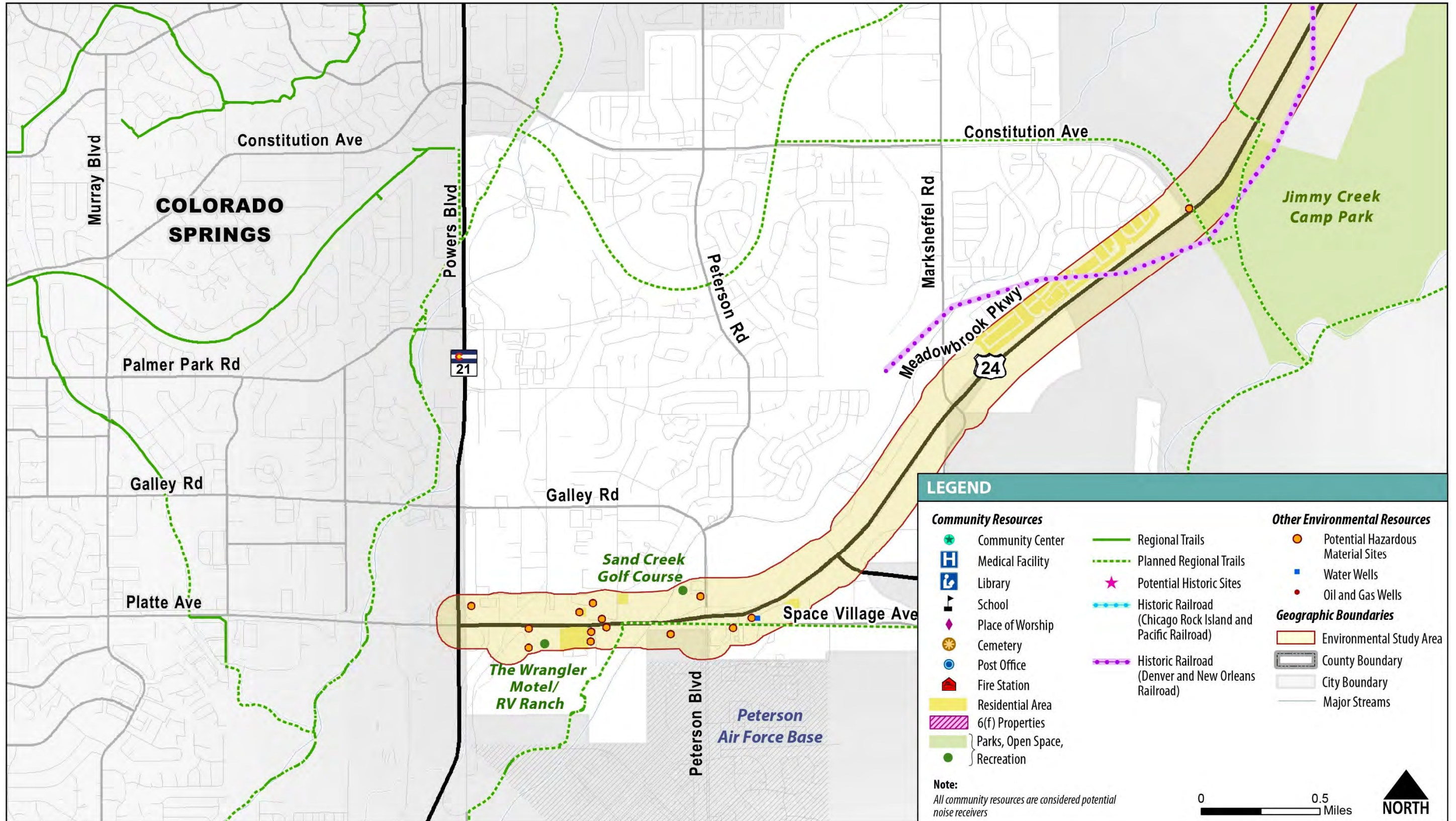




Figure 34: Environmental Resources – Built Environment (Constitution Avenue to Falcon)

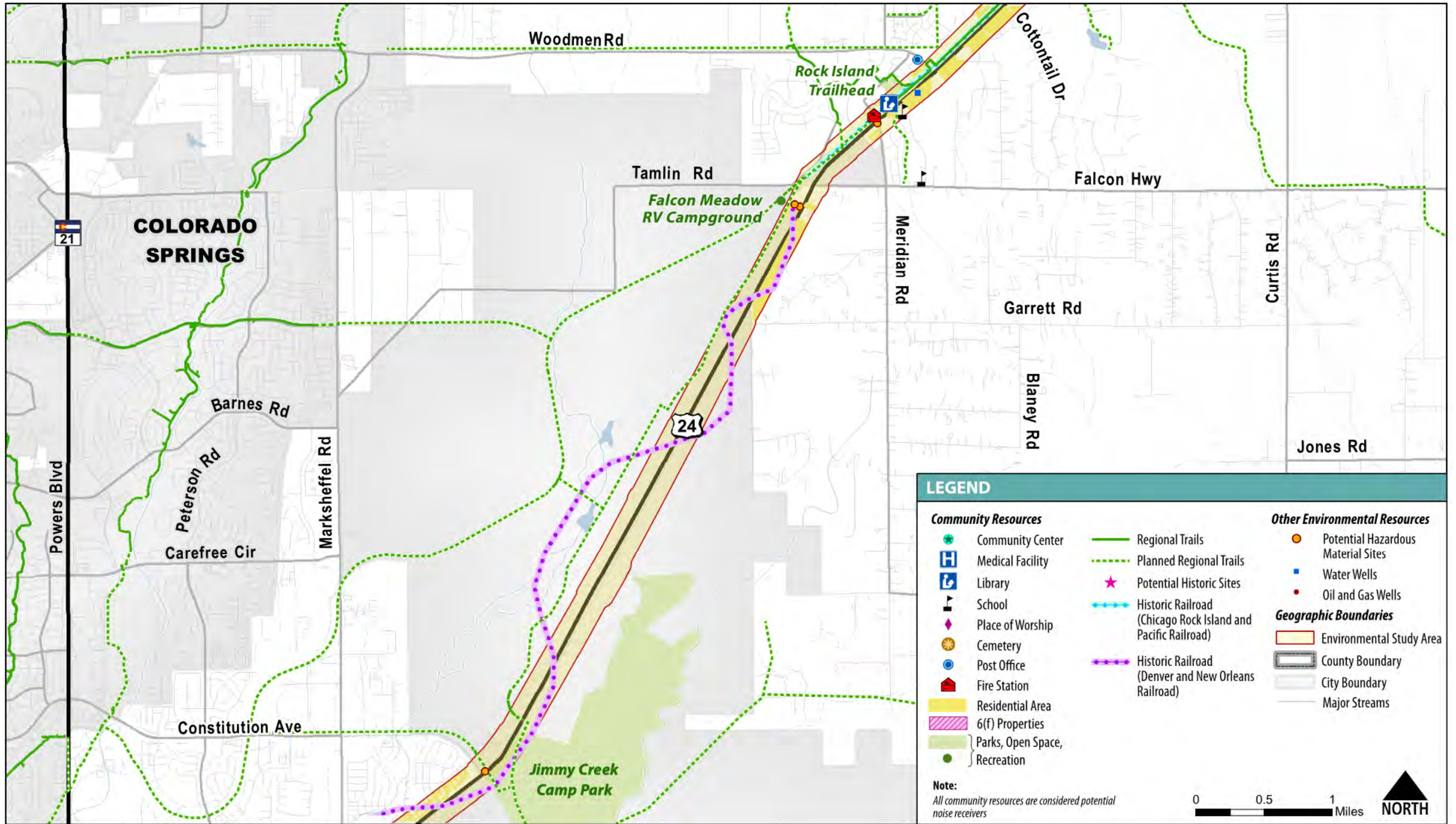




Figure 35: Environmental Resources - Built Environment (Falcon to Peyton)

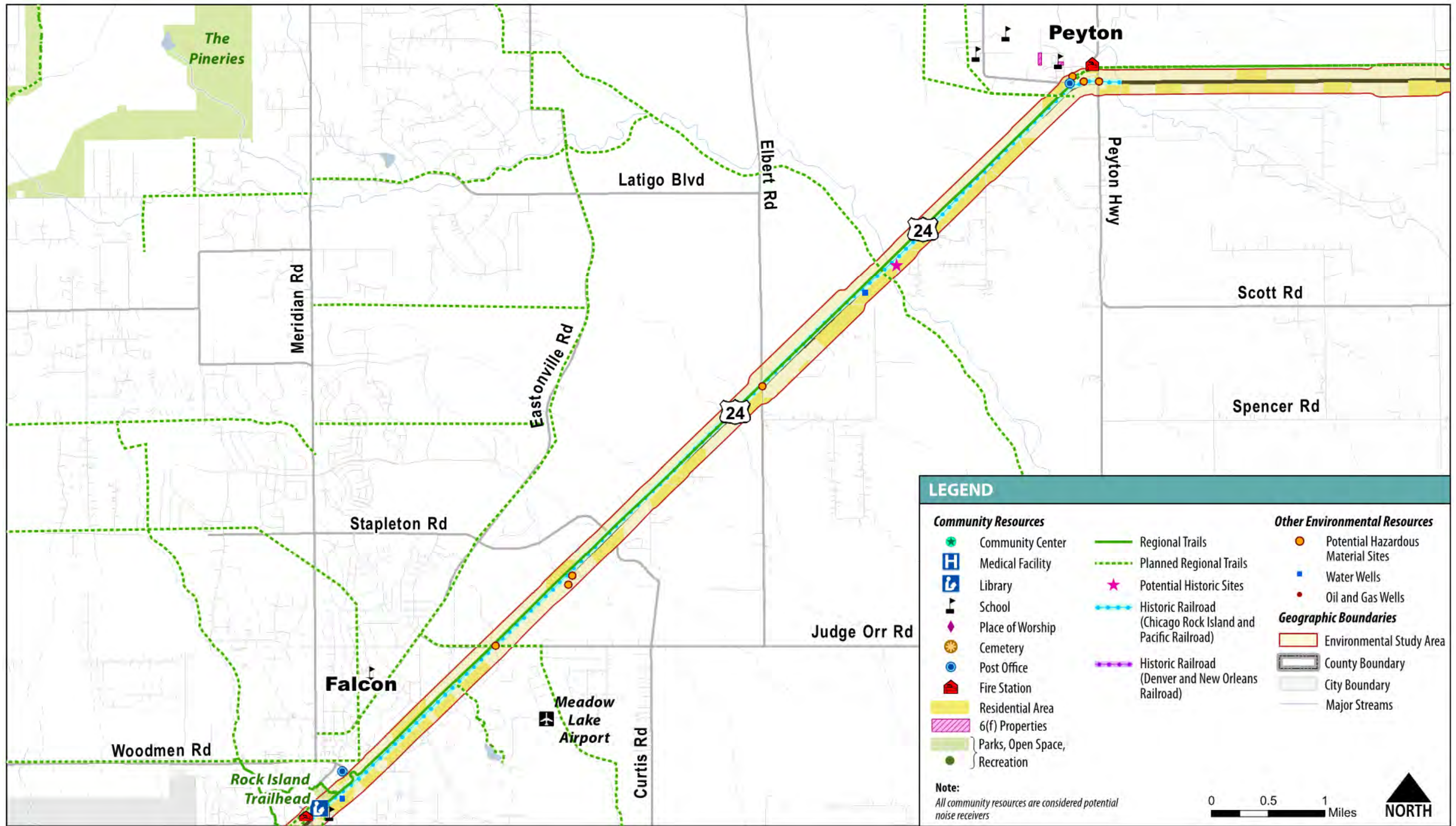


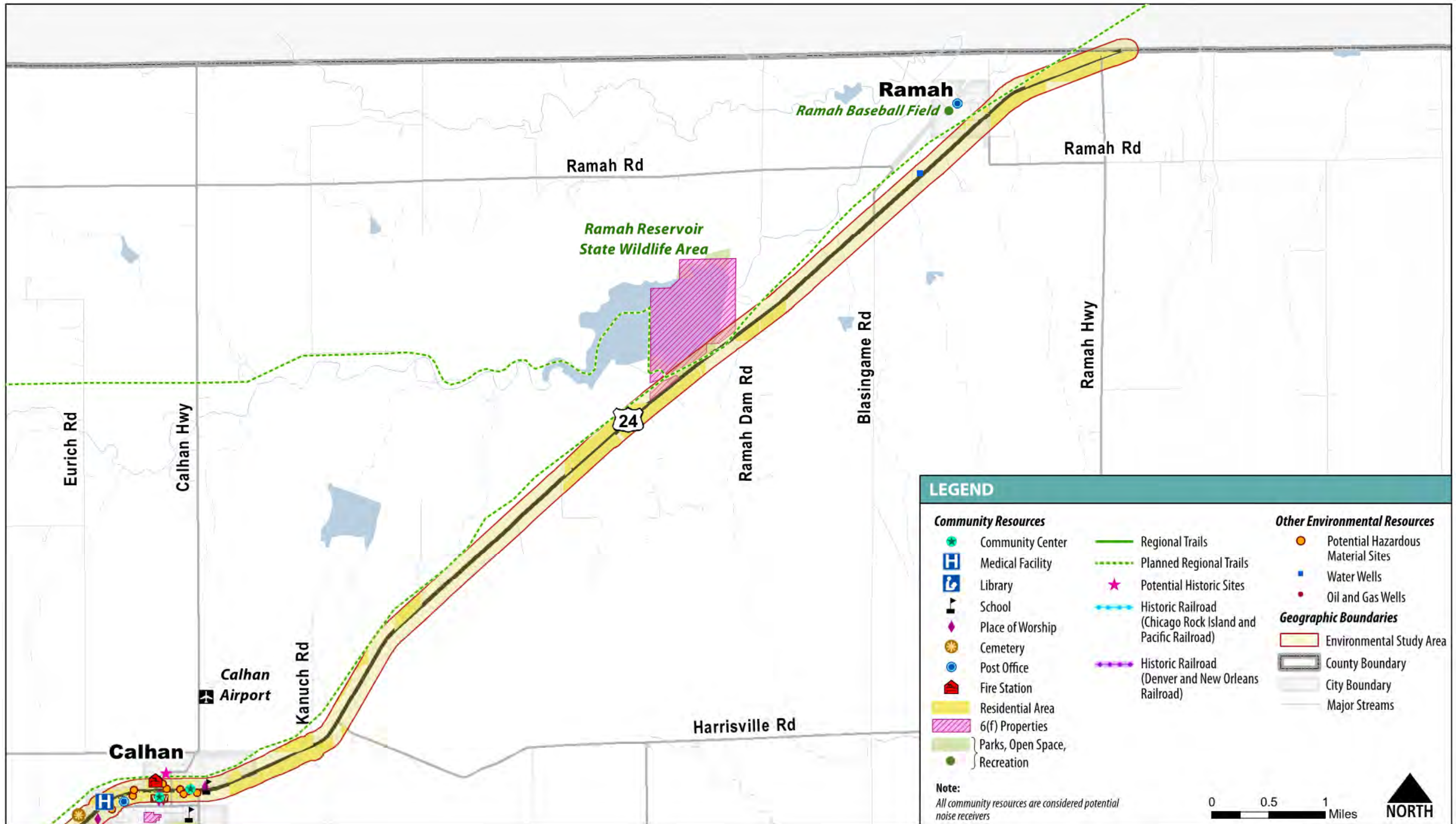


Figure 36: Environmental Resources - Built Environment (Peyton to Calhan)





Figure 37: Environmental Resources - Built Environment (Calhan to Ramah)





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Parks and Recreational Resources

Parks and recreation resources are important community facilities that warrant consideration during federally-funded transportation projects. Impacts to public parks and recreational resources are generally under the jurisdiction of Section 4(f) (23 CFR 774) of the US Department of Transportation (DOT) Act. In addition, some recreational properties have been purchased or improved with funds from the Land and Water Conservation Fund Act (LWCFA) and are therefore subject to regulation as defined in Section 6(f) of the LWCFA. Several sources of data and information were referenced to identify parks and recreational facilities within the study area, including *El Paso County Parks Master Plan (2013 Update)*, Town of Calhan staff and website, PPACG, *City of Colorado Springs Parks Master Plan*, Environmental Systems Research Institute (ESRI) Parks data sets, and available aerial photography and maps.

There are five existing parks and/or recreational resources located within the area surrounding the US 24 corridor:

- ✦ Jimmy Camp Creek Park
- ✦ Rock Island Trail
- ✦ Rock Island Trailhead (Park)
- ✦ Ramah Baseball Field
- ✦ Ramah Reservoir State Wildlife Area

In addition, there are numerous proposed parks and recreational facilities that are located in or adjacent to the US 24 corridor. The City of Colorado Springs has several unnamed proposed trails that are also located near the US 24 study corridor. The El Paso County Parks Master Plan shows the following proposed trails in the area:

- ✦ Rock Island Trail extension from Peyton to Ramah
- ✦ Black Squirrel Creek Trail (crosses US 24 to the west of Peyton)
- ✦ Big Sandy Creek Trail (would connect with the Rock Island Trail extension)

Community and Social Resources (with Environmental Justice)

Community resources include a variety of factors that may affect quality of life for a population. Information on the composition of the community should be collected and refined throughout the project. The study area should at least include communities within and immediately surrounding the proposed alternatives and any issues should be identified as early as possible during the project planning.

Transportation projects should consider potential impacts to the following:

- ✦ Community cohesion
- ✦ Community resources (e.g., libraries, schools, churches, parks, grocery and other smaller retail stores, emergency services)
- ✦ Community values and vision
- ✦ Community transportation resources (i.e., alternative modes of transportation)
- ✦ Community mixed-use developments

CDOT evaluates social resources to involve communities that will be affected by transportation projects (whether positively or negatively) and should be an important part of



the process; to follow CDOT's environmental stewardship policy which ensures that the statewide transportation system is constructed and maintained in an environmentally responsible, sustainable, and compliant manner; and follow several legal mandates that pertain to communities and federally funded projects.

Environmental justice legislation was created out of concerns that facilities were being placed in minority and low-income populations without regard to the consequences of these actions. Environmental justice refers to the social equity in sharing the benefits and the burdens of specific projects and/or programs and is regulated by Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (EO 12898, 1994). The EO is in response to Title VI of the Civil Rights Act of 1964 which states "No person in the US shall, in the grounds of race, color, or national origin be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving federal financial assistance."

Guidance on how to implement EO 12898 and conduct environmental justice analyses was issued by the Council on Environmental Quality (CEQ) (CEQ, 1997). The CEQ guidance states that minority and low-income populations occur where either:

- ✦ The minority or low-income population of the affected area exceeds 50%.
- ✦ The population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographical analysis.

Minorities constitute races and ethnic groups, and include the following (as identified by the US Census Bureau): Black/African Americans, American Indian/Alaskan Natives, Asians, Native Hawaiian/Pacific Islanders, and Hispanics. Low income is defined as persons/families within incomes at or below the poverty level as determined by the Department of Health and Human Services or the Census Bureau. The EO requires projects that involve federal agencies or federal funds be analyzed to determine whether there is a potential for disproportionately high or adverse impacts from the project on minority or low-income populations in comparison to populations that are not minority or low-income in the study area.

Disproportionately high and adverse effects are defined as being predominately borne by a minority population and/or a low-income population and suffered by the minority population and/or low-income population in an appreciably more severe or greater magnitude than the adverse effect that would be suffered by the non-minority population and/or non-low-income population

The FHWA Order 6640.23 published in 1998 was updated in June 2012; it is titled 6640.23A *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* and it serves as the agency's policy regarding environmental justice. CDOT's NEPA Manual includes direction for implementation of FHWA and CEQ guidance. The CDOT NEPA Manual reflects the EO and FHWA's 6640.23A Order as well as provides direction for identifying environmental justice populations, potential impacts, appropriate mitigation measures, and outreach methods that may be useful for the determination.

For the purpose of this study, data was collected from a variety of resources to consider impacts to the community. Online resources and Google Earth were used to identify social and community resources. A qualitative environmental justice evaluation was performed to



determine to what extent any minority or low-income populations would be affected by the proposed improvements. An understanding of the demographic character of the area is important to provide a basis for assessing impacts to the local community and evaluating the project with respect to environmental justice requirements.

Community and Social Resources

Development within the area surrounding the US 24 corridor is composed of residential, agricultural, light industrial, recreational and commercial properties including retail stores, restaurants, campgrounds, schools, and automotive and fueling service stations. Community facilities within the community area are listed in **Table 8**.

Table 8: Community Facilities

NAME	ADDRESS / LOCATION
Ramah Baseball Field	Southwest corner of Main Street and South Chestnut Street
Ramah Reservoir State Wildlife Area	Four miles west of Ramah north of US 24
Frontier Charter Academy/Calhan Country Church	488 Yoder Street, Calhan
Paulson Senior Center	406 Cheyenne Street, Calhan
Church of the Nazarene	411 Cheyenne Street, Calhan
Calhan United Methodist Church	583 Denver Street, Calhan
High Plains Orthodox Presbyterian Church	657 7th Street, Calhan
Calhan Town Hall/VFW Clarence G. Dzuris Post #5221	556 Colorado Avenue, Calhan
Living Word Community Church	532 Colorado Avenue, Calhan
Calhan Post Office	655 Cascade Street, Calhan
Eastern Plains Community Pantry	701 4th Street, Calhan
Eastern Plains Medical Clinic	560 Crystola Street, Calhan
St. Paul Lutheran Church and Preschool	1450 5th Street, Calhan
Calhan Cemetery	US 24 and Hahn Road, Calhan
Peyton Post Office	13055 Bradshaw Road, Peyton
Rock Island Trailhead and Regional Trail	McLaughlin Road, Falcon
Pikes Peak Community College/Patriot Learning Center	11990 Swingline Road, Falcon
High Prairie Library	7035 Old Meridian Road, Peyton
Falcon Fire Protection District	7030 Old Meridian Road, Peyton
Falcon Meadow RV Campground	11150 US 24, Peyton
Sand Creek Golf Course	6865 Galley Road, Colorado Springs
The Wrangler Motel/RV Ranch	6225 East Platte Avenue, Colorado Springs

Many of the community resources listed above are also listed and/or discussed further in the Parks and Recreation and Noise resource sections within this report.



A review of the US 24 study corridor revealed that there are four Census tracts and seven block groups within the area that could be impacted by a future project.

Minority Populations

Minority populations are composed of ethnic and/or racial minorities. As defined in FHWA Order 6640.23, a minority is a person who is African American, Hispanic, Asian American, American Indian or Alaskan Native. Census blocks with a higher percentage of minorities than the respective county would be evaluated for disproportionately high and adverse effects and selected for outreach.

Based on the CDOT guidance, block groups that are located in the community study area were compared to the state of Colorado and El Paso County data to evaluate if minority groups are present. Reviewing preliminary data, there are five block groups within five Census tracts within the community study area that exceeded the minority percentages for El Paso County. Therefore, these block groups have been identified as minority populations.

Low-Income Populations

To evaluate whether there are low-income populations in a community study area, two things must be established: 1) the low-income threshold dollar amount, number, and percentages for a particular county; and 2) the number and percentage of low-income populations in the community study area that will be compared to the county percentage. The low-income threshold means a household income at or below the Department of Health and Human Services (HHS) poverty guidelines. As part of future NEPA studies, potentially affected census block groups with an average household income below that of the respective county would be evaluated for disproportionately high and adverse effects and selected for outreach.

The El Paso County low income threshold was assessed to be \$48,984 in which the El Paso County percentage was 43%. Three of the eight Census Tracts, Census Tracts 40.08, 50, and 62, were above the El Paso County percentage at 70%, 59%, and 66% percent, respectively.

Limited-English Proficient Populations

For purposes of this assessment, individuals who do not speak English as their primary language and have a limited ability to read, write, speak, and understand English are considered to be limited-English proficient (LEP). LEP populations are identified to ensure that they can effectively participate in and benefit from federally assisted projects and that project actions do not violate the Title VI prohibition against national origin discrimination.

For a proper LEP assessment, data should be collected from the US Census Bureau American Community Survey 5-year Estimates at the Census Tract level as well as the county level. Datasets collected based upon populations 18 and older that speak English not at all, not well, and well and should be collected and compared to Colorado and El Paso County for future projects.



The FHWA guidelines are that if greater than 50 people fall into this category, language assistance is required, and that if 5% (must be at least 50 people) or 1000 people fall into this category, written translation is required for vital documents.

Based on the high level review, the percentage of LEP individuals within El Paso County is approximately 20%. However, within the community study area, none of the Block Groups approach the county rate.

Air Quality

The purposes of an air quality analysis are to evaluate transportation actions to maintain consistency with planning goals in the air quality State Implementation Plan, present relevant air quality issues and information related to the study area, and provide information to support a subsequent analysis under NEPA.

Air quality is regulated at the national level by the Clean Air Act of 1970, as amended in 1977 and 1990. The Clean Air Act regulates emissions through the National Ambient Air Quality Standards (NAAQS) and the Hazardous Air Pollutants (HAP) program, which includes Mobile Source Air Toxics (MSATs). Specific requirements are placed on the transportation planning process in air quality nonattainment areas that do not meet the NAAQS emissions limits and in areas that have been reclassified from nonattainment to attainment/maintenance areas.

The NAAQS regulates six criteria pollutants: Carbon monoxide (CO), ground level ozone (O₃), sulfur dioxide (SO₂), nitrogen dioxide (NO₂), particulate matter, and lead. The Environmental Protection Agency (EPA) has established health- and welfare-based exposure and concentration limits for the NAAQS (EPA, 2016a). Of the six NAAQS pollutants, transportation sources contribute to CO, NO₂, PM₁₀, and ozone. The EPA works with states and local jurisdictions to monitor ambient air levels for these pollutants. In addition, MSATs have been identified as an issue of concern related to transportation projects (EPA, 2016b). Greenhouse gases (GHGs) are currently regulated via the permitting requirements of the Clean Air Act, with large sources such as power plants required to report GHG emissions (EPA, 2016c). Although transportation-related sources are also large contributors to GHG emissions, these sources are not regulated for GHG at present.

The eastern portion of the study area (from Elbert Road [MP 326] to Ramah Highway [MP 350.4]) is within an attainment status for all NAAQS criteria pollutants; therefore, no quantitative analysis would be required in a subsequent NEPA analysis within this portion of the study area.

The western portion of the study area (from Powers Boulevard [MP310.9] to Elbert Road [MP 326]) is located within the Colorado Springs Carbon Monoxide Attainment/Maintenance Area; therefore a quantitative analysis for CO may be necessary for a subsequent NEPA analysis.

For this air quality section, online resources were used, along with desktop utilities such as Google Earth, to describe the air quality issues of concern in the study area. EPA websites were consulted to describe the regulatory environment. Ambient air quality data were acquired from Colorado Department of Public Health and Environment (CDPHE) and compared to the NAAQS to characterize the existing conditions along the US 24 study corridor.



The existing conditions along the study corridor for each major category of pollutants are:

- ✦ **Criteria pollutants:** Since 2002, all areas in Colorado are in attainment of all NAAQS criteria pollutants except for ozone in the Front Range area. Areas that were previously in nonattainment for CO and particulate matter have been re-designated to attainment/maintenance status (CDPHE, 2016).
CDPHE operates four air quality monitors in El Paso County, measuring CO, SO₂, O₃, and particulate matters PM₁₀ and PM_{2.5} (CDPHE, 2016). There have been SO₂ exceedances of the standard at a monitoring site along US 24; however, the occasional high values have not yet resulted in a violation of the NAAQS (CDPHE, 2016). This monitoring site was added in January 2013 and, in addition to the monitor, a meteorological tower has also been installed to better understand the reasons behind these elevated concentration events (CDPHE, 2016). In addition to particulate matter, ozone levels in El Paso County occasionally rise to the NAAQS threshold value, but there have not been exceedances of the standard as of the most recent reporting year (2012).
- ✦ **Mobile Source Air Toxics:** Tools and techniques for assessing MSATs are limited, and there are no approved exposure-concentration limits. FHWA has issued interim guidance for MSAT analyses associated with NEPA studies based on a tiered approach with no analysis necessary for projects with no potential MSAT effects, a qualitative analysis for projects with low potential MSAT effects, and a quantitative analysis to differentiate alternatives with higher potential MSAT effects (Marchese, A., 2012).
- ✦ **Greenhouse Gases:** Recent concerns with climate change have prompted calls for reducing GHGs, of which carbon dioxide (CO₂) is a primary component. FHWA is working nationally with other modal administrations through the DOT Center for Climate Change and Environmental Forecasting to develop strategies to reduce transportation's contribution to greenhouse gases - particularly CO₂ emissions - and to assess the risks to transportation systems and services from climate changes. At the state level, there are also several programs underway in Colorado to address transportation GHGs. Based on guidance from the CEQ, GHG emissions may need to be calculated during future project development.

Noise

Noise is defined as any unwanted sound. As mobility increases, transportation can be a key source of noise across transportation modes. FHWA procedures for noise abatement are outlined in Title 23 Code of Federal Regulations (CFR) Part 772, Procedures for Abatement of Highway Traffic Noise and Construction Noise. A noise-sensitive site is any property (owner occupied, rented, or leased) where frequent exterior human use occurs and where a lowered noise level would be of benefit. CDOT has established noise levels at which noise abatement must be considered. Known as Noise Abatement Criteria (NAC), these criteria vary according to a property's land use category and are described in **Table 9**.

CDOT has determined that a traffic noise impact occurs when the projected traffic noise levels meet or exceed the NAC levels, or when projected noise levels substantially exceed existing noise conditions. CDOT defines "substantially exceeding the existing noise levels" as an increase of 10 A-weighted decibel (dBA) or more over the existing levels (CDOT, 2013).



Table 9: CDOT Noise Abatement Criteria

ACTIVITY CATEGORY	LEQ(H)	DESCRIPTION OF LAND USE ACTIVITY CATEGORY
A	56 dBA (Exterior)	Lands on which serenity and quiet are of extraordinary significance and serve an important public need and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B	66 dBA (Exterior)	Residential.
C	66 dBA (Exterior)	Active sport areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	51 dBA (Interior)	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E	71 dBA (Exterior)	Hotels, motels, timeshare resorts, vacation rental properties, offices, restaurants/bars, and other developed lands, properties or activities not included in A-D or F.
F	N/A	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, ship yards, utilities (water resources, water treatment, electrical), and warehousing.
G	N/A	Undeveloped lands that are not permitted for development.

Source: CDOT Noise Analysis and Abatement Guidelines (2015)
 dBA = A-weighted sound level

For the noise evaluation for the US 24 study corridor, online resources were used, along with desktop utilities such as Google Earth, to identify noise sensitive receivers along the study corridor. FHWA and CDOT websites were consulted to describe the regulatory environment.

Locations with noise-sensitive activity for NAC C receivers (all community resources) are shown in **Figures 32 through 36** at the beginning of this chapter. This activity category requires that a threshold of 66 dBA be reached in order to consider mitigation. NAC A receivers were not identified within the study area. NAC B receivers are residential areas adjacent to the highway corridor. NAC B noise receivers were not individually counted; rather, they were grouped together based on land use data. These types of properties will be included in a noise analysis, if necessary. NAC D (interior noise readings) will not need to be considered for this project. NAC E land uses are located throughout the US 24 study corridor and are more prevalent near areas of development. This activity category requires that a threshold of 71 dBA be reached in order to consider mitigation. NAC F receivers are located along the study corridor, and in rural areas this category includes manufacturing and farming uses. These locations are considered to generate significant on-site noise and are not considered noise-sensitive receivers. Undeveloped lands not permitted for development do not have noise thresholds; however, these lands should be included in noise assessments if noise contour lines depict noise levels of 66 dBA and 71 dBA.



Hazardous Materials

Hazardous materials include substances or materials which have been determined by the EPA to be capable of posing an unreasonable risk to health, safety, or property. Hazardous materials may exist along the US 24 study corridor at facilities that generate, store, or dispose of these substances, or at locations of past releases of these substances. Examples of hazardous materials include asbestos, lead-based paint, heavy metals, dry-cleaning solvents, and petroleum hydrocarbons (e.g., gasoline and diesel fuel), all of which could be harmful to human health and the environment.

Hazardous materials are regulated by various state and federal regulations. NEPA, as amended (42 US Code (USC) 4321 et seq., Public Law 91-190, 83 Stat. 852), mandates that decisions involving federal funds and approvals consider environmental effects from hazardous materials. Other applicable regulations include the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)(42 USC 9601 et seq.), which provides federal authority for the identification, investigation, and cleanup of sites throughout the US that are contaminated with hazardous substances (as specifically designated in the CERCLA) and the Resource Conservation and Recovery Act of 1976 (RCRA) (42 USC 321 et seq.), which establishes a framework for the management of both solid and hazardous waste. The federal Hazardous and Solid Waste Amendments of 1984 established a new comprehensive regulatory program for underground storage tanks containing petroleum products and hazardous chemicals regulated under CERCLA. In 2016, the EPA retired the Comprehensive Environmental Response, Compensation, and Liability Information System database, and replaced it with a more modern system called the Superfund Enterprise Management System.

An environmental database records search was conducted for the area surrounding the US 24 corridor (GeoSearch, 2016). The records search was conducted in accordance with the search radii specified in American Society for Testing and Materials (ASTM) Designation E 1527-13, “Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process” (ASTM, 2013). For this assessment, ASTM-required databases were reviewed; non-ASTM required databases were not evaluated. Numerous facilities were identified in the study area and several of these facilities were identified with multiple database listings (GeoSearch, 2016). The non-ASTM databases are not listed in the results. The database information with respect to the status of the listing and its location within the study area boundaries were evaluated. In addition, a review of the compliance history of the study area, and any adjacent sites, as identified by a regulatory database search, was conducted. Any facilities adjacent to the study area that were included within the National Priorities List and the Superfund Enterprise Management System databases were reviewed.

The environmental records search identified the following types of facilities:

- ✦ Emergency Response Notification System (ERNSCO)
- ✦ Resource Conservation & Recovery Act - Generator (RCRAGR08) facilities
- ✦ Superfund Enterprise Management System (SEMS)
- ✦ Hazardous Waste Sites - Generator (HWSG)
- ✦ Aboveground Storage Tanks (AST) facilities
- ✦ Underground Storage Tank (UST) facilities



- ✦ Leaking Underground Storage Tank (LST) facilities
- ✦ Leaking Underground Storage Tanks Trust Fund Sites (LUSTTRUST)
- ✦ Historical Solid Waste Landfills (HISTSWLF)
- ✦ Solid Waste Facilities (SWF)

The area surrounding the US 24 corridor is developed with a mix of commercial, residential, and agriculturally developed property. Facilities that utilize hazardous materials are dispersed throughout the study area; however, sites are largely concentrated in developed areas. The majority of the facilities identified in the environmental records search have been identified in the UST and LST databases. UST sites and LST sites are typically associated with petroleum hydrocarbon use (e.g., automotive fueling stations) and potential releases.

The facilities identified in the agency database, listed in **Table 10**, are shown as having either a high, medium, or low potential to impact the US 24 corridor area based on the location and known releases.

Table 10: Database Sites with the Potential to Impact the Study Area

DATABASE NUMBER	FACILITY NAME	FACILITY ADDRESS	DATABASE	STATUS	POTENTIAL TO IMPACT STUDY AREA
3	Colorado 24 and Elbert Road	Falcon, CO	ERNSCO	Closed	Low
6	CDOT Calhan	451 Golden Street, Calhan	UST, LST	Closed, Open	High
7	Falcon Food Store	11150 US 24, Peyton	UST, AST	Open, Open	Medium
8	Country Corner Store	US 24 & Peyton Hwy, Peyton	UST	Closed	Medium
9	Residential	US 24 & Constitution Avenue, Colorado Springs	ERNSCO	Closed	Low
14	Charles Dungan	379 5th Street, Calhan	UST, LST	Closed, Closed	Medium
15	Meadowlake Airport	US 24 and Judge Orr Road, Falcon	ERNSCO	Closed	Low
16	East Platte Office CIG	6402 East Platte, Colorado Springs	UST	Closed	Medium
17	Warren's Garage	US 24, Calhan	UST, UST	Closed, Closed	Medium
18	Super Gas	18600 US 24, Peyton	UST	Closed	Medium
21	All Rental Center Inc	1000 5th Street, Calhan	AST	Open	Low
22	Calhan Short Stop	124 5th Street, Calhan	LUSTTRUST, UST, LST	Open, Open, Open	High
23	Dons Garden Shop	6001 East Platte Avenue, Colorado Springs	SWF	Open	Low
24	Adams Excavating Inc.	6425 East Platte Avenue, Colorado Springs	UST	Closed	Medium
25	Loaf N Jug #50	1025 5th Street, Calhan	UST	Open	Medium
26	Ed Glaser Propane	324 5th Street, Calhan	AST	Open	Low



DATABASE NUMBER	FACILITY NAME	FACILITY ADDRESS	DATABASE	STATUS	POTENTIAL TO IMPACT STUDY AREA
27	21st Communications Squadron	Multiple Buildings on Peterson Air Force Base, Colorado Springs	AST, HWSG, LST, SWF, UST, RCRAGR08, SEMS	Open, Open, Closed, Open, Open, Open, Open	High
28	CST Metro LLC DBA Corner Store #1173	11769 US 24, Falcon	UST, LST	Open, Closed	Medium
29	Falcon Auto Service Center	14195 US 24, Peyton	SWF	Open	Low
30	Sun City Trailers	6302 East Platte Avenue, Colorado Springs	AST	Open	Low
31	Beems Paint and Body	6275 East Platte Avenue, Colorado Springs	RCRAGR08	Open	Medium
32	Falcon Tentel Campground	11118 US 24 East, Peyton	AST	Closed	Low
33	Glaser Gas Inc.	1240 8th Street, Calhan	AST	Open	Low
34	Tumbleweed Restaurant	6940 SH 94, Calhan	AST	Closed	Low
35	D & C Service	675 5th Street, Calhan	LST, UST, AST	Closed, Closed, Closed	Medium
36	Big R of Falcon	14155 US 24, Falcon	AST	Open	Low
37	CDOT Right of Way Site	5800 East Platte Avenue, Falcon	UST, LST	Closed, Closed	Medium
38	TRAX Construction Inc./The Shop Body and Paint LLC	555 Ford Street, Colorado Springs	RCRAGR08, UST	Open, Closed	Medium
39	Conoco #6393	520 Peterson Road, Colorado Springs	UST, LST	Open, Open	High
40	Loaf N Jug #41	6857 US 24, Colorado Springs	UST	Open	Medium
41	Airport Automotive	6305 East Platte Avenue, Colorado Springs	SWF	Open	Low
43	El Paso County Public Works	13525 Railroad Street, Peyton	AST	Open	Low
48	Ramah	West of Town, Ramah	HISTSWLF	Unknown	High
50	Meadow Lake Airport	Judge Orr Road, Colorado Springs	UST	Closed	Medium

Former and abandoned landfills have been previously present along the corridor. These areas should be reviewed during project refinements to evaluate the need for further subsurface investigations. If evidence of a landfill is discovered during construction, the CDPHE Division of Solid Waste Management should be contacted immediately.



Mines

Mining activities generate waste during the extraction, beneficiation, and processing of minerals. The elements and compounds uncovered through mining and processing have the potential to contaminate the surrounding environment. Most extraction and beneficiation wastes from hard-rock mining (the mining of metallic ores and phosphate rock) and specific mineral processing wastes are categorized by EPA as "special wastes" and have been exempted by the Mining Waste Exclusion from federal hazardous waste regulations under Subtitle C of the RCRA.

GIS data was obtained from the Colorado Division of Reclamation, Mining, and Safety to identify potential permitted mine locations within the study area and their characteristics (Colorado Division of Reclamation, Mining and Safety, 2011). The review of data of past and current mining operations revealed that no mining sites occur in the study area.

Cultural Resources

There are two federal laws that apply to historic properties and will need to be addressed once there is a federal undertaking associated with this study. Section 106 of the National Historic Preservation Act of 1966 requires federal agencies to take into account the effects of their undertakings on historic properties. The Section 106 process involves the identification of historic properties, the evaluation of effects, and resolution of adverse effects. Section 106 is a procedural law that involves consultation with the State Historic Preservation Office (SHPO) and other interested, or consulting parties.

In addition, Section 4(f) of the Department of Transportation Act also applies to historic sites listed on or eligible for the National Register of Historic Places (NRHP). The applicability of Section 4(f) is linked to the determinations of eligibility and effect under Section 106.

A file search was conducted in June 2016 on History Colorado's database for the sections of land within the environmental study area. Site files for all previously surveyed properties along the study corridor were reviewed. Lists of properties on the State and National Registers in El Paso County were reviewed. Furthermore, a field assessment was conducted to verify the location and existence of any properties that may have been listed on the State or National Registers and any previously surveyed properties assessed as eligible for inclusion on the SRHP or NRHP.

Included in this report are those properties which have been listed on the NRHP, on the Colorado State Register of Historic Properties (SRHP), and those that have been assessed as eligible for inclusion on the NRHP. For PEL studies, designated local landmarks are also included. However, El Paso County and the local communities of Falcon, Peyton, Calhan, and Ramah do not have any local landmark designation programs. In addition, the City of Colorado Springs does not have any designated landmarks or historic districts along the US 24 study corridor.



Historical Overview

A brief historic overview is presented below to support the evaluation of the cultural resources and to allow better understanding of the historical periods, themes and patterns that may contribute to the significance of the identified historical resources.

Native Americans had long lived and hunted in the mountains and plains of what would later become Colorado. In the 1600s, the Apaches on the plains and the Utes, generally in the mountains, began to feel the effects of Spanish military, traders and explorers. By 1803, the US had completed the Louisiana Purchase and the region west of the Mississippi River became part of the United States. Explorers, trappers, and traders traveled through Colorado along the general area of the Arkansas River. Bent's Fort, just north of the Arkansas River, became an important trading post. These explorers left accounts of the natural and scenic lands and the opportunities for economic benefit to be gained from these lands. Motivated by these reports, residents from eastern regions of the country began a significant westward migration.

Settlers came for a variety of reasons. Some came hoping to strike it rich with the gold finds they had heard about. Others wanted to take advantage of the land being offered through the Homestead Act of 1862.

Many of the would-be gold seekers soon realized that while very few people could make a good living searching for gold, many could turn a good profit on producing food for the hungry miners. Miners and settlers first arrived traveling from the east by wagon over rough trails. Over the decades, routes and trails became more defined with stopover and rest points developed. Stage lines developed to meet the demand for transportation to the west. But wagon and stagecoach travel was slow and arduous. Rail transportation seemed to be the big hope and solution. In 1862, President Abraham Lincoln convinced Congress to pass the Pacific Railroad Act that eventually resulted in the Union Pacific Railroad. The Union Pacific Railroad started work on the first transcontinental rail route in 1865. By the late 1860s, rail lines were under construction in Colorado to connect to the transcontinental route.

The area along the US 24 study corridor generally developed in the 1880s with the construction of the Denver & New Orleans Railroad in the early 1880s, organized by John Evans, David Moffat, Walter Cheeseman and others. This rail line was part of a rail system connecting Denver with the Gulf of Galveston. A few years later, the Chicago Rock Island & Pacific Railroad was constructed nearby. This rail line was originally built in 1888 by the Chicago Nebraska & Kansas Railroad and acquired by the Chicago Rock Island and Pacific Railroad (commonly called the Rock Island) in 1889. Its purpose was to extend the Rock Island line westward into central Colorado by reaching Colorado Springs, where it connected with the Denver and Rio Grande Western rail line. Four towns in the corridor remain today that are built along the railroad tracks: Falcon,



*Chicago, Rock Island & Pacific Train
Photo Courtesy of Denver Public Library, Western History
Collection, History Colorado, William Henry Jackson
Collection, Reference CHS.J3775*



Peyton, Calhan, and Ramah. The towns of Peyton and Calhan were named after men associated with the Rock Island railroad.

Ranching was the first dominant agricultural activity in the region of the US 24 study corridor. Large grazing operations used the open plains for their cattle. By the 1880s, small farms and small scale ranches started moving eastward from Colorado Springs spurred on by the development of the railroads.

Historic (Architectural) Resources

More than 50 properties along the US 24 study corridor have previously been documented. Included in the previous surveys of this predominantly agricultural area are ranches, farms, homes, businesses, railroads and depots, churches, bridges, culverts, and roads. Of those surveyed features, the four features described below are listed on the SRHP or NRHP or have been assessed as eligible for inclusion on the NRHP. In addition, the field assessment showed that there were several ranches, homes, and business structures that were over 50 years of age that would need further historic research to determine their eligibility during future project development. The properties are listed in **Table 11**. All resources identified in this study will need to be evaluated once a project is identified, and it is possible that the eligibility status noted in this report could change once the Section 106 process takes place. This resource information is being provided to show that there are known historic properties in the study area.

Sand Creek Bridge (East of US 24/Powers Avenue) 5EP.3320

When surveyed in 1999, this long timber trestle bridge was determined officially eligible for inclusion on the NRHP. However, in 2002 the historic wooden trestle bridge was replaced with a modern bridge. The new replacement bridge is not eligible for the NRHP.

Denver & New Orleans Railroad (Between Marksheffel Road and Falcon) 5EP.868.6

This rail line was built in 1881-1882 as part of a rail system connecting Denver with the Gulf of Galveston. The railroad was abandoned by 1917 and the tracks were removed by 1919. This abandoned railroad grade is significant for its role in the development of railroads in Colorado, the development of Denver as a major rail hub and for its association with the active business careers of rail builders John Evans and David Moffat. Segment 5EP.868.6 roughly follows US 24 from Marksheffel Road to the east to approximately one mile southeast of Falcon, crossing US 24 several times. Segment 5EP.868.1, located out of the US 24 area and farther north in El Paso County and Elbert County, has been listed on the SRHP.

Black Squirrel Creek Bridge (West of Peyton) 5EP.3561

The long historic steel bridge was built in 1935 and listed on the NR HP in 2002. It is significant for its design which includes a rigid connected Parker style through-truss. Since that time, the bridge has been replaced with a modern bridge structure. The new replacement bridge is not eligible for the NRHP.

Chicago Rock Island & Pacific Railroad (Between Falcon and Ramah) 5EP.1815, 5EP.1815.1, 5EP.1815.7, 5EP.1815.8, 5EP.1815.11

This rail line was originally built in 1888 by the Chicago Nebraska & Kansas Railroad and acquired by the Chicago Rock Island and Pacific Railroad (commonly called the Rock Island) in



1889. Its purpose was to extend the Rock Island line westward into central Colorado by reaching Colorado Springs where it connected with the Denver and Rio Grande Western rail line. The towns of Peyton and Calhan were named after men associated with this railroad.

This rail line is significant for its role in the settlement of the Colorado region as it passed between the Kansas border and Colorado Springs. It directly contributed to the settlement and economic development of this region in the late 19th and early 20th centuries. This rail line has been abandoned for many decades. The tracks were removed in 1993-1994 and the portion of the rail line between approximately Meridian Road and Peyton has been converted to a bike path. Segments 5EP.1815.7, 5EP.1815.8, 5EP.1815.11, although surveyed separately for several projects, are all located within the same area covered by 5EP.1815.1. The northern portion of Segment 5EP.1815.2 is within the US 24 study corridor.

Archaeological Resources

Previous resource identification in the area surrounding the US 24 study corridor includes 39 prehistoric archaeological sites, 13 historic archaeological sites, and numerous combined historic/historical archaeological sites. The combined historic/historical archaeological sites are all associated with historic railways and automobile roads and are discussed in the previous historic resources section.

Prehistoric Archaeology

The US 24 study corridor is located on the northern edge of the Arkansas River Basin, with Big Sandy Creek serving as the northernmost tributary. To the north and west is the Palmer Divide. These natural features played a major role in the movement and settlement of ancient peoples (Zier, C.J. and S.M. Kalasz, 1999). The majority of the sites are prehistoric Native American open lithic scatters and/or open camps sites of unknown age and cultural affiliations, that have been recommended or determined to be *not eligible* for listing on the NRHP. Six additional sites have no eligibility recommendation, but they are all isolated prehistoric artifacts that are *not eligible* to the NRHP, and would not likely be considered contributing to a possible district.

Five additional prehistory Native American sites are listed as “needs data” and should be considered as potentially eligible at this time. One of these sites, 5EP.1277, is identified as an Early to Middle Archaic period open campsite, with a possible occupation date range of 7,800 to 3,000 years before present. Another site with an associated archaeological period is 5EP.1289. This is a Paleoindian to Middle Archaic period open campsite, with a possible occupation date range from 12,500 to 3,000 years before present. This is based on the presence of a Scottsbluff type projectile point and paleo ecological data. The other three sites, 5EP.1287, 5EP.3923, and 5EP.3929, show some level of future data potential.

Only one prehistoric site within the study area is recorded as *officially eligible* for listing on the NRHP 5EP.3920. The site has been partially excavated, and artifacts associated with the Late Paleoindian to Early Archaic Period were recovered and studied (Slessman, S.A., 2002).

Historical Archaeology

The history of European American occupation in the area surrounding the US 24 study corridor dates to the middle 1800s with the influx of fur traders starting in the 1830s and the discovery of gold in the Pike’s Peak area in 1858. During the 1880s the towns of Ramah,



Calhan, Peyton, and Falcon grew as stops along the Rock Island Railroad system. The area prospered until the collapse of the mining industry and the shutdown of the railroad in the middle of the 20th century. When historic sites fall into states of ruin to the point they are not historically significant for their intact architecture, they are typically categorized as historic archaeology. Many sites retain a mixture of intact architecture and archaeological components. The sites of this nature within the study corridor are exclusively historic linear transportation features, and are discussed in the previous historic resources section.

There are 13 sites within the US 24 study corridor that are recorded as only historical archaeological in nature. Most are associated with ranching, farming, and transportation. Eight of these sites are listed as *not eligible* for listing on the NRHP, and five have a status that requires additional survey. Sites 5EP.868.3 and 5EP.868.9 are former bridges associated with the Golden Belt Highway and would be more appropriately categorized as primarily historic in nature, as they are components of a historic transportation linear feature. They are listed as field eligible. Site 5EP.1736, is the historic 1,500-acre B/K Ranch, which is also listed as a Colorado Centennial Farm. It is also a historic site, but has high potential for historical archaeological resources. Only a very small portion of the southern edge of the site is within the corridor study area. Site 5EP.4676 is the location of the Banning Lewis Ranch site. The site is in ruins and is no longer occupied or in use. The site is listed as *officially eligible* for listing on the NRHP. Finally, site 5EP.6943 is a county historical marker that has no listed determination of eligibility.

Table 11 outlines the cultural resources located within the study area that have been surveyed and are recorded as either eligible, needs data, or have no determination for listing on the NRHP. The remaining resources identified in the COMPASS file search have an official or field determination of *not eligible*; therefore, these sites are not reflected in the table.

Table 11: Known Historic and Archaeological Properties in the Study Corridor

SITE NUMBER	LOCATION	NAME	NRHP STATUS
5EP.3320	Historic Bridge	Sand Creek Bridge	Historic Bridge was <i>Officially Eligible</i> for the NRHP; however, the historic bridge has been removed and replaced with a modern bridge. The existing bridge is <i>Not Eligible</i> for the NRHP.
5EP.868 5EP.868.6	Railroad	Denver & New Orleans Railroad	Feature is <i>Officially Eligible</i> for the NRHP
5EP.3561	Historic Bridge	Black Squirrel Creek Bridge	Historic Bridge was listed on the NRHP; however, the historic bridge has been removed and replaced with a modern bridge. The existing bridge is <i>Not Eligible</i> for the NRHP.
5EP.1815 5EP.1815.1 5EP.1815.2 5EP.1815.7 5EP.1815.8 5EP.1815.11	Railroad	Chicago Rock Island & Pacific Railroad	Feature is <i>Officially Eligible</i> for the NRHP. Railroad was abandoned and the tracks were removed in 1993-94.
5EP.868.3	Historic Bridge	Golden Belt Route Highway Bridge	Field Eligible
5EP.868.9	Historic Bridge	Golden Belt Route Highway Bridge	Field Eligible



SITE NUMBER	LOCATION	NAME	NRHP STATUS
5EP.1277	Archaeological	N/A	Needs data
5EP.1287	Archaeological	N/A	Needs data
5EP.1289	Archaeological	N/A	Needs data
5EP.1736	Historic Ranch	B/K Ranch Centennial Farm	No determination
5EP.3920	Archaeological	N/A	Feature is <i>Officially Eligible</i> for the NRHP
5EP.3923	Archaeological	N/A	Needs data
5EP.3929	Archaeological	N/A	Needs data
5EP.4676	Historic Ranch	Banning Lewis Ranch Site	Feature is <i>Officially Eligible</i> for the NRHP
5EP.6943	Historical Marker	N/A	No determination

Source: COMPASS database (July 2016)

Paleontological Resources

The Colorado Historical, Prehistorical and Archaeological Resources Act of 1973 (CRS 24-80-401 to 411, and 24-80-1301 to 1305) defines permitting requirements and procedures for the collection of prehistoric resources, including archaeological and paleontological resources, on state lands, and actions that should be taken in the event that resources are discovered in the course of state-funded projects and on state-owned/administered lands. Based on this legislation, CDOT requests assessments on state-owned and/or administered lands that have the potential to contain significant archaeological and paleontological resources, and mitigation monitoring during ground disturbance in these areas.

This evaluation inventories existing paleontological resources within the US 24 study corridor. The History Colorado file search was used to identify archaeological and paleontological resources within the area that have been previously surveyed. Google Earth, US Geological Survey (USGS) topographic and geological maps were also reviewed to identify geological units, resource distribution, resource types, and development patterns. The Potential Fossil Yield Classification System (PFYC) (Murphey et al., 2015) was also referenced to determine the potential for fossils based on the geologic units within the study area. Location information related to archaeological and paleontological resources is protected; therefore, these resources are not mapped.

The US 24 study corridor crosses 11 mapped geologic units, listed in **Table 12** (Geology mapped by Moore et al., 2001; Madole, 2003; Madole and Thorson, 2003; Scott, 1978). These range in age from the Paleocene to the latest Holocene. All geologic units in eastern Colorado have been ranked according to the PFYC, a predictive modeling tool that ranks the paleontological potential of geologic units from 1 (very low) to 5 (very high) paleontological potential. Holocene geologic units within the study area have low paleontological potential (PFYC 2) because they are too young to contain in-situ paleontological resources. Pleistocene geologic units (those deposited during the “ice age”) have the potential to contain scientifically important paleontological resources, especially mammals, and have moderate paleontological potential (PFYC 3). The Poison Canyon Formation preserves predominantly fossil plants, and has high paleontological potential (PFYC 4). The Denver Formation preserves fossil reptiles (including dinosaurs), primitive mammals, and locally abundant plants, and has very high paleontological potential (PFYC 5).



Table 12. Geologic Units within the Study Area and PFYC Rankings

GEOLOGIC UNIT NAME	AGE	PFYC	MILES ⁽¹⁾
Artificial Fill	Late Holocene	2	1.6
Alluvial sand, silt, clay and gravel (Louviers and Slocum Alluvium undivided)	Late middle Pleistocene	3	2.3
Alluvial sand, silt clay and gravel (Post-Piney Creek Alluvium, Piney Creek alluvium, and Pre-Piney Creek alluvium)	Holocene and Late Pleistocene	3	9.5
Arkosic loamy colluvium and sheetwash alluvium	Holocene	2	12
Older alluvium two	Middle and early/ Pleistocene	3	0.03
Middle alluvium	Late Pleistocene	3	0.1
Eolian sand	Holocene and Pleistocene	3	2.8
Piney Creek Alluvium	Holocene	2	2.9
Young alluvium two	Late and middle/ Holocene	2	3.2
Poison Canyon Formation	Paleocene	4	0.3
Dawson Formation (synonymous with Denver Formation)	Upper Cretaceous ⁽²⁾ , Paleocene and early Eocene	5	4.9

⁽¹⁾ Miles listed are total miles of each geologic unit crossed by the US 24 study corridor.

⁽²⁾ Paleocene and early Eocene within the study area.

According to data provided by the Denver Museum of Nature and Science (DMNS), there are 11 previously recorded fossil localities within the Denver (Dawson) Formation within the same Townships as the US 24 study area. These include 10 fossil plant localities and one fossil vertebrate locality (Table 13). The University of Colorado Museum (UCM) has 15 localities in the Denver Formation within the same Townships as the study area. These yielded fossil reptiles and mammals. The UCM has an additional 30 localities in the Denver Formation and six in Pleistocene deposits in El Paso County, and the DMNS has an additional 14 localities in the Denver Formation in El Paso County. A search of the online Paleobiology database shows an additional five localities from the Denver (Dawson) Formation in El Paso County which produced fossil plants, dinosaur bone fragments and turtle. Only one fossil locality is situated within the study area. UCM Locality 89112 produced four bone fragments of an unidentified reptile which were discovered by former CDOT staff paleontologist S.M. Wallace.

Table 13. Previously Recorded Fossil Localities within the same Townships

LOCALITY NUMBER	DATA PROVIDED BY	DATA COLLECTED BY	FOSSIL	FORMATION
419	DMNS	Data not provided	Plants	Dawson Arkose Formation
2484	DMNS	Data not provided	Plants	Dawson Arkose Formation
2535	DMNS	Data not provided	Plants	Dawson Arkose Formation
2538	DMNS	Data not provided	Vertebrates	Dawson Arkose Formation
2540	DMNS	Data not provided	Plants	Dawson Arkose Formation



LOCALITY NUMBER	DATA PROVIDED BY	DATA COLLECTED BY	FOSSIL	FORMATION
2541	DMNS	Data not provided	Plants	Dawson Arkose Formation
2687	DMNS	Data not provided	Plants	Dawson Arkose Formation
2875	DMNS	Data not provided	Plants	Dawson Arkose Formation
2876	DMNS	Data not provided	Plants	Dawson Arkose Formation
3096	DMNS	Data not provided	Plants	Dawson Arkose Formation
3386	DMNS	Data not provided	Plants	Dawson Arkose Formation
89112 ⁽¹⁾	UCM	S.M. Wallace	Reptilia - four bone fragments	Denver
77275	UCM	Middleton	Mammals, reptiles and amphibians	Dawson/Denver
77277	UCM	Middleton	<i>Plesiobaena antiqua</i>	Dawson/Denver
82126	UCM	M.D. Middleton & J. Harris (VanCouvering)	Mammals, reptiles and fish	Denver
79013	UCM	M. Middleton	<i>Denverus middletoni</i> ; Mammalia - partial humerus	Dawson/Denver
77274	UCM	Middleton	No data provided	Dawson/Denver
77276	UCM	Middleton & Alexander	<i>Ampliconus browni</i> - LM/1-2 fragment; <i>Ectoconus</i> sp. - L distal humerus	Dawson/Denver
77278	UCM	Middleton	<i>Carsiptychus</i> sp. - 1/2P4/, Mx/, P2/?	Dawson/Denver
77279	UCM	Middleton	No data provided	Dawson/Denver
83095	UCM	M.D. Middleton	<i>Periptychus coarctatus</i> - palate in nodule	Denver
83097	UCM	C. Alexander	No data provided	Denver
83196	UCM	Middleton	<i>Periptychus coarctatus</i> - edentulous jaw with roots for L P4-M3; <i>Ectoconus ditrignonus</i> - R mandibular fragment with M2; <i>Loxolophus hyattianus</i> - R M2 lower; Chelonia undet. - skull and jaws	Denver
90063	UCM	S. Gigliotti	<i>Periptychus coarctatus</i> - RP/3-4	Denver
91331	UCM	No data provided	No data provided	Denver
91334	UCM	No data provided	No data provided	Denver

⁽¹⁾ Denotes localities located within the Project area

Section 4(f) and Section 6(f)

Section 4(f) of the Department of Transportation Act of 1966 is a regulation applicable only to projects that receive funds from the US DOT agencies. It is implemented by FHWA and the Federal Transit Administration (FTA) through the regulation 23 CFR 774. Under this regulation, the following resources are protected:



- ✦ Parks and recreational areas of national, state, or local significance that are both publicly owned and open to the public
- ✦ Historic sites of national, state, or local significance in public or private ownership
- ✦ Publicly owned wildlife and waterfowl refuges of national, state, or local significance that are open to the public to the extent that public access does not interfere with the primary purpose of the refuge

Section 4(f) stipulates that the FHWA and other agencies under the purview of the US DOT may not approve a “use” of a Section 4(f) property unless there is no feasible and prudent alternative and all efforts to minimize harm to the resource have been implemented (FHWA, 2016). In addition, “future” public recreation facilities that are documented in an official planning document (local municipality or jurisdiction parks and recreation plan, land use plan, etc.) are also considered Section 4(f) properties. Section 4(f) protection is afforded to historic sites that warrant preservation in place. A historic site is defined in 23 CFR 774 as “any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register.” Eligible archaeological sites that are eligible only under criterion D for their scientific value usually do not warrant preservation in place; therefore, these sites are not treated as Section 4(f) properties.

Section 6(f) of the Land and Water Conservation Fund (LWCF) Act of 1965 applies to all recreational properties that were either purchased or improved with funds from the LWCF (FHWA, 2013). Section 6(f) protects these properties as public recreation facilities in perpetuity and prohibits a “conversion” of a property from recreational use unless a suitable (size, usefulness, monetary value) property can be found (FHWA, 2013). The LWCF Act is run by the National Park Service and administered locally in Colorado by Colorado Parks and Wildlife.

Section 4(f) properties were identified using a combination of Google maps, existing park master plans (as listed in the previous parks and recreational resources section) and CDOT Section 6(f) GIS data. As described in the parks and recreational resources section of this report, all recreational resources previously described are considered Section 4(f) resources, as they are all public facilities. In addition, as Section 4(f) also applies to historic resources, all sites that are listed or eligible for inclusion in the NRHP (as discussed in the previous cultural resources section) would also be considered Section 4(f) resources.

There is one Section 6(f) property within the area surrounding the US 24 study corridor, Ramah State Wildlife Area; and two properties that are located just outside of the study area, Calhan Town Park and Peyton Community School Park.

Prime and Unique Farmlands

The Farmland Protection Policy Act requires that all actions either led by the federal government or with federal funding, evaluate the action’s impacts on prime or unique farmlands, or land of statewide or local importance. The intent of the act is to minimize the conversion of these farmlands to non-agricultural use. The Natural Resource Conservation Service (NRCS) defines prime farmland as, “Land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops and is also available for these uses. It has the soil quality, growing season, and moisture supply



needed to produce economically sustained high yields of crops when treated and managed according to acceptable farming methods, including water management” (NRCS, 2016a).

Prime farmland must have at least one of the following criteria:

- ✦ Dependable water supply (natural or irrigated)
- ✦ Favorable temperature and growing season
- ✦ Acceptable acidity or alkalinity, salt content, and few or no rocks
- ✦ Permeable to air and water
- ✦ Do not flood frequently (or are protected from flooding), continuously saturated, or excessively eroded

Unique farmland is defined as non-prime farmland that can has combined conditions to support high quality and high yield of specialty crops (fruit, nuts, etc.). Farmland that is neither prime or unique but is used for food, feed, fiber, forage, or oilseed crops may be determined by state or local governments to be “land of statewide or local importance” (NRCS, 2016b).

For this study, data was obtained from the NRCS Soil Survey Geographic Database for El Paso County and was analyzed to determine the presence or absence of prime farmland along the US 24 study corridor. Prime farmland exists throughout the area surrounding the US 24 corridor. The prime farmland in El Paso County is only considered prime if it is irrigated. There is no unique farmland in El Paso County (NRCS, 2016c).

Floodways and 100-year Floodplains

Review of Federal Emergency Management Agency (FEMA) flood insurance rate maps and drainage studies were conducted to determine the locations of drainageway crossings and FEMA floodplain designations along the US 24 study corridor. Consultants who produced the drainage studies were contacted for copies of the drainage reports and studies along the corridor. Various other reports were obtained from the City of Colorado Springs and El Paso County websites. There may also be private development reports that describe improvements to drainage systems impacting the US 24 study corridor. Drainage reports and studies pertaining to areas within the US 24 study corridor are:

- ✦ “City of Colorado Springs Stormwater Needs Assessment, Final Report”, City of Colorado Springs, CH2MHill, October 2013
- ✦ “Falcon Drainage Basin Planning Study Selected Plan Report”, El Paso county Public Services Department. Matrix Design Group, September 2015.
- ✦ “Final Hydraulics Report for East Fork Sand Creek at Powers Boulevard”, Kiowa Engineering Corporation, December 1991.
- ✦ “Jimmy Camp Creek Master Drainage Planning Study”, City of Colorado Springs, El Paso County, Wilson and Company Engineers, January 1987.
- ✦ “Preliminary/Final Drainage Report for East Fork Sand Creek Channel Improvements”, JR Engineering, March 1999.
- ✦ “Sand Creek Drainage Basin Planning Study Preliminary Design Report”, City of Colorado Springs, El Paso County, Kiowa Engineering Corporation, March 1996.



- ✦ “Sand Creek Master Drainage Planning Study”, City of Colorado Springs, El Paso County, Simons, Li & Associates, Inc., July 1985.
- ✦ “West Fork Jimmy Camp Creek Drainage Basin Planning Study”, Kiowa Engineering Corporation, October 2003.

There are numerous FEMA floodplains that cross the US 24 study corridor between Powers Boulevard (SH 21) and Ramah. There are two types of FEMA floodplains along the corridor, Zone A and Zone AE, as well as Regulatory Floodways. The definitions of these types of floodplains are:

- ✦ **Zone A** is defined as areas subject to inundation by the 1-percent-annual-chance flood event generally determined using approximate methodologies. Because detailed hydraulic analyses have not been performed, no Base Flood Elevations (BFEs) or flood depths are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- ✦ **Zone AE** is defined as areas subject to inundation by the 1-percent-annual-chance flood event determined by detailed methods. BFEs are shown. Mandatory flood insurance purchase requirements and floodplain management standards apply.
- ✦ A “**Regulatory Floodway**” means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than a designated height. Communities must regulate development in these floodways to ensure that there are no increases in upstream flood elevations. For streams and other watercourses where FEMA has provided BFEs, but no floodway has been designated, the community must review floodplain development on a case-by-case basis to ensure that increases in water surface elevations do not occur, or identify the need to adopt a floodway if adequate information is available.

There are two floodways that cross the US 24 study corridor and the majority of the floodplains that cross the US 24 corridor are zone A, with no detailed study conducted on the drainageway. Most of these floodplains are unnamed tributaries to a larger named drainageway. There are currently three floodplains with detailed hydraulic analysis and, when FEMA publishes the preliminary map changes, six floodplains will have detailed hydraulic studies to support them. There are a total of 28 FEMA floodplains that cross this alignment.

The federal Clean Water Act (CWA) requires each state to classify the intended (i.e., designated) uses of all surface water bodies and to develop criteria to protect the designated uses of these water bodies. Colorado currently has five designated uses for surface water bodies: agriculture, water supply, recreation, aquatic life, and wetlands.

The CWA requires each state to publish an annual list of water bodies that are not meeting their designated uses because of excess pollutants; these pollutants can be naturally occurring or a result of human activity. The list, known as the Section 303(d) list, is based on violations of water quality standards and is organized by watersheds, which are further divided into stream segments. Fountain Creek and multiple tributaries are included on the Impaired Waters 303(d) List for the State of Colorado which include *E.coli* (CDPHE, 2012). The impairments should be considered during project refinement.



The major drainageways crossing the US 24 study corridor are listed in Table 14. Revisions to the Flood Insurance Rate Maps are currently underway. The preliminary information is available and the table highlights any differences in Flood Hazard Zones per the preliminary version of the Flood Insurance Rate Maps.

Table 14: Major Drainageway Crossings

MAJOR DRAINAGEWAY	FLOODWAY	FEMA ZONE	UPDATED ZONE	STRUCTURE
Sand Creek Center Tributary	Yes	AE	AE	Triple 6'x14' CBC
Sand Creek East Fork	Yes	AE	AE	6-cell 10'x20' CBC
Black Squirrel Creek	No	A	A	2 span 224 ft wide bridge
Brackett Creek	No	A	A	3 span 69 ft wide bridge
East Branch Brackett Creek	No	A	A	Double 8'x10' CBC
Calhan Main Channel	No	AE	AE	3-span 70 ft wide bridge
Black Squirrel Creek West Fork Bennett Ranch Basin	No	A	AE	8'x20' CBC
Unnamed tributary to Black Squirrel Creek No. 2	No	A	AE	Triple 12'x6' CBC
Unnamed tributary to Black Squirrel Creek	No	A	AE	Double 12'x6' CBC
Haegler Ranch Tributary 2	No	A	A	4'x4' CBC

Source: FEMA Flood Insurance Rate Map Panels.

Wells

Community and public wells are regulated by the Colorado Division of Water Resources (DWR). DWR administers water rights, issues water well permits, issues licenses for well drillers, and assures the safe and proper construction of water wells.

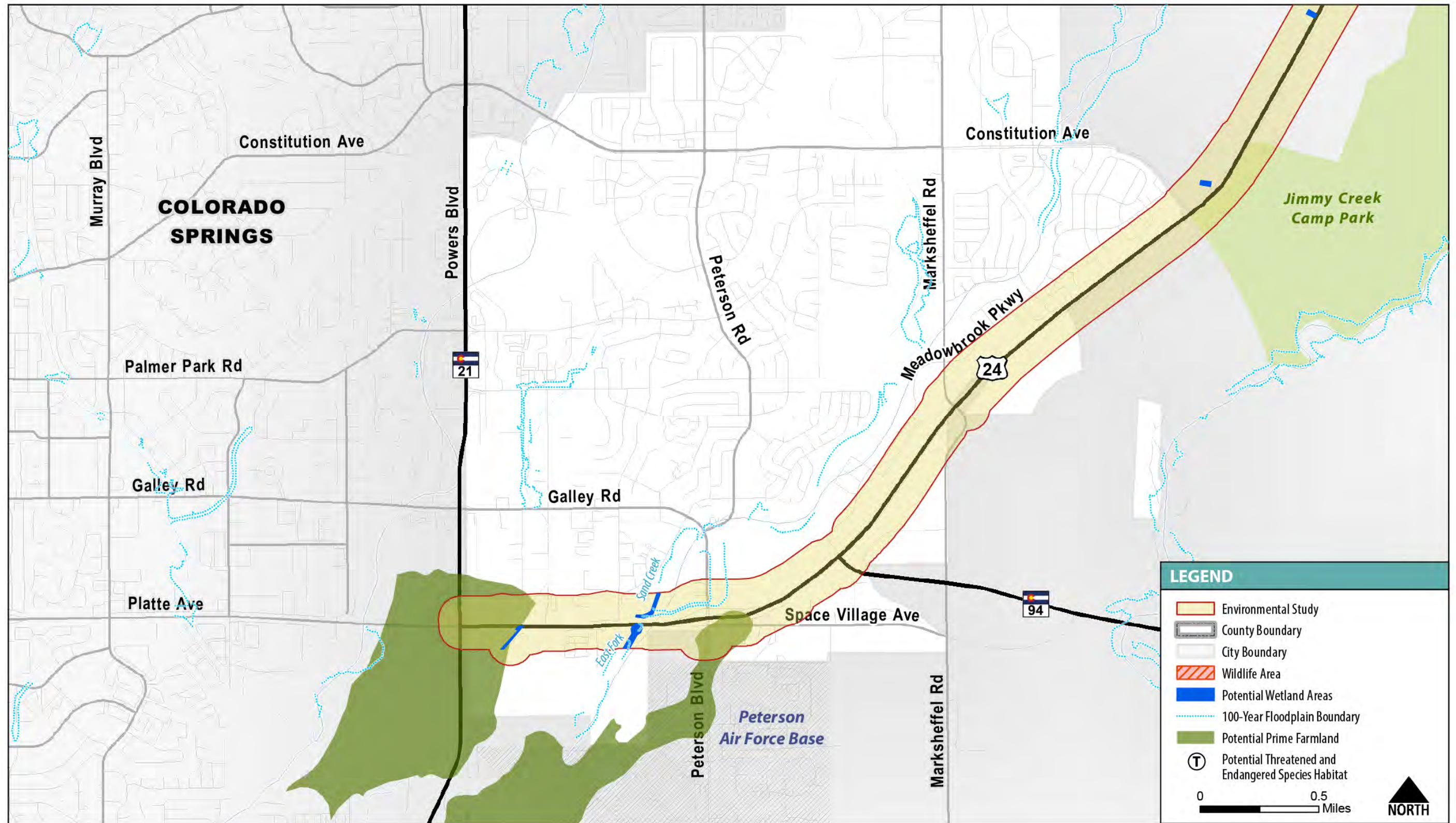
Existing wells in the study area were identified through a survey of GIS data from the DWR and the Colorado Oil and Gas Conservation Commission (COGCC). According to the DWR data, seven water wells were identified in the US 24 corridor study area (DWR, 2016). According to the COGCC GIS data, there is one oil and gas well within the study area (COGCC, 2016).

Natural Environment

The resources for the natural environment are illustrated in **Figures 38 through 42**.



Figure 38: Environmental Resources - Natural Environment (Powers Blvd to Constitution Ave)



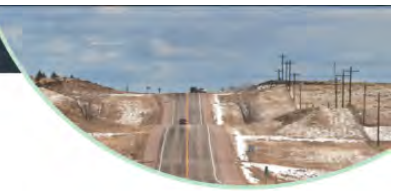


Figure 39: Environmental Resources - Built Environment (Constitution Avenue to Falcon)



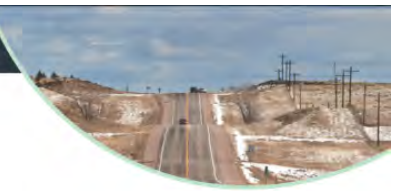
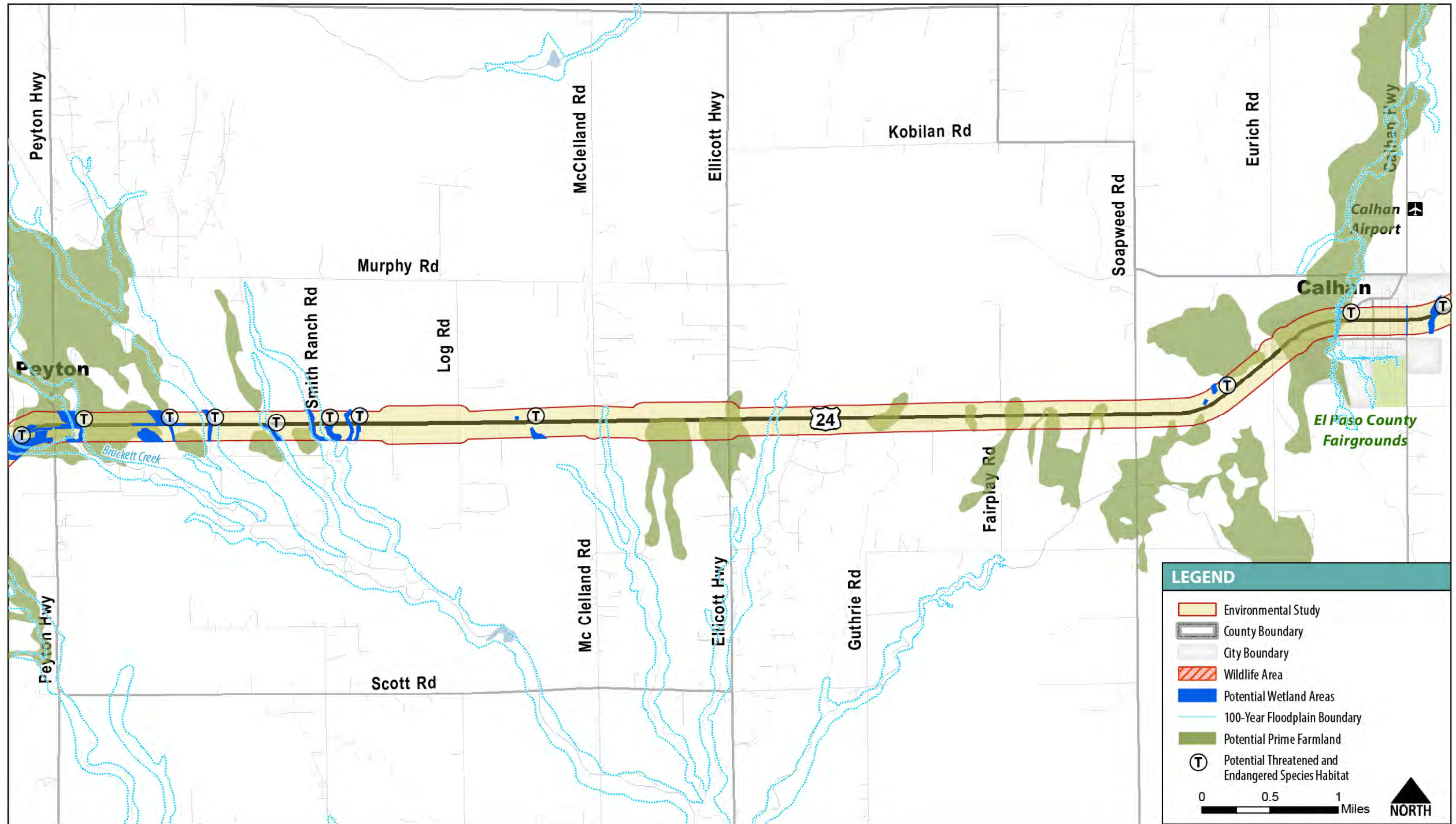


Figure 40: Environmental Resources – Built Environment (Falcon to Peyton)





Figure 41: Environmental Resources - Built Environment (Peyton to Calhan)



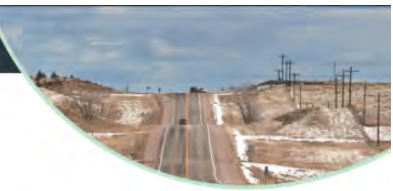
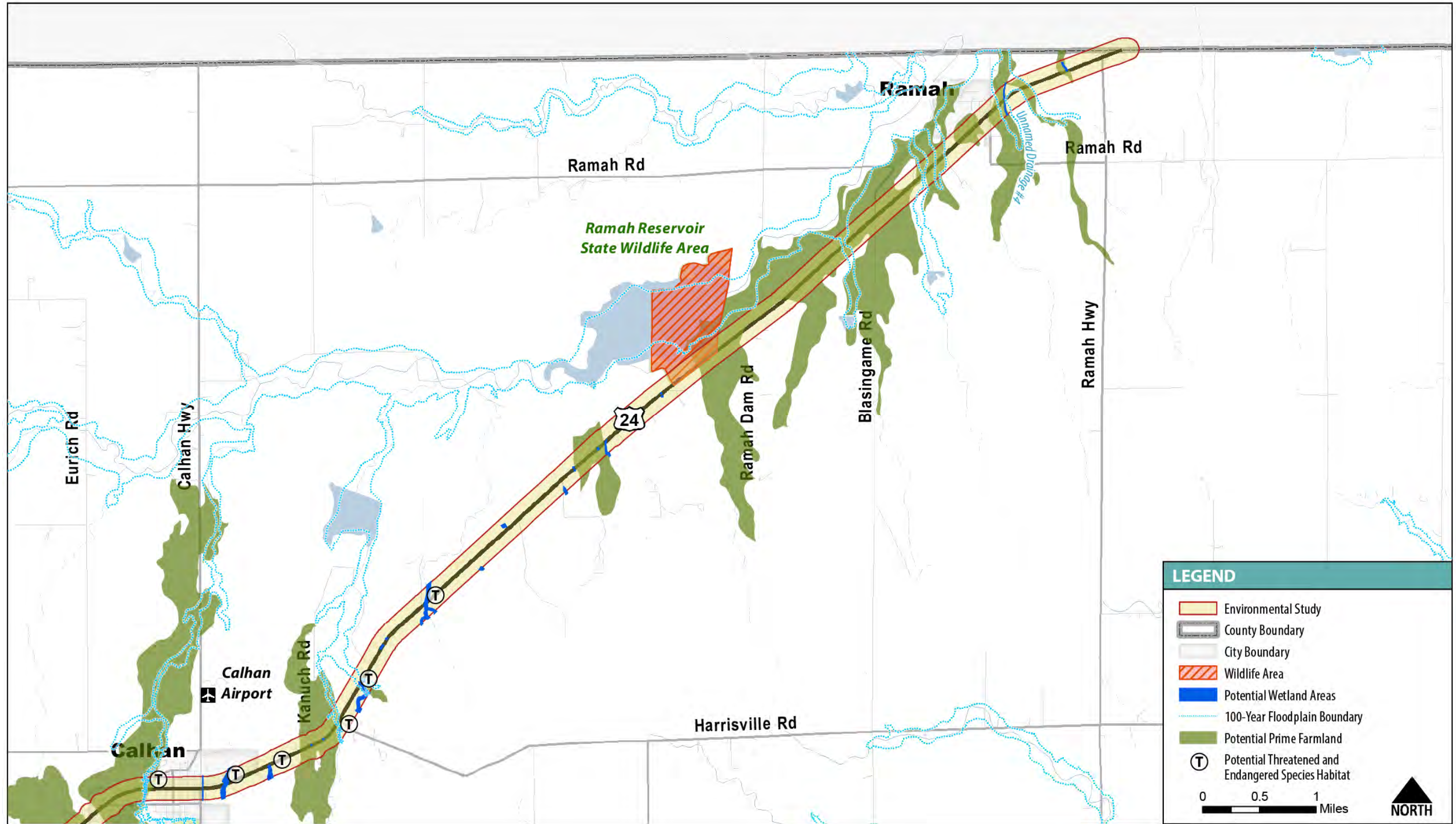


Figure 42: Environmental Resources - Built Environment (Calhan to Ramah)





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Wetlands and Waters of the US

Waters of the US are typically defined as navigable waterways and/or waterways that have a nexus to navigable waters. This definition includes those water features that are adjacent to (considered a “significant nexus”) waters of the US, including canal, irrigation ditches, and wetlands. These resources provide a variety of functions such as wildlife habitat, sediment and pollution filtration, flood protection, agricultural irrigation, and groundwater recharge.

Waters of the US, including wetlands, are protected under Section 404 of the Clean Water Act (CWA) (33 US Code 1344) and Executive Order 11990 Protection of Wetlands (EPA, 1977). The CWA requires coordination with the US Army Corps of Engineers and resource agencies such as the Environmental Protection Agency (EPA) and the United States Fish and Wildlife Service (USFWS) when impacts occur to wetlands that are considered waters of the US. The USDOT Order 5660.1, *A Preservation of the Nation’s Wetlands* (USDOT, 1978), provides guidance on wetland mitigation assessment. CDOT has incorporated this and other FHWA environmental guidance into its Environmental Stewardship Guide which emphasizes efforts to avoid and minimize wetland impacts (CDOT, 2005).

Numerous sources of data were reviewed to gain a general understanding of the ecology of the study area. These sources included the National Wetland Inventory (NWI) website, Web Soil Survey, Google Earth, and other relevant data. The study area was driven on June 28 and July 6, 2016 to identify and coarsely map potential wetlands and other waters of the U.S. For the purposes of this report, other waters of the US include perennial, intermittent, or ephemeral streams and rivers, ditches, ponds, lakes, and other similar water features.

Potential wetlands were identified based on the presence of hydrophytic vegetation and/or wetland hydrology. No soils investigations or detailed investigations of vegetation or hydrology were conducted. No wetlands were delineated per US Army Corps of Engineers protocol. Based on a windshield survey, maps were generated to show coarse geometric polygons for wetlands and other waters of the US. All of the potential wetlands identified in the study area were classified as either palustrine emergent (PEM) or palustrine scrub-shrub (PSS) (Cowardin, et al., 1979). PEM wetlands are dominated by emergent (herbaceous) vegetation and PSS wetlands are dominated by shrubs.

Wetlands

The study area contains dozens of wetland areas, including both PEM and PSS. The PEM wetlands are typically dominated by cattail (*Typha* spp.), Baltic rush (*Juncus balticus*), Emory’s sedge (*Carex emoryi*), Nebraska sedge (*Carex nebrascensis*), woolly sedge (*Carex pellita*), and/or common spikerush (*Eleocharis palustris*). Some PEM wetlands contain pockets of narrowleaf willow (*Salix exigua*) and other widely scattered trees and shrubs.

Most of the PSS wetlands in the study area have a similar mix of herbaceous wetland plants as PEM wetlands, with an overstory of narrowleaf willow in most locations. Other woody plants often present include Wood’s rose (*Rosa woodsii*), plains cottonwood (*Populus deltoides*), peachleaf willow (*Salix amygdaloides*), and/or crack willow (*Salix fragilis*).

By far, the majority of the wetlands in the study area are PEM and occur near the middle of the corridor (between and around Falcon and Peyton). They are mainly found in depressions,



topographic swales, and/or along creeks; and appear to be primarily supported by high groundwater. In many locations the wetlands are situated in roadside ditches (topographic swales parallel to the road) which appear to be intercepting and ponding much of this groundwater (and associated surface water flows). Although many of these wetlands are somewhat impaired by development in the watershed, water diversions, and other stressors, most still provide good wildlife habitat, water quality improvement, and flood attenuation.

Some wetlands in the study area are sustained primarily by stormwater runoff from urban areas. These wetlands are mostly found in and around urban areas, especially Falcon. They consist of man-made channels or depressions, and often contain standing water. They are typically less biologically diverse than those wetlands associated with groundwater discharge (mainly due to the unnatural hydrologic regime), but often still provide some wildlife habitat and good water quality improvement.

Other Waters of the US

Although a detailed examination may reveal additional potential other waters of the US in the study area, the six main ponds and seven most-defined drainages identified for this report are listed in **Table 15**. All the ponds are man-made features and appear to be on private lands. The creeks and other drainages tend to flow roughly perpendicular to US 24 and all of them flow south except for one unnamed drainage near the east end of the study area, which flows north. Black Squirrel Creek is the only drainage that likely has perennial (year-round) flow. All the others are assumed to flow seasonally or only after precipitation events. There are many other topographic swales in the study area that occasionally carry surface flows, but they tend to be well-vegetated and lack a defined channel.

Table 15: Potential Waters of the US in the Study Area

NAME	TYPE	APPROXIMATE MILEPOST	NOTES
East Fork Sand Creek	Intermittent	312	Tributary to Fountain Creek; flows south
Unnamed Drainage #1	Intermittent	321	Tributary to Black Squirrel Creek; flows south
Unnamed Drainage #2	Intermittent	322	Tributary to Black Squirrel Creek; flows south
Pond #1	Perennial	323	Unnamed man-made pond
Pond #2	Perennial	324	Unnamed man-made pond
Unnamed Drainage #3	Intermittent	325	Tributary to Black Squirrel Creek; flows south
Pond #3	Perennial	326	Unnamed man-made pond
Black Squirrel Creek	Perennial	327	Tributary to Chico Creek; flows south
Pond #4	Perennial	329	Unnamed man-made pond
Pond #5	Perennial	329	Unnamed man-made pond
Pond #6	Perennial	329	Unnamed man-made pond
Brackett Creek	Intermittent	330	Tributary to Black Squirrel Creek; flows south
Unnamed Drainage #4	Intermittent	349	Tributary to Big Sandy Creek; flows north



State and National Forests and Wildlife Reserves

When a proposed action will occur on National Forest System lands, the US Forest Service (USFS) is generally the lead agency, per the Forest Service Handbook 1909.15 - NATIONAL ENVIRONMENTAL POLICY ACT HANDBOOK. The USFS may also be a lead or cooperating agency when Colorado State forest lands are involved. Potential impacts to these forests would require coordination with the USFS and/or the State of Colorado.

Wildlife Reserves or Refuges are managed by the USFWS. FHWA has an Interagency Agreement with USFWS which documents the processes and responsibilities of each agency in meeting the requirements of Title 23, United States Code (23 U.S.C.) relating to public roads in the National Wildlife Refuge System. This agreement includes provisions for assistance by FHWA on roads under the jurisdiction of the USFWS which are not funded under 23 U.S.C. 204.

The area surrounding the US 24 study corridor does not contain any State or National Forest lands or Wildlife Reserves. However, there is one State Wildlife Area (Ramah Reservoir State Wildlife Area). The Ramah State Wildlife Area is located approximately four miles west of Ramah MP 346. It encompasses approximately 800 acres and includes Ramah Reservoir (approximately 90 acres) with a boat ramp. According to Colorado Parks and Wildlife (CPW), the area offers hunting, fishing, sail boating, and wildlife viewing. It is known to be suitable for hunting deer, dove, turkey, rabbit, and waterfowl. No fires, camping, or water contact recreation is allowed, and hunting is only allowed with muzzleloaders, bows, and rimfire rifles. The State Wildlife Area also contains the Pam Wagner Memorial Birding Trail where numerous resident prairie and migratory bird species may be observed (CPW, 2016b).

Barrier Effect

One of the consequences of building and maintaining roadways is often the diminished connectivity of wildlife habitats, which results in fragmentation that limits the natural movement of wildlife to support their life-cycle requirements (FHWA, 2002). This fragmentation occurs when animals avoid the area, are unable to cross the road, or are killed on the road (FHWA, 2002). The presence of these impediments (either physical or non-physical) is known as the "barrier effect."

Other than vehicular traffic, there are no major physical impediments to wildlife movement present. No concrete medians or substantial areas of elevated roadway sections, retaining walls, closed guardrails, extremely steep embankments, or other obvious barriers were observed along the study corridor. There may be several locations where large wetlands exist in which additional culverts could be placed to facilitate better movement for reptiles, amphibians, and small mammals; however, no specific sites were noted during the site visit.

Regardless of the barrier effect, large mammal movement across the US 24 corridor appears to be somewhat limited. The CPW species map data show that the portion of the study corridor roughly between Calhan and Ramah overlaps with white-tailed and mule deer overall range, and pronghorn concentration area, but no migration patterns or corridors are depicted (CPW, 2016c).

Additionally, the effects of road noise as a barrier to wildlife are not clear and somewhat understudied. It appears that road noise has a pronounced effect on some species, especially



those that rely on meaningful sounds for communication, navigation, avoiding danger, and finding food (FHWA, 2004). Several studies have demonstrated that certain species of small breeding birds in grasslands appear to avoid areas within up to 3,000 meters of roadways based on traffic noise (FHWA, 2004).

Further consideration is needed to understand any potential changes to the barrier effect for any proposed improvements to the study area. The *Wildlife-Vehicle Collision Reduction Study: Best Practices Manual* includes design considerations for minimizing wildlife-vehicle collisions (FHWA, 2008). The intent is to help wildlife get across transportation corridors safely, whereby reducing the barrier effect.

Critical Habitat and Threatened and Endangered Species

Impacts associated with transportation improvement projects have the potential for critical habitat loss and effects to threatened and endangered species. There are state and federal regulations that protect habitat for threatened and endangered species and other wildlife, including: the Endangered Species Act of 1973, administered by the USFWS; the Migratory Bird Treaty Act and the Bald and Golden Eagle Protection Act, both administered by the USFWS; and the Colorado Non-game, Endangered, and Threatened Species Conservation Act, administered by CPW.

For this study, threatened and endangered species (TES) include those listed by USFWS as endangered, threatened, proposed, experimental, or candidate. Prior to conducting a field visit, numerous sources of data were reviewed to gain a general understanding of the ecology of the study area. These sources included the CPW, Colorado Natural Heritage Program (CNHP), and USFWS websites; aerial photographs; topographic maps; soil survey; and other relevant data.

According to the USFWS website there are six TES that may be affected by projects in this part of El Paso County, including two mammals, one bird, two fish, and one plant (USFWS, 2016a). These species are listed in **Table 16** along with their status, general habitat requirements, and an assessment of habitat suitability in the study area. No critical habitat is present in the study area.

Of the six TES listed, three have suitable habitat within the study area. These species are briefly discussed after the table.



Table 16: TES Potentially Occurring in the Study Area

COMMON NAME	SCIENTIFIC NAME	USFWS STATUS	GENERAL HABITAT	SUITABLE HABITAT PRESENT?
Mammals				
North American wolverine	<i>Gulo gulo luscus</i>	Candidate	High elevations with reliable spring snow cover	No; no high elevation habitats
Preble’s meadow jumping mouse	<i>Zapus hudsonius ssp. preblei</i>	Threatened	Well-developed riparian with adjacent grassland	Yes; multiple areas
Birds				
Mexican Spotted Owl	<i>Strix occidentalis lucida</i>	Threatened	Mature forest/canyons	No; no forest or canyons
Fish				
Arkansas darter	<i>Etheostoma cragini</i>	Candidate	Shallow, clear, cool water, sand or silt bottom streams with spring-fed pools and abundant rooted aquatic vegetation; streams may be intermittent	Possible
Greenback cutthroat trout	<i>Oncorhynchus clarki ssp. stomias</i>	Threatened	Clear, cold streams with well-oxygenated water	No; no clear, cold streams
Plants				
Ute ladies’-tresses	<i>Spiranthes diluvialis</i>	Threatened	Wetland/riparian	Yes; multiple areas

Sources: USFWS 2016a; CPW 2016a; Andrews and Righter 1992

Preble’s Meadow Jumping Mouse

Preble’s meadow jumping mouse (Preble’s) generally prefers well-developed plains riparian vegetation with relatively undisturbed grassland and a water source in close proximity. It is often found in areas with dense herbaceous vegetation consisting of grasses, forbs, and thick shrubs (USFWS, 2004). The area along the US 24 study corridor contains some areas of suitable habitat, including mainly the PSS wetlands along perennial and intermittent creeks, and associated habitats.

Although some suitable habitat exists along most of the corridor, approximately 13 miles of the study area (from the western project terminus to approximately MP 324 which is to the east of Falcon near Stapleton Road) is within a USFWS approved Preble’s “block clearance” area for Colorado Springs. This means that even if suitable habitat exists in this area, it is assumed to be unoccupied because of historic or current land use practices (USFWS, 2016b).

While there is no critical habitat for Preble’s in the area adjacent to the US 24 corridor, there is designated critical habitat about nine miles to the northwest of Falcon at Kettle Creek in the northern Colorado Springs area. Additionally, according to local USFWS personnel, Preble’s was captured near the study area in 1998 to the west of Peyton on Black Squirrel Creek (USFWS, 2016b). Thus, occurrence of Preble’s is possible along the US 24 corridor to the east of MP 234.



Arkansas Darter

The Arkansas darter is a small fish that is related to walleye and yellow perch. It prefers shallow, clear, sandy streams with spring-fed pools and abundant rooted aquatic vegetation (CPW, 2016a). It persists in large, deep pools during late summer low-water periods, when streams may become intermittent. It is found in several watersheds in southeastern Colorado, including Black Squirrel Creek, which flows through and has multiple tributaries in the US 24 study corridor (CPW, 2016a). Although occurrence of Arkansas darter is unlikely, it may be found in Black Squirrel Creek or some of its tributaries.

Ute Ladies'-Tresses

Ute ladies'-tresses (ULT) is a species of orchid that generally prefers moist meadows associated with perennial stream terraces, floodplains, oxbows, seasonally flooded river terraces, sub-irrigated or spring-fed abandoned stream channels and valleys, and lakeshores between 700 and 7,000 feet above mean sea level (Fertig, et al. 2005). There is one historic record of ULT in El Paso County (near the mouth of Cheyenne Canyon in 1896), but otherwise the nearest known and current population is in Jefferson County, Colorado, over 65 miles to the northwest (Fertig, et al. 2005). No critical habitat has been established for this species.

Although occurrence of ULT is unlikely, there is ample suitable habitat associated with nearly any of the PEM wetlands along the US 24 study corridor and occurrence is possible. The possibility of occurrence was confirmed by the local USFWS personnel (USFWS, 2016b).

Shortgrass Prairie Initiative

In addition to the TES described in this report, there are also many other rare or sensitive plant and wildlife species potentially occurring along the US 24 study corridor that are not formally or legally protected. Most of these species are addressed by the Shortgrass Prairie Initiative (SGPI) and discussed in detail in *Estimating Impacts of Highway Projects on Select Rare, Sensitive, or Declining Species on Colorado's Central Shortgrass Prairie* (CNHP, 2002).

The SGPI is a cooperative program between CDOT, USFWS, CPW, and FHWA that provides proactive advance conservation of priority habitats for multiple plant and wildlife species (38 total species) in eastern Colorado (CNHP, 2002). The *Shortgrass Prairie Initiative Programmatic Biological Opinion* (BO) allows CDOT to take an integrated and comprehensive approach to mitigating the effects of various routine upgrade and maintenance activities across eastern Colorado, rather than mitigating project-by-project which can result in a piecemeal and fragmented approach to compensation (USFWS, 2003). The BO identifies 17 primary or "target" species that, if categorized as "presumed present" in the report, are targeted for off-site habitat protection (CNHP, 2002). The species that are presumed present in the US 24 corridor study area include:

- ✦ Burrowing Owl
- ✦ Cassin's Sparrow
- ✦ Ferruginous Hawk
- ✦ Lark Bunting
- ✦ Loggerhead Shrike
- ✦ McCown's Longspur
- ✦ Mountain Plover
- ✦ black-tailed prairie dog
- ✦ massasauga



Additionally, there are 21 other “non-target” species addressed in the SGPI BO that are targeted for on-site mitigation (mainly implementing certain best management practices), regardless of actual presence.

Migratory Birds and Raptors

Most migratory birds, including raptors, are protected by the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal for anyone to “take, possess, import, export, transport, sell, purchase barter, or offer for sale, purchase, or barter, any migratory bird, or the parts, nests, or eggs of such a bird except under the terms of a valid permit issued pursuant to Federal regulations (USFWS, 2016a).” The MBTA is enforced by the USFWS.

In addition, Bald and Golden Eagles are also protected by the Bald and Golden Eagle Protection Act (BGEA). The BGEA prohibits “taking eagles, including their parts, nests, or eggs” without a permit issued by the Secretary of the Interior (USFWS, 2016b). The BGEA also provides criminal penalties for persons who “take, possess, sell, purchase, barter, offer to sell, purchase or barter, transport, export or import, at any time or any manner, any eagle, alive or dead, or any part, nest, or egg thereof.” The BGEA defines “take” to include disturbing the birds, which means “to agitate or bother” to a degree that “causes, or is likely to cause, based on the best scientific information available, 1) injury to an eagle, 2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or 3) nest abandonment, by substantially interfering with normal breeding, feeding, or sheltering behavior.” The BGEA is also enforced by the USFWS.

In order to comply with these Acts, preconstruction and during construction surveys for nesting birds (including eagles and other raptors) should be done if any ground-disturbing activities are planned during the nesting season. The nesting season varies by species, but is generally from April 1 to August 31. If active nests are present, no-work buffers or other restrictions will likely be required around the nest during construction activities. The size of the buffer will be determined in coordination with CPW, USFWS, and CDOT biologists. For raptors, the buffer distances generally adhere to those presented in Recommended Buffer Zones and Seasonal Restrictions for Colorado Raptors (CPW, 2002). If eagles are expected to be present, additional surveys may be required to identify winter roosting sites which may also require no-work buffers or other restrictions. Further guidance on required surveys can be found in Section 240 Protection of Migratory Birds of the CDOT Standard Specifications for Road and Bridge Construction (CDOT, 2016)

One raptor species that has potential habitat in the study area is the Burrowing Owl, which is listed as threatened by the State of Colorado. The owls are usually associated with prairie dog colonies and nest below ground. Although it is addressed in the SGPI, CPW still recommends conducting presence/absence surveys in any prairie dog colonies that may be disturbed between February 1 and October 31. If owls are found, no work areas will be required per CPW policy.

