

**DRAFT - TRAFFIC DESIGN MEMORANDUM  
PROJECT 23558/23559  
I-17-X: US 24  
EL PASO COUNTY, COLORADO**

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*Prepared for:*



Colorado Department of Transportation – Region 2  
5615 Wills Blvd.  
Pueblo, CO 81008

*Prepared by:*



Stanley Consultants, Inc.  
8000 S Chester Street, Ste. 500  
Centennial, CO 80112  
Phone (303) 799-6806  
Fax (303) 799-8107

## Project Description

The CDOT Region 2 Bridge Bundle Design Build Project consists of the replacement of a total of nineteen (19) structures bundled together as a single project. These structures are rural bridges on essential highway corridors (US 350, US 24, CO 239 and CO 9) in southeastern and central Colorado. These key corridors provide rural mobility, intra- and interstate commerce, movement of agricultural products and supplies, and access to tourist destinations. The design build project consists of seventeen (17) bridges and two (2) Additionally Requested Elements (AREs) structures.

The fourteen (14) of the structures in this design build project are jointly funded by the USDOT FHWA Competitive Highway Bridge Program grant and the Colorado Bridge Enterprise (Project No. 23558). The remaining five (5) structures are funded solely by the Colorado Bridge Enterprise (Project No. 23559). These projects are combined to form one design-build project. The two ARE structures are part of the five bridges funded by the Colorado Bridge Enterprise.

The nineteen bridges identified to be included in the ‘Region 2 Bridge Bundle’ were selected based on similarities in the bridge conditions, risk factors, site characteristics, and probable replacement type, with the goal of achieving economy of scale. Seventeen of the bridges being replaced are at least 80 years old. Five of the bridges are Load Restricted, limiting trucking routes through major sections of the US 24 and US 350 corridors. The bundle is comprised of nine timber bridges, four concrete box culverts, one corrugated metal pipe (CMP), four concrete I-beam bridges, and one I-beam bridge with corrugated metal deck.

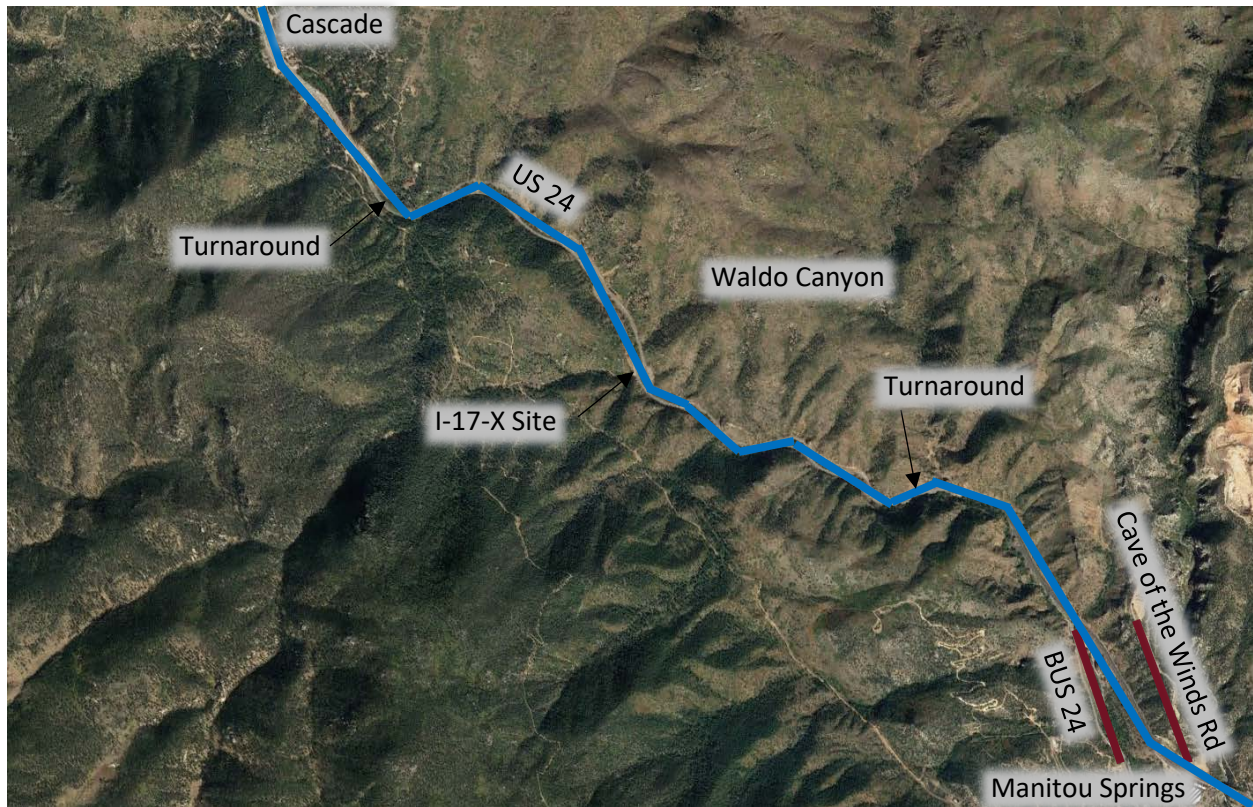
## Project Site

Structure I-17-X is at US 24 milepost 295.450 in El Paso County, Colorado, and crosses Upper Fountain Creek. Categorized as an E-X Expressway in the CDOT State Highway Access Code, US 24 traverses rolling terrain with a 45 mph posted speed limit. In the area of the structure, the highway is approximately 76 feet wide, with four 12-foot lanes and a depressed separation of opposing traffic with Fountain Creek running between the Eastbound and Westbound lanes. The structure location is used as a turnaround between opposing directions of travel. Prior to the Waldo Canyon Fire in 2012, the structure provided access to and from the Waldo Canyon Trailhead located on the east side of the roadway. This trailhead has been permanently closed and barricaded off. A gated off private dirt road extends to the west of the highway. No parking is allowed on either side of the highway. **Figure 1** shows the project area.

## Traffic Data

This segment of US 24 has a 2020 Annual Average Daily Traffic (AADT) of 28,000 vehicles per day, and a projected 2040 AADT of 34,160 vehicles per day, according to CDOT’s Online Transportation Information Systems (OTIS). Of these daily traffic volumes, 3.6% are heavy vehicles. This roadway has the capacity to accommodate 4,450 vehicles every hour, resulting in a volume to capacity ratio of 0.80. In the year 2040, the volume to capacity ratio results in 0.96.

A total of 71 crashes were recorded in the vicinity of the structure location (mileposts 294.88 to 296.02) between January 1, 2015 and December 31, 2019. Twelve crashes occurred near the structure itself during this time. Alcohol was reported to be involved in one of these crashes whereas the remaining crashes, no impairment was suspected. Three crashes were sideswipes of the same direction, two were caused by overturning, and two involved a guard rail. There does not appear to be any pattern of crash type, contributing factors, or impairment of drivers. The lack of any crash related pattern results in no specific modified design features.



**Figure 1: Vicinity Map**

### **Complete Closure During Construction**

Given that the structure is located off the mainline of US 24, and that the structure no longer provides property access to Waldo Canyon, only a complete closure for the duration of construction of the turnaround was analyzed. There are no property accesses (including Waldo Canyon Trailhead) along the north side of the highway between this structure location and the previous turnaround opportunity to the south (east) one mile away. The Pike National Forest mostly borders the highway along the north (east). Also, the property to the south of the highway, as potentially accessed by the structure, is private and gated. Therefore, very few northbound (westbound) vehicles are anticipated to use this turnaround. Similarly, there are no property accesses along the south side of the highway between this structure location and the previous turnaround opportunity 1.3 miles away. Therefore, very few southbound (eastbound) vehicles are anticipated to use this turnaround. Those intending to use this turnaround during construction, must continue 1.0 – 1.3 miles past this location in order to turn around. Left turn lanes will be closed to prohibit left turn movements at the structure location.

### **Conclusion:**

The recommended traffic control at this structure location, is a complete closure of the structure. Doing so should not impact mainline capacity however, a reduced speed to accommodate construction vehicles and worker safety is likely. Left turn lanes approaching the structure will be closed to prohibit left turn movements, and likely to accommodate construction activities.