



## Vasquez PEL Study CDOT CO 2701-040-21083 Draft Purpose and Need Dec. 1, 2016

The purpose of transportation improvements in the vicinity of I-270 and Vasquez Boulevard is to improve operations, mobility, and safety for vehicles and freight at the I-270/Vasquez Boulevard interchange—and its connection to the Vasquez Boulevard/56<sup>th</sup> Avenue and Vasquez Boulevard/60<sup>th</sup> Avenue intersections, on Vasquez Boulevard and the surrounding local road system—and improve transportation connectivity for all modes.

The need for operational improvements is based on several observations, and will be confirmed by modeling the existing and future traffic conditions and evaluating existing roadway geometry. There are poor levels of service at the interchange, mainly due to the substandard design of the cloverleaf configuration. This configuration leads to low ramp speeds and overlapping weaving of vehicles entering and exiting the freeway, especially with the large trucks. The operational issues create queues that extend across multiple intersections on Vasquez Boulevard, and weaving movements between the interchange and intersections cause turbulence in the traffic flow. Congestion created by this configuration also affects the travel-time reliability on I-270 and along Vasquez Boulevard.

Mobility improvements are needed to reduce out of direction travel, created by the missing northbound Vasquez to eastbound I-270 movement at the interchange. The missing ramp creates out of direction travel through the study area, especially for trucks that depend on the interstate to move freight. The close spacing of the interchange to the Vasquez Boulevard intersections with 56<sup>th</sup> Avenue and 60<sup>th</sup> Avenue impedes operations on Vasquez Boulevard. For through movement of freight traffic in the area, access to 56<sup>th</sup> Avenue from the interchange is critical. The close spacing and weaving segments make this movement difficult for large vehicles creating safety and operational issues.

According to safety analysis performed for the study area, crash rates are higher in the study area than state averages for similar facility types. The interchange configuration contributes to sideswipe and rear-end crashes in the ramp weave area on I-270 and Vasquez Boulevard, as well as to run-off-road crashes on the ramps. High levels of congestion on I-270 create speed differentials that result in the rate of rear end and sideswipe crashes being higher than expected for the segment of I-270 when compared to similar facilities statewide.

The majority of crashes on Vasquez Boulevard occur at the 56<sup>th</sup> Avenue and 60<sup>th</sup> Avenue intersections, where the rear-end and sideswipe crash rates are higher than state averages. The intersection of 56<sup>th</sup> Avenue experienced higher than expected frequency of severe crashes and total crashes.

There is a lack of adequate transit, pedestrian and bicycle facilities and connections in the study area, which leads to people without vehicles avoiding the study area, and being unable to get to the shopping centers, restaurants, schools, and recreational centers located along the Vasquez Boulevard corridor, or to connect to the Sand Creek Greenway trail. Transit facilities to support planned transit improvements in the corridor are lacking. Future redevelopment opportunities will create the need for better connections and better congestion management as traffic increases in the future.

The goals of the project include the following:

- Balance access between the transportation network and adjacent land uses.
- Minimize and mitigate impacts to the built environment consistent with local master plans.
- Effectively connect current and future modes and networks, including roads, bicycles, pedestrians, and transit.
- Improve the ability of freight and goods to efficiently travel through and within the area.
- Minimize or mitigate impacts to the natural environment.