



Santa Fe PEL C-470 to I-25

PURPOSE AND NEED

August 17, 2020

This segment of Santa Fe Drive (US 85) is located in the south Denver metropolitan area and is an important regional transportation corridor between downtown Denver and Douglas County as well as the other communities located along or served by this corridor. The Santa Fe corridor serves as an important connection for inter-regional travel and a route for commuter and local trips for residents and businesses in the growing area communities.

The study area for the Santa Fe PEL Study is defined as Santa Fe Drive from C-470 in Douglas County to the junction of Alameda Avenue and I-25 in City and County of Denver. The 11-mile highway corridor has a functional classification of Principal Arterial for the entire length of the study area with an access category of Expressway from C-470 to Florida Avenue and Non-Rural Principal Highway north of Florida Avenue. It varies in cross-section, surrounding character, and use, which creates differing issues for travelers that utilize some or all of the various sections of this regional travel corridor.

Purpose

The purpose of the recommended transportation improvements from this study is to improve safety for all users, improve operational performance, and enhance multimodal connectivity for the Santa Fe Drive corridor from C-470 to I-25 through Arapahoe County, City and County of Denver, Douglas County, Englewood, Littleton, and Sheridan.

Need

Transportation improvements are needed to address:

❖ Safety

- Vehicular
 - The most common crash types experienced along the corridor are related to congestion.
 - Over a three-year period from January 1, 2016 to December 31, 2018, there were 2,282 crashes on Santa Fe Drive from C-470 to Alameda Avenue. Rear end crashes were the most common crash type followed by sideswipe (same direction). These types of crashes are typically related to vehicular congestion.
 - Crashes along Santa Fe Drive are highly concentrated during the peak commuting periods at the signalized intersections of Mississippi Avenue, Dartmouth Avenue, Oxford Avenue, Bowles Avenue, and Mineral Avenue, due to congestion and queuing.
 - Over half of all recorded crashes occurred at or near intersections.
 - Intersections are dominated by rear end and sideswipe crash types that primarily occur on intersection approaches
 - The Mississippi Avenue intersection has the highest crash rate within the corridor.
 - Total crash rates on all segments of Santa Fe Drive (2.27 – 3.65 crashes/million vehicle-miles of travel) exceed the CDOT average rate for an expressway facility (1.62 crashes/million vehicle-miles of travel).
 - North of Dartmouth Avenue, fatal crashes (0.024 crashes/million vehicle-miles of travel) occurred more frequently compared to the CDOT average rate for a principal arterial (0.014 crashes//million vehicle-miles of travel). Ten fatal crashes occurred

along Santa Fe Drive and the majority of those crashes (seven crashes) occurred north of Dartmouth Avenue.

- Access
 - Areas with more frequent direct access driveways and public road intersections along Santa Fe Drive create speed differentials and turning conflicts.
 - The sections with more frequent direct access driveways and intersections along Santa Fe Drive see an increased proportion of rear end and angle crashes, and an increase in overall crash frequency, such as south of Bowles Avenue, south of Union Avenue, north of Dartmouth Avenue, and Iowa Avenue to Mississippi Avenue.

❖ **Operational Performance**

- Congestion and Travel Time Reliability
 - Drivers along the Santa Fe Drive corridor experience substantial delays and queues during commuter peak periods between 6am and 9am northbound, and 3pm and 7pm northbound and southbound.
 - Travel times during the AM and PM peak hours are up to 40% longer than the travel time to drive the corridor at free flow speeds.
 - Bottlenecks with congestion and long queues regularly occur at the signalized intersections at Mineral Avenue, Bowles Avenue, Oxford Avenue, Dartmouth Avenue, Alameda Avenue, and Mississippi Avenue, and approaching the I-25 interchange flyover. During peak travel times, congested segments reach up to three miles in length.
 - Providing pedestrian crossing times at the signalized intersections for the relatively wide roadway creates additional delay for drivers along Santa Fe Drive when pedestrians utilize the at-grade intersections to cross the corridor. A pedestrian crossing Santa Fe at an intersection as wide as Dartmouth increase the red time for Santa Fe traffic by up to one minute. Pedestrian activations also take the signal out of coordination for several cycles, impacting traffic flow up and down the corridor.
 - Congestion along the Santa Fe Drive corridor is expected to worsen by 2040 with longer recurring periods of delay and slower speeds, as well as new areas of congestion.
 - Traffic volumes are expected to increase by an average of 13% on the corridor, and up to 30% south of Mineral Avenue, due to local and regional population and employment growth.
 - Varying geometric characteristics along the Santa Fe Drive corridor, such as inconsistent driveway and intersection spacing, acceleration/deceleration lane design, median treatments, and the number of travel lanes, create traffic disruptions, particularly weaving maneuvers between intersections/interchanges and lane changes to/from the High Occupancy Vehicle (HOV) express lane during peak hours.
 - The existing HOV express lane creates operational issues with weaving maneuvers and lane changes due to the need for left turning traffic to utilize the lane, and the need for HOV express lane traffic to stop at the signalized intersections.
 - Congestion also occurs on Santa Fe Drive outside of typical peak commuting hours during 75% of weekdays with congestion due to community events, crashes, severe weather, freight rail crossing south of Oxford Avenue, and traffic diversion to Santa Fe Drive when other regional corridors (like I-25 and Broadway) experience congestion.
- Access
 - The inconsistent spacing and types of intersections and driveways contribute to operational issues along the Santa Fe Drive corridor.

- An example of this inconsistency, the types of intersection and driveway accesses in two segments of the corridor are:
 - In the two miles south of Belleview Avenue: 1 grade separated interchange, 4 at grade signalized intersection, and 26 driveway/street accesses (full movement and right-in/right-out)
 - In the two miles north of Hampden Avenue: 2 grade separated interchanges, 1 at grade signalized intersection, and 9 driveway/street accesses (all right-in/right-out)
- Individual private driveways and business accesses on Santa Fe Drive between C-470 and Florida Avenue are inconsistent with the corridor access category classification of Expressway and negatively impact corridor travel and operations with turning conflicts, speed differentials and does not meet the required public road intersection spacing of one mile in some segments.
 - The lack of a local roadway network to provide property access contributes to the frequency of private driveways and business access on Santa Fe Drive, particularly in Littleton south of Bowles Avenue, as well as on the west side of the corridor south of Union Avenue and north of Dartmouth Avenue in Englewood.
- Freight
 - The Santa Fe Drive corridor is a designated critical freight corridor serving regional freight movements between I-25 in Denver and areas south of C-470, in addition to serving local community freight needs directly along the corridor.
 - The percentage of truck traffic to the overall daily volume is 7.5% - 9.2%, which is higher than a typical urban principal arterial highway of approximately 2%.
 - Industrial and commercial land uses adjacent to the corridor between Belleview Avenue and Evans Avenue create heavy truck movements on and off of the corridor at the intersections of Union Avenue, Oxford Avenue, and Dartmouth Avenue, as well as at driveways and minor street accesses. These heavy trucks contribute to poor operational performance at these intersections.
 - The unreliable or unpredictable travel times along the corridor cause difficulty in trip planning and have negative impacts for freight operators.
 - Corridor stakeholders like the Colorado Motor Carriers Association express concern with trucks, like other vehicles, experiencing increased delays traveling along the corridor as traffic volumes and the associated congestion increase.

❖ Multimodal Connections

- Pedestrian and Bicycle
 - Santa Fe Drive lacks adequate facilities to accommodate pedestrian and bicyclist crossings of the highway with connections to area sidewalks, trails, and LRT stations.
 - With high traffic volumes and speeds plus a width of eight lanes or more, Santa Fe Drive is a barrier for pedestrian and bicyclist travel.
 - Various land uses along the Santa Fe corridor generate demand for walking and biking trips, including residential areas, LRT stations, Arapahoe Community College, employment centers, non-profit centers, community hubs, and recreational amenities such as the South Platte River, Mary Carter Greenway Trail, South Platte Park and Carson Nature Center, Overland Golf Course, and numerous nearby public parks. Because many of the origins and destinations of these trips are on opposite sides of the highway, conflicts occur at intersections due to insufficient pedestrian/bicycle facilities and limited crossing locations.

- The speed and volume of traffic and roadway width, combined with turn lanes, acceleration/deceleration lanes, and the parallel freight rail/LRT, hinder the ability of pedestrians and bicyclists to cross the highway.
- Lack of pedestrian and bicycle wayfinding within the Santa Fe Drive corridor area reduces the use and effectiveness of the multimodal facilities.
- Traffic congestion and speed combined with the lack of connected pedestrian and bicycle facilities create conflicts and uncomfortable conditions for pedestrians and bicyclists crossing the roadway and moving along the roadway where sidewalks exist.
- Transit
 - Lack of sidewalks and pedestrian crossing opportunities impact comfort and safety at bus stops on streets crossing Santa Fe Drive and along Santa Fe Drive such as at County Line Road and Mineral Avenue.
 - Bicyclist and pedestrian access to adjacent LRT stations is impeded by the lack of connections across the Santa Fe Drive corridor.

Project Goals

Additional goals of the recommended transportation projects for the Santa Fe Drive corridor are to:

- Consider local community surroundings and context
- Support local and regional planning efforts
- Minimize environmental impacts as practicable
- Balance local access and regional travel with consistent application of the defined access category for Santa Fe Drive
- Optimize transit use and multimodal travel opportunities for the travel corridor.
- Enhance connections and wayfinding to adjacent pedestrian and bicycle facilities
- Provide redundancy for the regional transportation system to accommodate traffic when incidents impact other north-south routes such as I-25, Broadway, or Federal.