CHAPTER 1
Purpose and Need

The Colorado Department of Transportation (CDOT), in cooperation with the Federal Highway Administration (FHWA) and other stakeholders, has prepared this Environmental Assessment (EA) to identify and assess potential transportation improvements at the interchange of US 6 (also referred to as 6th Avenue) and Wadsworth Boulevard (referred to as Wadsworth throughout this EA) and to Wadsworth north of the interchange. Additional supporting documentation for the study is in included in Appendix C. The *Traffic Study Report* (CH2M HILL, 2009a), also contained in Appendix C, provides more detail on the needs for the proposed action.

The project study limits, which are shown in Exhibit 1-1, includes US 6 from the eastern limit of the Wadsworth interchange ramps west to Garrison Street. On Wadsworth, the project limits are 4th Avenue to 14th Avenue. This area is a vital regional hub of the western Denver metropolitan area and the heart of the City of Lakewood (Lakewood).

1.1 PURPOSE OF THE PROPOSED ACTION

The purpose of the US 6/Wadsworth project is to improve traffic flow and safety, accommodate high traffic volumes, and increase multi-modal travel options and connections at the US 6 and Wadsworth interchange and along Wadsworth between 4th Avenue and 14th Avenue.

1.2 NEED FOR THE PROPOSED ACTION

The existing design and configuration of the interchange and roadway within the project limits have not kept pace with traffic and multi-modal travel demands. Improvements are needed to:

- Improve safety for motorists, pedestrians, and bicyclists
- Improve operational efficiency of the interchange and on Wadsworth
- Meet current and future traffic demands
- Support multi-modal connections

Exhibit 1-1 shows locations where these improvements are needed.

1.2.1 SAFETY

The proposed action is needed to improve traffic, pedestrian, and bicycle safety.

1.2.1.1 Traffic Safety

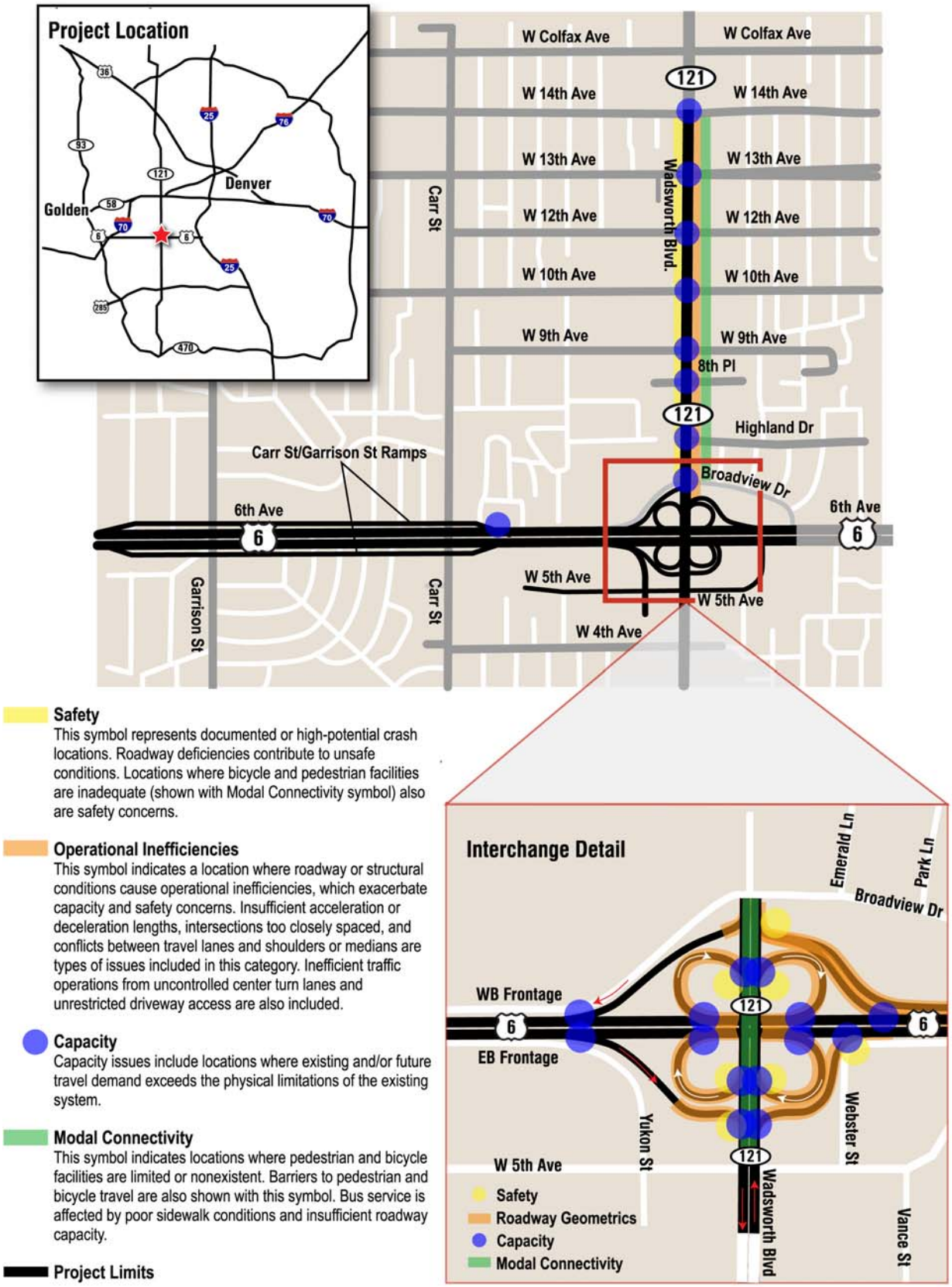
The US 6 and Wadsworth interchange is one of the highest accident locations in Lakewood. The interchange has been included on Lakewood's critical intersection list (for intersections with high potential for accidents) for every year between 2000 and 2006. In 2001 and 2003, the interchange topped Lakewood's list for most frequent accidents and was second for most severe accidents. Severe accidents include accidents with injuries or fatalities. The 13th Avenue intersection with Wadsworth also appeared on Lakewood's 2001 and 2003 critical intersection list.

Accidents along Wadsworth between 4th and 14th Avenues also are frequent. Unrestricted access and uncontrolled center turn lanes increase the probability of accidents.

As discussed in the Traffic Study Report (CH2M HILL, 2009a), many of the accidents in the study area occur because of congestion and substandard roadway design features. The following list describes the most common accident types in the study area and their likely cause(s):

- Rear-end accidents – related to congestion and multiple access points
- Crashes with fixed objects – related to ramp curvature
- Sideswipes when both vehicles are moving in the same direction – related to short weaving and lane-changing zone maneuvers

EXHIBIT 1-1: PROJECT LOCATION AND AREAS NEEDING IMPROVEMENTS



Source: CH2M HILL, 2009a

- Rollover accidents – related to ramp curvature
- Left-turn accidents – related to multiple access points and ineffective or insufficient traffic control
- Head-on collisions and sideswipes when vehicles are traveling in opposite directions – related to side-by-side left-turn lanes and multiple access points

1.2.1.2 Pedestrian and Bicycle Safety

High traffic volumes, deficient sidewalks, and limited crossing locations create safety concerns for pedestrians and bicyclists traveling through the study area. The interchange area presents a particular challenge. Crossing of US 6 is limited to the east side of Wadsworth because no sidewalk or path is present on the west side. Even where there is a sidewalk on the east side of Wadsworth, pedestrians and bicycles must cross four high-volume, free-flow on- and off-ramps. In these locations, drivers do not expect to encounter pedestrians or bicyclists and do not have time to react when they are present. The high volumes of traffic, especially during peak periods, do not provide adequate gaps in traffic for pedestrians and bicyclists to cross the ramps.

The lack of access control along Wadsworth contributes to pedestrian and bicycle safety concerns. Along Wadsworth, pedestrians and bicyclists must cross many driveways, and drivers turning into and out of these driveways are often focused on entering or exiting Wadsworth traffic and are not attentive to potential pedestrian conflicts.

Many pedestrians make unsafe mid-block crossings because there are no signalized pedestrian crossings between 5th and 10th Avenues. These mid-block crossings are particularly hazardous because pedestrians often must cross one direction of traffic and wait in between side-by-side turn lanes for an adequate gap in traffic from the opposite direction.

Along Wadsworth, discontinuous and narrow sidewalks result in dangerous situations for pedestrians and bicyclists, sometimes even forcing them into the travel lanes. Sidewalk facilities are discussed in more detail in Section 1.2.3.1.

1.2.2 CAPACITY AND OPERATIONS

US 6 carries approximately 122,000 vehicles daily as measured by traffic counts taken in 2007 (see Exhibit 1-2). Existing average daily traffic (ADT) south of US 6 on Wadsworth is approximately 65,700 vehicles, while north of US 6 the ADT is about 50,800 vehicles. Existing traffic operations in the study area were evaluated to determine the level of congestion during the morning and evening hours of peak traffic use (called peak hours). By 2035, the ADT on US 6 is projected to climb to approximately 153,000 vehicles.

EXHIBIT 1-2: EXISTING AND FORECAST DAILY TRAFFIC VOLUMES

Location	2007 ADT	Projected 2035 ADT
Wadsworth south of 10th Avenue	50,800	62,600
Wadsworth south of 5th Avenue	65,700	80,900
US 6 east of Wadsworth	123,000	153,900
US 6 west of Wadsworth	122,300	153,000

Source: CH2M HILL, 2009a

Congestion is measured by level of service (LOS) ratings. The highest level (LOS A) describes free-flow conditions in which vehicles experience minimal delay. The lowest level (LOS F) describes stop-and-go conditions in which long delays are experienced by most vehicles in the traffic stream.

1.2.2.1 Interchange Area

Most of the interchange ramps currently operate at unacceptable levels (LOS E or F) during peak hours. Vehicles do not have adequate distance to accelerate or decelerate when entering or exiting US 6, which causes slowing in the through lanes on US 6. The proximity of the Carr/Garrison Street on/off-ramps and the on/off-ramps to the Wadsworth interchange does not allow adequate acceleration or deceleration at either location.

The US 6 and Wadsworth interchange was constructed in the early 1960s. Although it served the development

and traffic conditions when it was constructed, its tight cloverleaf configuration can no longer effectively handle current or future traffic demands. In addition to a structurally deficient bridge deck that needs to be repaired, the interchange does not operate effectively because traffic volumes exceed its original design function.

The lengths of auxiliary lanes that allow vehicles to accelerate and decelerate when entering or exiting the highway (referred to as acceleration and deceleration lanes) for all exits and entrances to US 6 and Wadsworth are too short to allow cars to efficiently enter or exit high-speed traffic on US 6. Weaving conflicts (areas where two traffic streams must cross one another to enter or exit the road) between the loop ramps are an inherent problem with cloverleaf-type interchanges. This conflict zone is more pronounced in the US 6/Wadsworth interchange because of the high volume of traffic trying to make weaving maneuvers coupled with the very short distance (the length of the bridge) drivers have in which to make them.

The off-ramps do not provide adequate distance for cars to decelerate, and alignments limit visibility of queued cars (backup of stopped vehicles), which lead to increased probability for rear-end collisions. The ramp intersections do not provide adequate turning radii for buses or large trucks, which in certain cases cause the back wheels to “hop” the curb and encroach into sidewalk areas.

Close spacing between frontage road intersections and interchange ramps does not provide adequate distance or gaps for vehicles to merge or cross traffic on Wadsworth. Negotiating these conditions requires drivers to slow their speeds through the interchange area, which further limits the capacity of the interchange and adversely affects through traffic on both US 6 and Wadsworth.

1.2.2.2 Wadsworth

A lane imbalance exists on Wadsworth within the study area where there are four through lanes between 4th and 14th Avenues, compared to the six travel lanes provided immediately north and south. Lane imbalance contributes to congestion in through lanes and poses safety concerns from lane changes.

The four-lane cross section on Wadsworth north of US 6 operates at an unacceptable service level (LOS E). Cross streets at most intersections also operate at poor LOS. Due to the heavy through traffic and poor operations on Wadsworth, vehicles on cross streets and driveways are forced to wait long periods and are often forced to pull into small gaps in traffic.

North of US 6, the large number of driveways and unrestricted medians encourage uncontrolled turns across Wadsworth that both increase potential for conflicts (and accidents) and disrupt traffic flow. Side-by-side opposing left-turn lanes introduce multiple conflict points and create confusion because of the uncertainty of when and where drivers will enter the median lane(s). In addition, vehicles stopped in the turn lanes block the view of traffic in the through lanes, resulting in drivers making unsafe turns across through traffic. All of these conditions contribute to turbulence in the mainline Wadsworth traffic flow and reduce its capacity.

Residents have voiced concern about traffic flow through neighborhoods and desire lower speeds and less traffic. Although traffic counts taken on surrounding neighborhood streets do not indicate a speeding problem or unduly high volumes, reducing neighborhood cut-through traffic is an important community value supported by the project. The configuration of the one-way frontage roads near the interchange limits access to commercial properties along the frontage roads and may contribute to cut-through and higher-speed traffic on neighborhood streets.

1.2.3 MODAL CONNECTIVITY

Automobiles, trucks, pedestrians, bicyclists, and buses travel along Wadsworth, and Wadsworth lacks adequate facilities to accommodate safe and efficient travel.

1.2.3.1 Pedestrian and Bicycle Facilities

Local and regional plans identify the need for pedestrian and bicycle improvements to Wadsworth

and its crossing of US 6. (Local plans are discussed in Section 3.7, Land Use). These needs will become more critical as the volume of pedestrian and bicycle travel increases after the opening of the West Corridor light rail transit (LRT) station. The need to improve pedestrian and bicycle conditions within the study area was one of the most frequently identified public concerns during the EA process.

Within the study area along Wadsworth, approximately 50 percent of the sidewalk on the east side and 85 percent of the sidewalk on the west side are nonexistent or in substandard condition. Substandard conditions include sidewalks that are too narrow, not buffered adequately from travel lanes, and contain obstacles such as curbs, signs, or utility poles in the traveled way. Some of the sidewalk conditions are illustrated in Exhibits 1-3 and 1-4.

EXHIBIT 1-3: MISSING SIDEWALKS AND OBSTRUCTIONS NEAR 5TH AVENUE

EXHIBIT 1-4: MISSING SIDEWALK SEGMENT SOUTH OF 12TH AVENUE

The existing sidewalks in general are often too narrow to accommodate both pedestrian and bicycle use. Vehicular lanes are not conducive to bicycle travel because of the high traffic volumes and speeds, and lack of shoulders or bike paths. In spite of these deficiencies, Wadsworth is an important component of bicycle mobility in Lakewood because it offers the only opportunity for bicycles to cross US 6 in the 2.5-mile stretch between Sheridan Boulevard and Garrison Street.

The only pedestrian and bicycle crossing of US 6 is located on the east side of Wadsworth. There is no sidewalk on the west side.

1.2.3.2 Transit Operations

Existing transit service on US 6 and Wadsworth in the study area includes local, limited, and express bus routes operated by the Regional Transportation District (RTD). RTD also plans to implement light rail transit through residential neighborhoods along 13th Avenue as part of the West Corridor project. A large park-n-Ride is also planned at Wadsworth and 13th Avenue. Construction of the West Corridor began in Spring of 2007 and is anticipated to be completed in early 2013. Once light rail is implemented, bus frequency on Wadsworth is expected to increase four-fold, from four buses per hour today to 16 buses hourly.

Buses, like other vehicles, will experience increased delays traveling through the study area as traffic volumes increase. Buses also contribute to congestion by regularly stopping in the outside through-traffic lane, causing a temporary reduction in roadway capacity.

Public Comments Support Project Needs

"Improve traffic flow onto and off of 6th Avenue. Avoid the circles to get onto 6th Avenue. That is pretty scary going west from Wadsworth at 7:15 [a.m.]."

"Improv[ing] bicycle/pedestrian access under 6th Avenue is of the utmost importance. A sidewalk adjacent to Wadsworth is inadequate – there needs to be a buffer zone between Wadsworth and the bike/pedestrian path."

"Left turns [across Wadsworth] are dangerous, and traffic sometimes prevents even right turns."

"Double yellow lines do not work to control illegal turns into multiple driveways."