

CHAPTER 4
PEDESTRIAN
NETWORK



4.1 - KEY ISSUES

People who walk and use assistive mobility devices in Adams County face several key challenges when navigating the pedestrian environment. First, along arterials such as Federal Boulevard, Washington Street, West 84th Avenue, pedestrians encounter relatively narrow sidewalks directly abutting high volumes, high speed vehicle traffic, frequent curb cuts, and wide crossings at intersections. Many of these arterials are key travel corridors and hotspots of commercial activity, but the high-stress pedestrian environment dissuades people who might otherwise walk or puts those are foot-reliant in uncomfortable situations.

Additionally, sidewalk connectivity poses issues for users walking as transportation. Many sidewalks in the County have missing gaps, requiring users to walk along the shoulder or grass alongside a roadway. These sidewalk connections and safe crossings are especially important near key destinations such as bus stops and commuter rail stations so that transit riders can comfortably access transit. For example, around the Pecos Junction Station, there are sidewalks present along North Pecos Street and the West 62nd Parkway, but no crosswalks for someone beginning their journey on the west side of Pecos Street to reach West 62nd Parkway, and no crosswalk for someone on the sidewalk on the north side of West 62nd Parkway to cross to the south to enter the transit

station. Along Washington Street and East 104th Avenue, transit riders must navigate deficient sidewalks, sidewalk gaps, and attached sidewalks that force them to wait for the bus directly alongside heavy traffic.

Finally, because Adams County abuts seven counties and has 17 member jurisdictions, both incorporated and unincorporated, implementing a more connected sidewalk network will require cross jurisdictional collaboration. For roadways such as Federal Boulevard, Pecos Street, and Washington Street that cross multiple jurisdictions, and for roadways under CDOT's jurisdiction, Adams County will need to build relationships and leverage partnerships in order to implement large projects and create a consistent experience for users.

4.2 - BIG IDEAS

The main goals for the pedestrian element of the Transportation Master Plan are to:

Complete sidewalk gaps in high priority pedestrian areas:

Adams County should prioritize the completion of missing sidewalks in locations where there are no facilities but where facilities are required by street standards (per **Chapter 3**).

Rehabilitate existing sidewalks:

This includes replacement of damaged sidewalks and widening of substandard sidewalks.

Rebuild curb ramps to comply with ADA:

Implement new curb ramps and upgrade existing curb ramps to ensure that they are ADA-compliant. This investment should be completed according to the prioritization tiers identified later in this chapter.

Implement new enhanced pedestrian street crossings:

Once key crossing locations are identified based on community concern and the prioritization process defined in this chapter, determine appropriate crossing treatments based on the vehicle volume, vehicle speed, and pedestrian volume.

Consider use of facilities by equestrians:

People riding horses may wish to travel in Adams County or connect to the trail network. Appropriate design considerations should be made, especially on key corridors, to accommodate these users.

4.3 - SIDEWALK UPGRADE PRIORITIZATION METHODOLOGY

The Transportation Master Plan prioritizes sidewalk projects using a data-driven approach to determine those needed most and with the greatest likely return on investment. The framework acknowledges the County has limited funding for sidewalks and identifies the most critical sidewalk gap completion and rehabilitation projects.

To determine the highest priority missing sidewalks in Adams County, missing sidewalks were evaluated on several factors related to access to transit, recreation, key destinations, and safety in order to objectively identify the most important segments for pedestrian connections. The methodology for this analysis built off of the ADA Transition Plan and Making Connections Plan, with the addition of criteria and background data that aligns with the Comprehensive Plan. This analysis was conducted for all roadways, regardless of whether sidewalks already existed there, and also for roadways specifically missing sidewalks. This determines both the highest need for upgrading existing sidewalks and highest need for constructing new sidewalks where they are missing. Priority areas were determined through a spatial analysis consisting of the factors in **Table 4.1**. Some factors of higher importance were given a higher weight, as shown in the 'weight' column. The areas with the highest scores were given the highest priority for pedestrian improvement. The results of this analysis are shown in **Map 4.1**. Each tier of projects is then prioritized as illustrated in **Figure 4.1**.

Within each of these six categories, the County should review and prioritize specific locations for gap completion or rehabilitation annually and on a case-by-case basis. In addition to the designated tier, decision makers should also consider the following

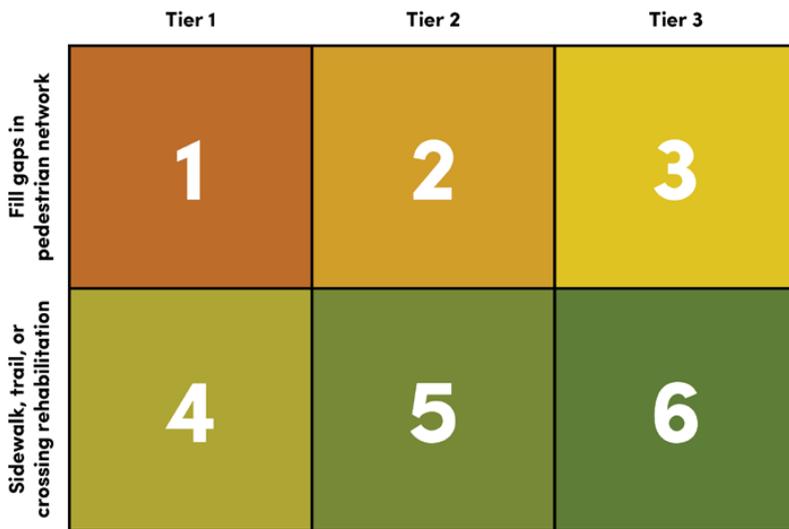


Figure 4.1: Illustration of Pedestrian Prioritization Methodology (Source: Fehr & Peers)

factors that may shift when a sidewalk is completed, regardless of its tier:

- Is there new development and/or a willing property owner adjacent to the sidewalk location?
- How/when does this location tie into the street paving/rehabilitation schedule?
- Is there a funding source available such as a Safe Routes to School grant?
- Could partnerships be formed with local entities to perform upgrades?

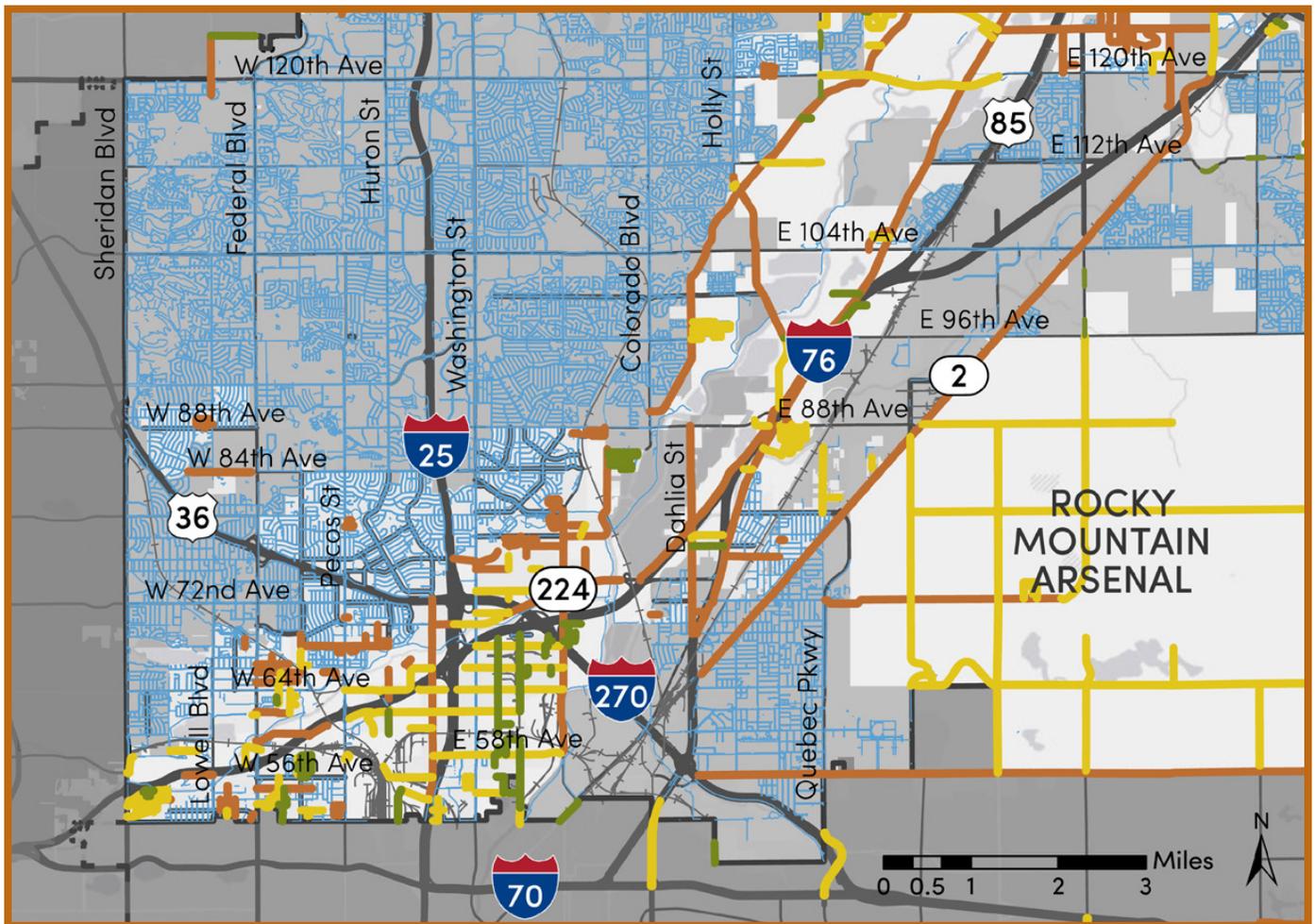
TABLE 4.1: SIDEWALK UPGRADE PRIORITIZATION INPUTS

INPUTS	HOW EACH CORRIDOR WILL BE SCORED	WEIGHT
Proximity to bus stops	1 - if within ¼ mile of bus stop 0 - if not	2
Proximity to commuter rail stations	1 - if within ½ mile of commuter rail station 0 - if not	2
Proximity to parks/open space	1 - if within ¼ mile of a park 0 - if not	1
Proximity to trail access points	1 - if within ¼ mile of trail access point 0 - if not	1
DRCOG Urban Centers	1 - if within DRCOG Urban Center 0 - if not	1
Proximity to key destinations (hospitals/urgent care, public libraries, grocery stores, rec centers)	2 - if within ¼ mile of 2+ key destinations 1 - if within ¼ mile of 1 key destination 0 - if not	1
Proximity to schools, including early learning centers	2 - if within ½ mile of 2+ schools 1 - if within ½ mile of 1 school 0 - if not	2
Frequency of bike and pedestrian related crashes along corridor (2013-2018)	2 - 6-11 bike and pedestrian related crashes within 100 feet of corridor, or any fatal or serious injury bike and pedestrian crashes within 100 feet of the corridor 1 - 1-5 bike and pedestrian related crashes within 100 feet of corridor 0 - 0 bike and pedestrian related crashes within 100 feet of corridor	2

MAP 4.1: TIERED PEDESTRIAN PRIORITY AREAS



- Adams County Boundary
- Incorporated Places Adams County
- Existing Sidewalks
- Tier 1 (High Priority Missing Sidewalks)
- Tier 2 (Medium Priority Missing Sidewalks)
- Tier 3 (Low Priority Missing Sidewalks)
- Sidewalks Not Required



4.4 - PEDESTRIAN CROSSINGS

Safe pedestrian crossings are critical to the comfort of the overall pedestrian network. Pedestrian networks are only as comfortable as their least comfortable link which in many cases are roadway crossings. There are two basic categories for pedestrian crossings—controlled crossings and uncontrolled crossings. A controlled crossing is a crosswalk across a roadway that is controlled by a stop sign or traffic signal. Controlled crossings are typically installed on roadways with higher vehicle volumes and vehicle speeds such as arterials or collectors. An uncontrolled crossing is a crosswalk where vehicle traffic is not controlled by a stop sign or traffic signal. Uncontrolled crossings are typically located on local roadways where vehicle volumes and speeds are relatively low. The specific treatments at both controlled and uncontrolled crossings (marked crosswalk, signage, flashing beacons, etc.) should be determined using national best practices. For example, the National Association of City Transportation Officials' (NACTO) Urban Street Design Guidelines include important considerations and recommendations for designing safe and comfortable pedestrian crossings for both controlled and uncontrolled crossings. The FHWA and USDOT developed the Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations. This document details the best practices used across the country

for building safe and comfortable uncontrolled crossings. It summarizes criteria for pedestrian uncontrolled crossings and details procedures for evaluating the types of crossing treatments that may be applicable for a particular set of vehicular volumes, speeds, and roadway geometries. Creating safe and appropriately spaced roadway crossings is an important component of a complete pedestrian network. Both proactive and reactive approaches are key to a comprehensive pedestrian crosswalk safety strategy.

4.4.1 - REACTIVELY ADDRESSING PEDESTRIAN CROSSING LOCATIONS

Reactive approaches to improving pedestrian crossing locations include responding to a request or concern expressed by community members about a particular crossing location or identifying needed safety improvements based on a location's history of severe or fatal crashes. To address these identified concerns, County staff can refer to the Guide for Improving Pedestrian Safety at Uncontrolled Crossing Locations provided by the FHWA, or the Urban Street Design Guidelines created by the NACTO to determine what treatment type is appropriate at each location. The County should also consider developing or adopting its own standards for pedestrian crossings. Treatment type is based on vehicular traffic volume, speed limit, and number of travel lanes.



Treatments to consider include high visibility crosswalks markings, raised crosswalks, signage, curb extensions, pedestrian refuge islands, beacons such as Rectangular Rapid Flashing Beacon (RRFB) or Pedestrian Hybrid Beacon (PHB), or road reconfigurations (also known as road diets). Additionally, the crash profiles detailed in DRCOG's Taking Action on Regional Vision Zero plan can be helpful in linking common crash types to safety improvements. Responding to these issues is an important part of improving the pedestrian network but must be in balance with proactively addressing unsafe crossing locations before severe or fatal crashes can occur.

4.4.2 - PROACTIVELY ADDRESSING PEDESTRIAN CROSSING LOCATIONS

The sidewalk completion prioritization in **Table 4.1** should be applied to prioritization of crossing enhancements as well. Proactive approaches to investigating street crossings could include walking audits, fieldwork, and community outreach to identify pedestrian safety, connectivity, or comfort issues that may not be evident in reported crash records or specific requests from the community. Once crossing locations that are missing or in need of upgrades are identified (starting with Tier 1), each crossing should be assigned a priority score. This score could be based on the peak hour pedestrian crossing volume and the corresponding

conflicting vehicular volume, divided by the project's cost. Locations with the highest score should be prioritized for planning and implementation.

$$\text{Score} = (\text{Pedestrian volume} \times \text{Vehicle volume}) / \text{Project cost}$$

Adams County can also identify priority safety projects based on high-risk roadway features that correlate with particularly severe crash types. This systemic safety approach goes beyond spot treatments where previous crashes have occurred to identifying locations across the system that have the highest potential for future severe crashes. Other factors to consider in identifying and prioritizing crossing locations include proximity to key destinations such as parks or schools, number of vulnerable users (such as school-aged children), and roadway geometry. Additionally, Adams County should adopt pedestrian crossing standards to ensure all future intersections or midblock crossings that are built are in line with national best practices for safe and comfortable crossings for all users).

4.4.3 - PEDESTRIAN AND BICYCLE GRADE SEPARATED CROSSINGS

Grade separated crossings are dedicated crossing facilities for people walking and people biking. Grade separated crossings can be designed as over-passes (bridges) or underpasses (tunnels). Grade separated crossings create a low

Figure 4.2:
Illustration of the Components of the Safe Systems Approach
(Source: Fehr & Peers)

stress connection across roadways allowing people walking and people biking to cross without having to navigate vehicle traffic. These crossing types are an essential component of Safe Systems (**Figure 4.3**), which is an evidenced-based approach defined by FHWA to reduce fatal and severe traffic crashes. The Safe System acknowledges that people

make mistakes. A Safe System helps communities design transportation networks that ensure inevitable mistakes made by roadway users do not result in fatalities. Factors to consider include:

Speed

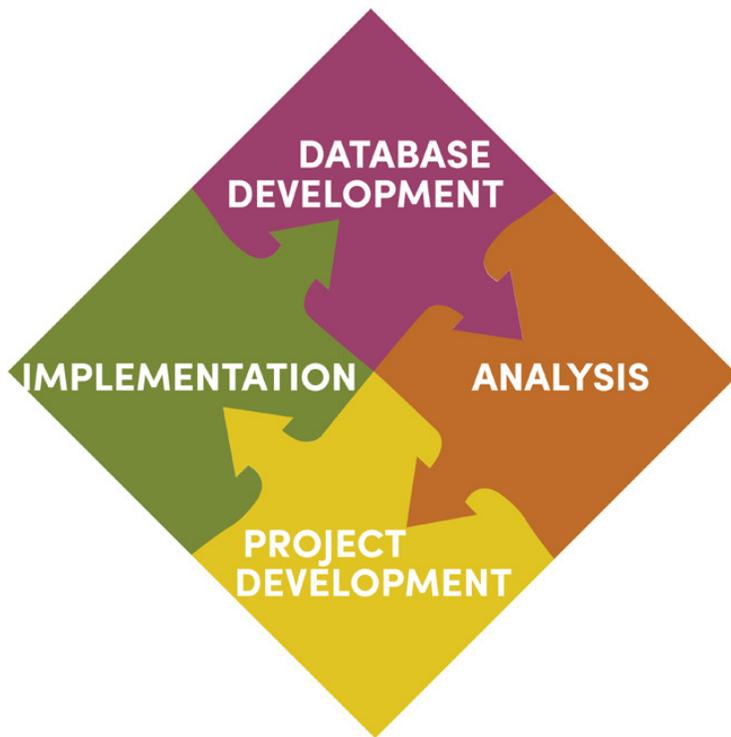
Candidates for grade separated crossings include streets operating at or above 35 mph. As shown in **Figure 4.3**, fatalities increase significantly as speed increases.

Facility type

The weakest link approach conveys that a walking experience will be negatively altered by the most stressful point in a trip, typically at a roadway crossing. Investing in grade separated crossings where trails and paths cross arterials extends the low stress facility across the roadway.

Users

Grade separated crossings are valuable to people of all ages and abilities. Grade separated crossings can be located where children are present, including at destinations such as schools, parks, and libraries. Grade separated crossings also



- Collisions
- Safety concerns
- Crowdsourcing
- Roadway characteristics
- Land uses
- Demographics



- Collision landscape
- Collision profiles
- Systemic typologies
- Countermeasure selection



- Benefit / cost
- Community support
- Prioritization
- Concept plans



- Grant applications
- Interim design
- Final plans
- Evaluation



ensure a safe and low stress crossing opportunity for older adults, those with mobility challenges, and others who may have trouble crossing high-speed, high-volume roadways at grade.

4.5 - CONNECTIONS FOR EQUESTRIAN USERS

Adams County has a prominent culture of equestrian users that wish to travel on roadways or access trails. The County should understand the design considerations for these unique users and key corridors that might provide desired access. Equestrians are encouraged to use the multiuse trail network but may need to access trails by connecting on the roadway. A wide sidewalk, at least ten feet, is recommended to provide space between people walking and biking

and horses. If there is right-of-way, a parallel soft surface trail provides an ideal surface and separation for people riding horses. Barriers improve safety for all trail users—they can prevent a scared animal from running into the path of others. The barrier must be sturdy and tall (at least 54 inches) enough to gain a horse’s respect or the animal may attempt to run through or jump over it. Additional push buttons can be located at a height accessible to those on a horse—on average 70 inches above ground level.

One specific corridor to consider implementing these design considerations is Washington Street. Washington Street provides a key connection to the Western Stock Show and the South Platte Trail.

Figure 4.3: Correlation Between Vehicle Speed and Fatality (Source: ITE)

