

Denver Moves: Pedestrians & Trails



DENVER
THE MILE HIGH CITY



JANUARY 2019



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GLOSSARY

At-grade crossing – a level street crossing for pedestrians or for a trail (as opposed to a bridge or tunnel).

Amenity zone – in urban settings, the space between the back of curb and edge of sidewalk that includes tree planters, street lighting, street furniture, public art, etc.

Arterial, collector or local street – a common street classification system; arterial streets carry the most people and have the least access while local streets have the most access and carry the fewest people.

Bikeway (on-street) – a street with a designated facility for biking, such as a neighborhood greenway or bike lane.

Census Tracts, Block Groups or Blocks – statistical subdivisions of a county or city per the U.S. Census Bureau.

Complete Network – nearly all of the projects the city could complete to improve walkability or to create a world-class trails system.

Curb ramp – a ramp between the sidewalk and street.

Grade-separated crossing – a street crossing for pedestrians or for a trail that is not level with the street, such as a bridge or tunnel.

High Injury Network – established by Vision Zero, the 5% of Denver streets that account for 50 percent of traffic deaths.

Parklet – a sidewalk extension that provides more space and amenities for people using the street.

Pedestrian Demand Index – an approximation of pedestrian demand across the city.

Pedestrian Hybrid Beacon (PHB, or HAWK) – a traffic control device with two red balls above a single yellow ball that is designed to help pedestrians safely cross busy streets.

Pedestrian Priority Areas – areas where land use, built environment and demographic factors contribute to high levels of walking.

Pedestrian realm – the combined space from the back of curb to the edge of right-of-way, including the sidewalk and tree lawn or amenity zone.

Rectangular Rapid Flash Beacon (RRFB) – a traffic control device with two yellow rectangles that flash rapidly that is designed to help pedestrians safely cross moderately busy streets.

Right-of-way – an area of land owned or controlled by the city for the purposes of constructing, operating and maintaining public facilities such as streets, alleys, sidewalks, bike paths, utilities or other public infrastructure.

Shared space – a right-of-way design approach that minimizes separation between travel modes.

Singletrack trail – an unpaved trail, usually only wide enough for one user at a time.

Skills course – areas with challenge features for people biking such as berms, rocks, logs or ramps.

Trail – a facility for the exclusive use of people biking, walking, or skating; trails are usually located in their own right-of-way rather than in a right-of-way shared with a street.

Tree lawn – in less urban settings, the space between the back of curb and edge of sidewalk that includes a grass lawn and trees.

Typology – a classification according to a general type.

Uncontrolled pedestrian crossing – an at-grade crossing for pedestrians where drivers are not controlled by a STOP sign or traffic signal.

WALKscope – an online data collection tool developed by WalkDenver and PlaceMatters.

EXECUTIVE SUMMARY

Denver Moves: Pedestrians & Trails is a long-term, community-developed, and financially unconstrained plan for achieving a vision for walking and trails in Denver.

This plan was developed through the *Denverright* process and was coordinated with other relevant already-established and developing plans. Significant effort was made through *Denver Moves: Pedestrians & Trails*' development to ensure a high degree of integration between the pedestrian, bicycle, trails and transit networks. *Denver Moves: Pedestrians & Trails* identifies priorities for projects, policies and programs so that elements of the community-developed vision can be achieved as quickly and efficiently as possible.

For pedestrians, *Denver Moves: Pedestrians & Trails* identifies a Complete Network of new sidewalks, widening of existing sidewalks, at-grade crossings of streets and grade-separated crossings of major barriers such as freeways, railroads and rivers. Many design treatments contribute to a highly walkable environment, including geometric treatments, traffic signal treatments and streetscape treatments. *Denver Moves: Pedestrians & Trails* focuses on the most essential elements of a transportation system for people walking. This plan identifies the overall cost for each of these elements, along with implementation priorities. The total cost of each of these elements is:

- To complete missing sidewalks – approximately \$273 million
- To widen existing sidewalks that are too narrow – approximately \$828 million
- At-grade crossing improvements (crosswalks, beacons, signals, etc.) – approximately \$80 million

- Grade-separated crossing improvements – approximately \$139 million

For trails, *Denver Moves: Pedestrians & Trails* identifies a Complete Network of new paved trails, new singletrack trails, widening of existing trails and new and upgraded trail connections and street crossings. New and widened trails are proposed according to new trail design guidelines; these guidelines are based on national best practices and can later be adopted as standards. The total cost of each of these elements is:

- To complete new paved trails – approximately \$20 million.
- To complete high-priority connections and crossings – approximately \$110 million.
- To complete new singletrack trails and widen existing trails – approximately \$225 million.
- To complete later-priority connections and crossings - \$45 million.

Although these costs are high, having an understanding of the total cost is critical for the city to identify annual funding levels to achieve the community's vision for a walkable Denver and for a world-class trails system.

The city will use these plans to identify new capital-funded projects, grant funding opportunities and, in some cases, General Obligation Bond projects.

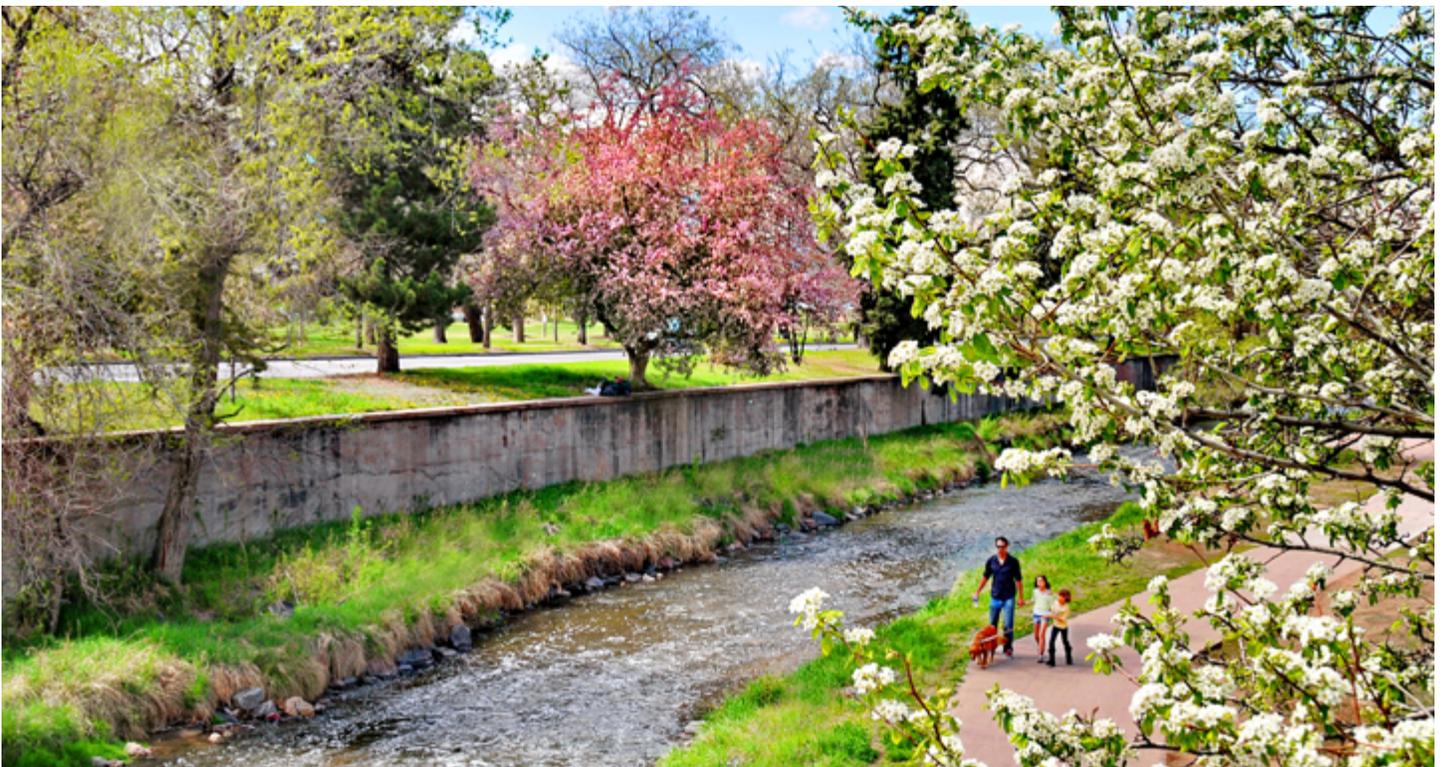
Both the pedestrians and trails elements include a variety of other useful elements and recommendations, such as planning tools, design guidelines and policy and program action plans.



INTRODUCTION

PLAN PURPOSE

Denver Moves: Pedestrians & Trails is a long-term, financially unconstrained plan for achieving a vision for walking and trails in Denver. That vision was developed and refined by people who live, work and play in Denver through an 19-month process from May 2016 to December 2017. Several City and County of Denver departments, including Public Works, Parks & Recreation, Community Planning and Public Health & Environment, will use *Denver Moves: Pedestrians & Trails* over time to implement projects, policies and programs. *Denver Moves: Pedestrians & Trails* identifies priorities for projects, policies and programs so that elements of the community-developed vision can be achieved as quickly and efficiently as possible. Achieving the vision identified in this plan will take many years, and, as Denver evolves over time, periodic updates to *Denver Moves: Pedestrians & Trails* may be appropriate.



PLAN CONTENTS

Denver Moves: Pedestrians & Trails includes separate pedestrian and trails elements. Although these elements are described separately, efforts were made through their development to ensure their integration with each other and with *Denver Moves: Bicycles* and *Denver Moves: Transit*.

In addition to identifying projects, policies and programs for pedestrians and for trails, *Denver Moves: Pedestrians & Trails* includes several components that can stand alone but serve as a critical building block to this plan:

- Pedestrian Priority Areas – these are being defined by *Blueprint Denver* and represent areas where land use, built environment and demographic factors contribute to high levels of walking. They inform how a street’s design and operations should differ to serve high levels of walking.
- Pedestrian Demand Index – this is an approximation of pedestrian demand that the city can use to inform regular prioritization of pedestrian infrastructure, including for annual budgeting. The Pedestrian Demand Index is more detailed than Pedestrian Priority Areas in regards to how pedestrian demand levels vary throughout the city.
- Sidewalk types – sidewalk types address how sidewalks should be designed when meeting the city’s standards is not feasible or when planning or designing in Pedestrian Priority Areas. Future changes to the city’s design standards, rules and regulations or policies can incorporate these sidewalk types.
- Trail design guidelines – the Parks & Recreation Department will strive to achieve these design guidelines

through new trail construction and trail retrofits; upon approval by the Parks & Recreation Department these can become trail design standards.

- A policy and program action plan for pedestrians and trails – City policies or programs have a significant effect on walkability and trail infrastructure; refinements to these policies and programs ensures that they promote this plan’s vision. Changes to these policies and programs are beyond the scope of this plan so an action plan is provided so these changes can happen over time.
- Conceptual designs of high-priority trail projects – the Parks & Recreation Department will use these conceptual designs to program projects into future budgets and as a starting point for high-priority project designs.
- Key messages for a future education and outreach.
- Recommendations for how to monitor progress for both pedestrians and trails.
- Recommendations for how to integrate this plan into the *Neighborhood Planning Initiative*.

Appendix A includes the maps that are referenced throughout this plan.



RELATIONSHIP TO OTHER PLANS

Various plans lay the foundation for a multimodal street system with high-quality pedestrian infrastructure and a world-class trails system. The city's *Strategic Transportation Plan*, completed in 2008, recognizes the importance of moving people, not just cars. The city's *Climate Action Plan*, completed in 2015, promotes walking and biking as a means to reduce greenhouse gas emissions and improve public health. *Blueprint Denver*, the city's coordinated land use and transportation plan, encourages expanded transportation choices to improve quality of life.

Denver's Mobility Action Plan (July 2017) has a Strategic Goal of a combined bike and pedestrian commute mode share of 15 percent. Pedestrian and trails infrastructure and programs are critical for meeting this Strategic Goal.

Whereas these plans set the policy direction for Denver's transportation system, Denver Moves plans are implementation-focused and provide direction as to how the city will achieve those policies. Denver Moves provides this direction through mode-specific plans that, through public engagement, identify specific projects and implementation strategies. *Denver Moves: Bicycles* was the first such plan developed. *Denver Moves: Pedestrians & Trails* was developed to be consistent with both *Denver Moves: Bicycles* as well as the forthcoming *Denver Moves: Transit*.

DENVERIGHT

Denver Moves: Pedestrians & Trails is one of four plans developed concurrently through the *Denverright* process, a long-term and comprehensive planning process initiated in 2016 that also includes updates to *Blueprint Denver*, updates to *Game Plan* (the city's master plan for parks and recreation), and the first-ever creation of *Denver Moves: Transit*. The Final Draft of *Denver Moves: Pedestrians & Trails* has been coordinated with these other planning efforts and will begin informing pedestrian investments as early as January 2018. However, *Denver Moves: Pedestrian & Trails* will not become final until *Blueprint Denver* and other *Denverright* plans are completely the end of 2018.

The 2018 update to *Blueprint Denver* will identify a variety of community values, including affordable housing and transportation, great parks and open space and transportation choices. Additionally, a forthcoming policy of *Blueprint Denver* is that pedestrians be treated with dignity on every street and that every street should have a safe place to walk. *Blueprint Denver* is developing a new street typology with goals for safety, context-sensitivity to land use and economic development potential and person-mobility. The new street typology classifies arterial and collector streets as Downtown, Main Street, Mixed-use, Commercial, Industrial or Residential and identifies high-level guidance for the design and operation of these streets, as well as modal priorities for specific streets or specific areas. Some of this guidance addresses aspects of a street's design and operation that influence its pedestrian-friendliness.

As of December 2017, *Game Plan* has identified several

Preliminary Strategies with a strong relationship to pedestrian infrastructure and trails: expand and diversify the urban forest; improve access to parks; and protect legacy parkways and expand green streets. *Denver Moves: Pedestrians & Trails* aims to complement these Preliminary Strategies in a variety of ways through its recommendations.

Lastly, *Denver Moves: Transit* will identify several Proposed Transit Corridors for a range of high-capacity transit and transit speed and reliability improvements. *Denver Moves: Pedestrians & Trails* recognizes the importance of high-quality walkways and crossings as a first and last mile access strategy and its recommendations are coordinated with the locations of Proposed Transit Corridors.

2004 PEDESTRIAN MASTER PLAN

The 2004 *Pedestrian Master Plan* identified recommendations and priorities for infrastructure, policies and programs. The recommendations and priorities of the pedestrian component of *Denver Moves: Pedestrians & Trails* replace those from the 2004 *Pedestrian Master Plan*.

PLAN PROCESS

Denver Moves: Pedestrians & Trails was developed between May 2016 and December 2017. The first half of the plan development process included public engagement to understand the community's vision and goals for walking and trails, as well as existing conditions data collection and analysis. The second half of the plan development process included network development and prioritization as well as additional public engagement to verify that the plan's proposed projects, policies and programs align with the community's vision and goals.

PUBLIC ENGAGEMENT

People who live, work and play in Denver were engaged throughout the entirety of the *Denver Moves: Pedestrians & Trails* development process. Specifically, public engagement was completed through the following mechanisms:

- The city formed a Task Force of citizens, agency representatives, advocates and elected officials; this Task Force met seven times through the plan's development to review draft plan components and to ensure that the plan reflected community values.
- In summer 2016 *Denver Moves: Pedestrians & Trails* gathered input through an online survey shared amongst the *Denverright* plans.
- In fall 2016 *Denver Moves: Pedestrians & Trails* initiated its own online survey to understand the community's vision and goals for walking and trails; additionally, *Denver Moves: Pedestrians & Trails* participated in five *Denverright* open houses throughout the city in October 2016.



- To engage underserved communities in the plan's development, City staff and consultants worked with community leaders to identify locations and events where they could engage non-English speaking communities, low-income communities and youth.
- In winter 2016 several Task Force members completed additional public engagement of underserved communities via a paper survey.
- In August and September 2017 *Denver Moves: Pedestrians & Trails* completed a follow-up online survey, series of five open houses and underserved community engagement effort to review the draft plan's contents and to ensure that the plan would convey a community-supported vision.





PEDESTRIAN ELEMENT

VISION, STATEMENT OF PURPOSE, GOALS & PERFORMANCE MEASURES

VISION

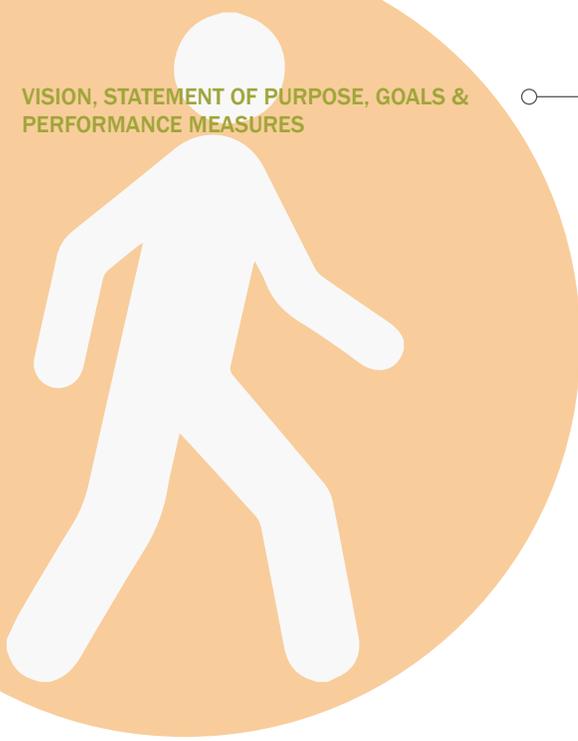
The vision for the pedestrian network of the City and County of Denver is one that provides residents, employees and visitors with a walkable environment that is safe and comfortable for all users and treats all users with dignity. The pedestrian environment will be well-connected with a complete set of sidewalks and crossings that access key destinations including transit stops and stations, parks and grocery stores. These facilities will be accessible to all users by complying with Americans with Disabilities Act (ADA) guidelines. Walking will be a safe mode of transportation and activity for all ages. The pedestrian environment will not only create a comfortable walking experience, but serve as a beautiful, clean and well-lit space that promotes healthy living.





STATEMENT OF PURPOSE

Denver Moves: Pedestrians & Trails establishes a Complete Network of pedestrian facilities including new sidewalks, widening of existing sidewalks, at-grade crossings of streets and grade-separated crossings of major barriers such as freeways, railroads and rivers. The Complete Network represents nearly all long-term projects the city could complete to improve walkability. The Complete Network relies on a series of sidewalk and crossing types that will create a comfortable, safe system of pedestrian facilities that flexibly incorporates new pedestrian facilities into existing, constrained street rights-of-way. Denver Moves: Pedestrians & Trails prioritizes elements of the Complete Network so staff from Denver Public Works have clear direction for project implementation. Denver Moves: Pedestrians & Trails estimates the overall funding need to buildout the Complete Network, along with a portrayal of how long buildout will take at different funding levels and how those different funding levels affect the goals and objectives derived from community input.



GOALS & PERFORMANCE MEASURES

Pedestrian-related goals were derived from community input. Each goal is followed by a performance measure so that the goals are measurable and so that progress can be tracked over time. *Performance measures are written in italics following each goal.*

Goal 1: Accessibility

A pedestrian system with a complete network of well-maintained, ADA-compliant sidewalks, walkways and crossings for users of all abilities.

Percent of sidewalks complete (≥ 4 feet) throughout the city.

Goal 2: Connectivity

A complete, connected sidewalk network without gaps and with frequent pedestrian crossings across barriers.

Average crossing spacing of arterials and major barriers including highways, rivers and railroads.

Why Use 4-foot Sidewalks as a Benchmark?

The United States Access Board's proposed Public Rights-of-Way Accessibility Guidelines (PROWAG) identify 4 feet as the minimum continuous clear width of pedestrian access routes, including sidewalks; however, these guidelines note that passing spaces shall be provided every 200 feet when sidewalks are less than 5 feet wide. New sidewalks in Denver will almost always be built 5 feet wide or wider but using 4 feet as the benchmark helps the city understand which sidewalks need major reconstruction to be accessible versus those that can become accessible with only minor modifications.



Goal 3: Destination Access

A complete pedestrian network with sidewalks and crossings that are up to standards and provide direct access to key destinations: transit, grocery stores, parks, schools, and health care centers.

Percent of sidewalks complete (≥ 4 feet) within $\frac{1}{4}$ mile from bus stops and bike share stations and $\frac{1}{2}$ mile from rail stations, parks, grocery stores, schools and health care centers.

Goal 4: Equity

A complete pedestrian network with sidewalks and crossings up to standards and without gaps within low-income areas.

Percent of sidewalks complete (≥ 4 feet) in census tracts where at least 20 percent of the population is below the Colorado state poverty level.

Goal 5: Health

A complete pedestrian network with sidewalks and crossings up to standards and without gaps within areas of health concern.

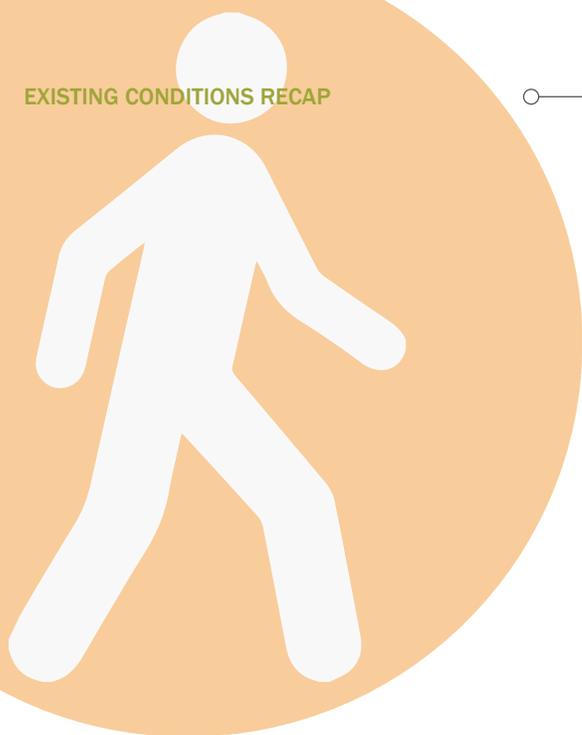
Percent of sidewalks complete (≥ 4 feet) in areas with high child obesity rates.

Goal 6: Safety

A safe network of pedestrian facilities that enables walking as a comfortable transportation mode and is designed to reduce or eliminate crashes involving pedestrians.

Percent of sidewalks complete (≥ 4 feet) along the corridors with the highest number of crashes causing injuries and fatalities, known as the High Injury Network (HIN); average crossing spacing along the HIN.

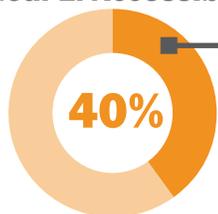




EXISTING CONDITIONS RECAP

The Denver Moves: Pedestrians & Trails Existing Conditions report (May 2017) summarizes each of the pedestrian-related goals and performance measures. The Existing Conditions report establishes a baseline so that the city can measure progress moving forward. Key findings from the Existing Conditions report are:

Goal 1: Accessibility



40% % of sidewalks in Denver that are either missing or too narrow (<4 feet).

- According to WALKscope, 64 percent of Denver streets for which data was available had an overall pedestrian environment rating of low to medium (scores of one to three out of five total).

Goal 2: Connectivity

- The average signal spacing across arterial streets is 1,130 feet (over 1/5 mile).
- The average crossing spacing across barriers is 3,380 feet for freeways (almost 2/3 mile), 3,150 feet for railroads (almost 3/5 mile) and 3,600 feet for rivers (over 3/5 mile).



Goal 3: Destination Access

Overall, 40 percent of sidewalks in Denver are either missing or too narrow (<4 feet); near key destinations, the percent of sidewalks missing or too narrow is:

- Within 1/2 mile of grocery stores – 31 percent
- Within 1/2 mile of parks – 39 percent
- Within 1/2 mile of schools – 39 percent
- Within 1/2 mile of health care centers – 35 percent
- Within 1/2 mile of light rail stations or 1/4 mile of bus stops and bike share stations – 39 percent

Goal 4: Equity

Whereas 40 percent of sidewalks in Denver are either missing or too narrow (<4 feet), 47 percent of sidewalks in low-income areas are missing or too narrow.

Goal 5: Health

Whereas 40 percent of sidewalks in Denver are either missing or too narrow (<4 feet), 44 percent of sidewalks in areas of health concern are missing or too narrow.

Goal 6: Safety

- Whereas 40 percent of sidewalks in Denver are either missing or too narrow (<4 feet), only 12 percent of sidewalks along the High Injury Network are missing or too narrow.
- Whereas the average signal spacing across arterial streets is 1,130 feet (over 1/5 mile), the average signal spacing across the High Injury Network is 880 feet.

The pedestrian element of *Denver Moves: Pedestrians & Trails* identifies planning and design tools, infrastructure strategies and policy and program actions aimed at moving the city closer to its vision for walkability.

PLANNING & DESIGN TOOLS

Denver Moves Pedestrians & Trails includes several planning and design tools that will inform how future pedestrian infrastructure is designed and operated. These planning and design tools are not location-specific; however, are intended to apply across a wide range of conditions throughout the city. They include Pedestrian Priority Areas, a Pedestrian Demand Index and a sidewalk typology.

PEDESTRIAN PRIORITY AREAS

Denver Moves: Pedestrians & Trails was developed concurrently with *Blueprint Denver*, which creates street typologies with established modal priorities on certain streets or within certain areas. On most streets, sidewalks are necessary to treat pedestrians with dignity and provide them a safe place to walk. However, shared spaces, an approach to street design where pedestrians, bicyclists and vehicles share street space, can meet this policy in areas exempted from sidewalks (for a full description of areas exempted from sidewalks, see the section of this plan on “Areas Exempted from Sidewalks”).

Blueprint Denver identifies Pedestrian Priority Areas as areas where land use, built environment and demographic factors contribute to high levels of walking. Pedestrian Priority Areas are a tool to inform how a street’s design and operations should differ to serve high levels of walking. Pedestrian Priority Areas indicate places where a vibrant streetscape is desired to support economic vitality and sense of place; in these areas, the city will go beyond its policy to treat pedestrians with dignity and to provide them a safe place to walk.

At minimum within Pedestrian Priority Areas, it may be appropriate to construct a pedestrian realm (the combined sidewalk and tree lawn/amenity zone) greater than the city’s standard and to operate a street so that pedestrian convenience is paramount (such as with shorter cycle lengths at traffic signals). In the future, Pedestrian Priority Areas may also inform other streetscape design features such as pedestrian-scale street lighting, decorative crosswalks, sidewalk café design and wayfinding.

Street types from *Blueprint Denver* are used to establish Pedestrian Priority Areas. Pedestrian Priority Areas are located on Downtown Streets, Main Streets and Mixed-use Streets. To derive these street types, *Blueprint Denver* relies predominantly on a street’s existing and future Place Type (a designation established by *Blueprint Denver*) and in some cases the predominant current zoning along a street. These Pedestrian Priority Areas capture most of the streets in areas already designated as Pedestrian Priority Zone’s (Downtown Denver in 2007 and Cherry Creek North in 2014) as well as to identify other areas of the city with similar characteristics.

Map 1 shows Pedestrian Priority Areas.



PEDESTRIAN DEMAND INDEX

Ideally, the city would be able to use a comprehensive set of pedestrian counts to inform project prioritization. However, even with a count program, the city will not have a citywide, street-by-street understanding of pedestrian activity levels. Therefore, *Denver Moves: Pedestrians & Trails* includes a Pedestrian Demand Index. The Pedestrian Demand Index estimates the latent demand for walking based on data variables known to contribute to high levels of walking: population density, employment density and population/employment diversity. The complexities of individuals’ travel decisions make it impossible to create an index that perfectly replicates real-world demand for walking; therefore, the Pedestrian Demand Index should be taken into account with planning and engineering judgment.

Map 2 shows Denver’s Pedestrian Demand Index.



SIDEWALK TYPOLOGY

WHAT IS A SIDEWALK TYPOLOGY?

A sidewalk typology is a set of templates that describe a desirable pedestrian environment within a range of conditions. As templates, they solve common or general issues with the pedestrian environment. A key in typology development is to solve the most common issues with a limited set of sidewalk types to ensure ease of application moving forward. The city's sidewalk typology is organized into four topic areas.

The city's *Transportation Standards and Details for the Engineering Division* (most recently updated in April 2017) apply for both new construction and retrofits. However, accommodating these standards can be difficult when retrofitting sidewalks onto existing streets. Where the city's standard cannot be achieved, the only next-best guidance for the pedestrian realm is designing to an accepted minimum (informed by the Americans with Disabilities Act), to be applied in minimal scenarios where wider facilities are infeasible. Therefore, *Denver Moves: Pedestrians & Trails* identifies Functional Retrofit Guidelines to strive for in retrofit situations along with appropriate levels of exceptions that projects must achieve to deviate from the city's standards and the Functional Retrofit guidance; these exceptions may be adopted later as a city policy.

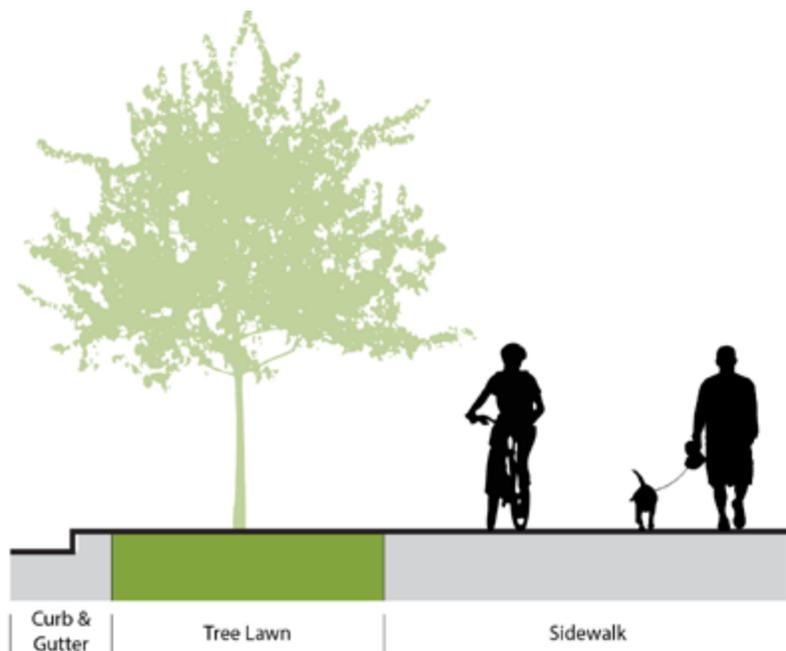




AREA 1: CITY'S STANDARDS SIDEWALKS

The city will achieve the *Transportation Standards and Details for the Engineering Division* whenever constructing new streets and will strive to achieve these standards when retrofitting sidewalks onto existing streets. Generally, these standards are:

- On local and collector streets, a 5-foot sidewalk and 8-foot tree lawn or amenity zone
- On arterial streets, an 8-foot sidewalk and 12-foot tree lawn or amenity zone



Example of a sidewalk with tree lawn



AREA 2: FUNCTIONAL RETROFIT GUIDELINES FOR SIDEWALKS

Where meeting the city's standards is not possible, the functional retrofit guidelines in *Denver Moves: Pedestrians & Trails* should be used to identify the preferred sidewalk type on a given street. Those guidelines are:

- On all arterial and collector streets, and on local streets with non-residential land use:
 - Where there is 7 feet of right-of-way behind the curb or less – sidewalk as wide as possible (all less than 2 percent cross slope).
 - Where there is 7-10 feet of right-of-way behind the curb – sidewalk as wide as possible (all less than 2 percent cross slope) or 5-foot sidewalk with 2-foot minimum red patterned concrete amenity zone where a steeper cross-slope is permitted.
 - Where there is 10 feet or greater – 5-foot sidewalk with 5-foot tree planter with street trees every 35 feet. In commercial areas or near bus stops tree planters may be used to accommodate pedestrian needs. Where more than 10 feet is available the sidewalk and tree lawn widths should match the city's standards as closely as possible.
- On local streets with residential land use – a 5-foot attached sidewalk is acceptable where right-of-way constraints, street trees or neighborhood character make tree lawns or amenity zones infeasible or inappropriate.



Example of a sidewalk with 2-foot minimum red patterned concrete amenity zone

RATIONALE FOR FUNCTIONAL RETROFIT GUIDELINES

Local streets with residential land use are especially constrained rights-of-way where achieving more than a 5-foot sidewalk is difficult due to improvements either in or adjacent to the right-of-way and drainage infrastructure that would be expensive to relocate. Requiring only a 5-foot sidewalk is a practical way to serve the relatively low levels of pedestrian demand on most local streets. Additionally, not requiring a tree lawn allows for property owners to maximize landscaping and trees behind the sidewalk. In locations with mountable curb (also known as rolled curb or Hollywood curb), the city will strive to replace mountable curb with vertical curb and gutter to keep parked cars off of the sidewalk and for pedestrian safety.

On collector and arterial streets, the recommended sidewalk as wide as possible, or in some cases a 5-foot sidewalk with a 2-foot minimum red patterned concrete amenity zone, provides additional separation from pedestrians to



faster moving traffic in nearby travel lanes. The wider sidewalks or amenity zone also addresses snow storage needs and allows for passenger loading on streets with on-street parking.

AREA 3: ACCEPTED MINIMUMS

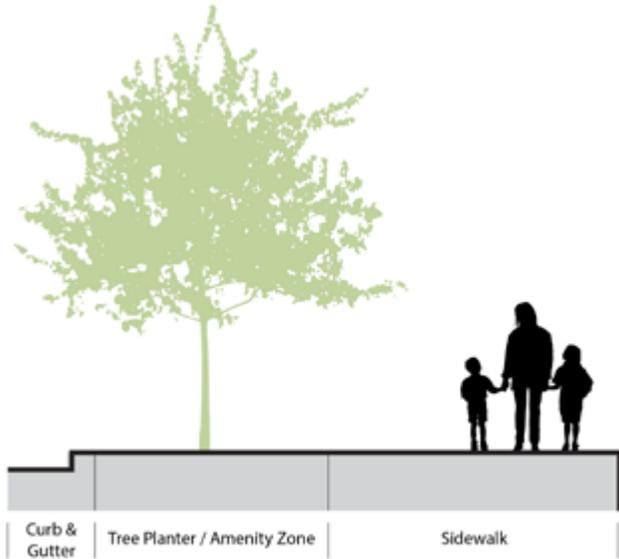
According to the Americans with Disabilities Act, the minimum continuous width of a sidewalk without passing spaces is 5 feet. This should be treated as an absolute minimum when constructing sidewalks where they are currently missing and efforts should be made to exceed this minimum per the city’s standards or functional retrofit guidelines wherever possible.

AREA 4: PEDESTRIAN PRIORITY AREA GUIDELINE FOR SIDEWALKS

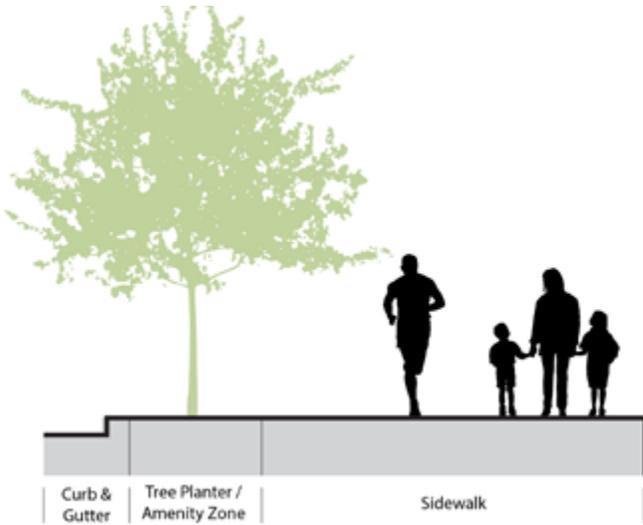
The guideline for Pedestrian Priority Areas is that the city strive for a combined pedestrian realm width of 20 feet inclusive of tree planters, sidewalk and the encroachment area (the area for privately owned improvements in the right-of-way, such as art, awnings, stairs or ramps and patios or café seating). This is intended to allow for vibrant use of the pedestrian realm within these areas. This guideline is flexible to allow for customized use of the space depending on constituent values. In some cases, a wider total pedestrian realm may be more appropriate for the highest and best use of the pedestrian realm, such as situations where a very wide encroachment area is desired for patios or café seating.

The sidewalk type for Pedestrian Priority Areas are guidelines that should be strived for in future planning and design projects. Creating a wider pedestrian realm to accommodate higher pedestrian demand is likely to cause tradeoffs within the right-of-way for travel lanes, bikeways and parking. Such future corridor planning efforts or *Neighborhood Planning Initiative* efforts can identify actual preferred cross-sections within Pedestrian Priority Areas.

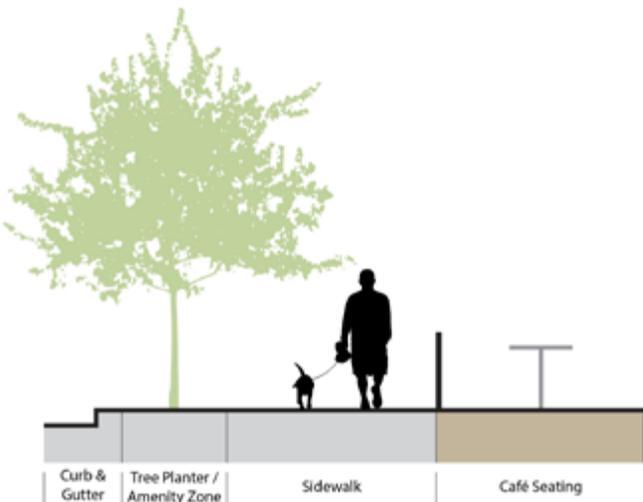




Example of a sidewalk with wide tree planter and amenity zone for additional pedestrian space outside of sidewalk



Example of a wide sidewalk with narrow tree planter and amenity zone



Example of a sidewalk arranged for café seating with narrower sidewalk and tree planter and amenity zone



SHARED-USE SIDEWALKS

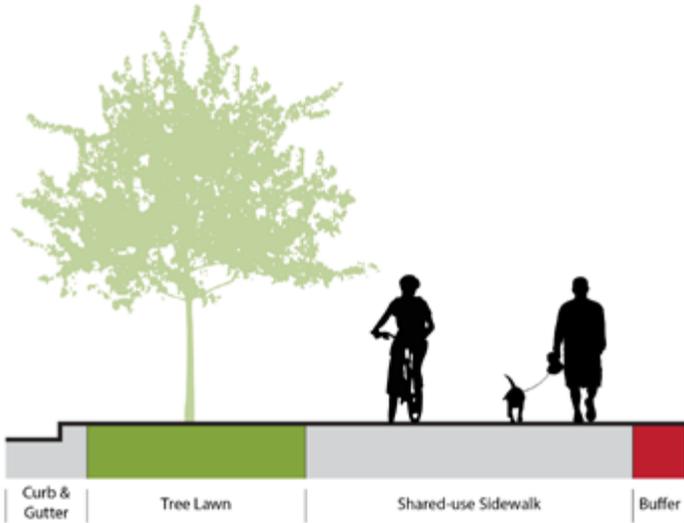
Denver Moves: Bicycles defines shared-use sidewalks (sidewalks designed for bicycle usage in addition to pedestrians). Shared-use sidewalks are only for implementation within a street’s right-of-way; when located in exclusive rights-of-way (such as a utility corridor or waterway corridor), the facility would comply with the trail guidelines, also established in *Denver Moves: Pedestrians & Trails*. The intent of this designation is as a connector facility not be implemented for extended lengths. The purpose of this category is to provide additional design guidance beyond what is provided in *Denver Moves: Bicycles*.

In general, the guideline for shared-use sidewalks should meet minimum guidance from the American Association of State Highway Transportation Officials (AASHTO) for multi-use paths. In locations with high volumes of bicyclists and pedestrians (generally above 300 per hour) it is recommended to either provide a 12 foot shared-use sidewalk or to separate the sidewalk from the bike path. The shared-use sidewalk guidelines are:

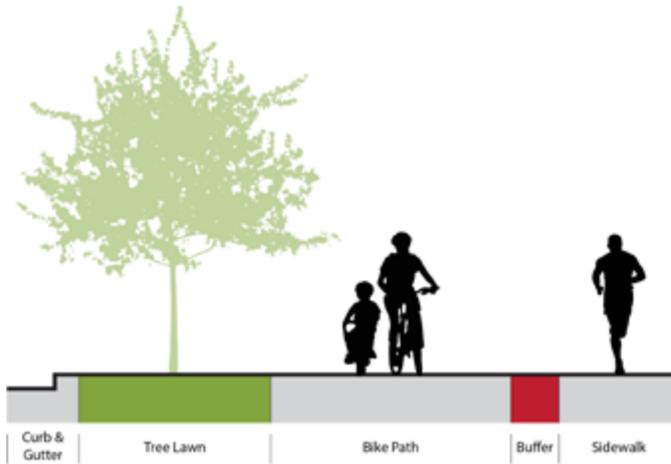
- For combined shared-use sidewalks (used by both bicyclists and pedestrians):
 - On local streets, a 10- to 12-foot shared-use sidewalk, 5-foot buffer from adjacent travel lanes and 2-foot buffer from obstructions (landscaping, poles, fences, signs, etc.).
 - On collector streets, a 10- to 12-foot shared-use sidewalk, 8-foot buffer from adjacent travel lanes and 2-foot buffer from obstructions.
 - On arterial streets, a 10- to 12-foot shared-use sidewalk, 12-foot buffer from adjacent travel lanes and 2-foot buffer from obstructions.
- For separated sidewalks and bike paths (generally only applicable on collector and arterial streets), a 5-foot sidewalk, 6-inch to 2-foot sidewalk/bike path buffer, 10- to 12-foot bike path and 8-foot buffer from adjacent travel lanes.

Note that both buffers from obstructions or between the sidewalk and bike path can either be landscaped or constructed of a textured paving material, such as colored, stamped concrete. Additionally, signage specifically aimed at reducing behaviors that result in user conflicts should be implemented on shared-use sidewalks.





Example of a shared-use sidewalk



Example of a separated sidewalk and bike path



AREAS EXEMPTED FROM SIDEWALKS

On almost all streets, sidewalks are necessary to treat pedestrians with dignity and to provide a safe place to walk. However, there are areas of the city exempted from sidewalks, documented in *Public Works' Rules & Regulations for Sidewalk and Curb Ramp Construction* (version dated October 1, 2007). These areas meet six exemption criteria: 1. They have historic sidewalk-less design, 2. There is no internal transit, 3. There are no internal civic features (schools, libraries, parks, etc.), 4. They do not require curb ramps to provide access to adjacent properties and do not require curb and gutter to provide adequate drainage, 5. They do not provide direct connections generally consistent with the larger street grid system, and 6. Vehicular traffic volumes are low enough that pedestrians can share the street. In these exempted areas, streets should be treated as shared streets where people walking and biking share space with vehicles. These shared streets may require design interventions, such as traffic calming devices, to ensure that they treat pedestrians with dignity and provide a safe place to walk.

SHARED SPACES

Shared spaces are an approach to street design where pedestrians, bicyclists and vehicles share street space

either at all times, at regularly scheduled times or for special events. Some shared streets feature special designs, such as curbless streets. Others may look like normal local streets but have sufficiently low traffic speeds and volumes that all users are comfortable sharing the street. Whether or not a shared space designation is appropriate, and the design of the share spaces itself, depends on a variety of factors. *Blueprint Denver* is exploring different types of shared streets and the decision-making framework for shared streets in Denver.

DESIGN DETAILS

FLAGSTONE SIDEWALKS

Many older parts of Denver have flagstone sidewalks including many of Denver's landmark districts. For a description of how future rehabilitation maintenance will affect flagstone sidewalks, see the "Maintenance" section of this plan.

TREE LAWN OR AMENITY ZONE

Tree lawns and amenity zones describe the space between the back of curb and the edge of sidewalk. Tree lawns are typical in less urban contexts and areas with predominantly residential land uses. These consist of larger trees, usually with grass lawns, where the width of the tree lawn is sufficient for tree health. Amenity zones are typical in more urban contexts and areas with predominantly commercial or mixed-use land uses. Amenity zones feature a variety of elements including hardscape surfaces, tree planters and/or green infrastructure. A variety of urban design elements may be located in amenity zones such as tree planters, street lighting, street furniture and public art.

Blueprint Denver's street types will provide guidelines where amenity zones are preferred instead of tree lawns. In general, amenity zones are preferred on Downtown Streets, Main Streets, Mixed-use Streets and along certain segments of Residential Streets (depending on land use).



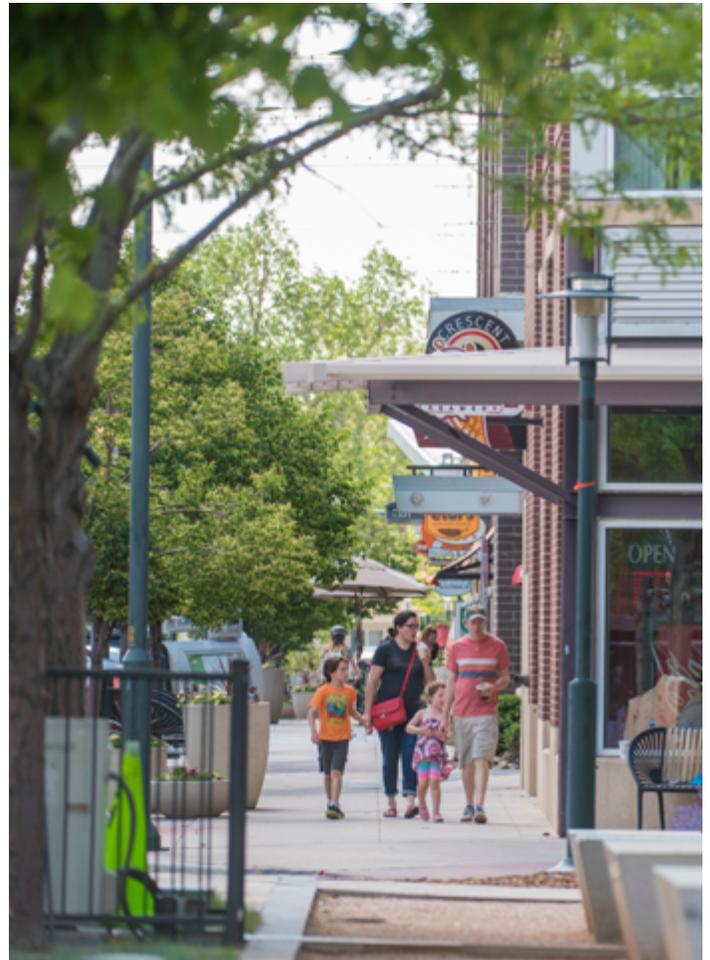
INFRASTRUCTURE

Denver Moves: Pedestrian & Trails identifies priorities for essential pedestrian infrastructure elements: sidewalks, at-grade crossings and grade-separated crossings. These essential elements make up a Complete network of infrastructure. Additionally, *Denver Moves: Pedestrians & Trails* identifies additional geometric, traffic signal and streetscape treatments that contribute to walkability.

COMPLETE NETWORK

The Complete Network for pedestrians includes new sidewalks, widening of existing sidewalks, at-grade crossings of streets and grade-separated crossings of major barriers such as freeways, railroads and rivers. The Complete Network represents nearly all long-term projects the city could complete to improve walkability. New and widened ADA-compliant **sidewalks** will be constructed according to sidewalk types that derive from the city's transportation standards or achieve a functional retrofit guideline (described in this plan) where the city's standards are not possible. **At-grade crossings** will be implemented according to the city's *Uncontrolled Pedestrian Crossing Guidelines* (September 2016) which establish a framework for evaluating candidate crossing locations and identify appropriate crosswalk treatments and geometric treatments. Lastly, **grade-separated crossings** of major barriers include pedestrian bridges, pedestrian undercrossings and walkways adjacent to streets that cross these major barriers.

A variety of other infrastructure investments will also benefit pedestrians in Denver including intersection modifications (such as curb extensions, medians or Leading Pedestrian Intervals) and other non-walkway or non-crossing improvements that benefit pedestrians (such as wayfinding). These projects are not specifically identified in *Denver Moves: Pedestrians & Trails*; however, other City efforts will identify these projects over time so that they can be prioritized and programmed for funding. These other efforts include the city's *Neighborhood Traffic Management Program* and *Vision Zero*, Denver's program for eliminating traffic-related deaths and serious injuries by 2030.





SIDEWALKS

To fulfill Denver Moves: Pedestrian & Trails' vision for Denver's pedestrian network, this plan estimates the total funding necessary to construct Americans with Disabilities Act-compliant sidewalks on all Denver streets along with citywide priorities for sidewalk construction. The city's *Transportation Standards and Details for the Engineering Division* provide details for sidewalk construction; the city will achieve these standards when constructing new streets. A pedestrian realm (the combined sidewalk and tree lawn/amenity zone) greater than the city's standards may be appropriate or desirable in Pedestrian Priority Areas; the desire for and applicability of wider pedestrian realms can be determined through future corridor planning efforts or *Neighborhood Planning Initiative* efforts. Where the city is retrofitting existing streets to provide sidewalks, they will strive to meet the city's *Transportation Standards and Details for the Engineering Division*. Where meeting the city's standards is not possible, the functional retrofit guidelines in *Denver Moves: Pedestrians & Trails* should be used to identify the preferred sidewalk type on a given street.



SIDEWALKS PRIORITIZATION

Denver Moves: Pedestrians & Trails' development established a community-driven prioritization for sidewalks in the city. In general, the city intends to complete missing sidewalks across all tiers before widening sidewalks that are too narrow. This approach is based on values identified by the community and pragmatically recognizes that having some amount of sidewalk is better than none at all.

Priority tiers are assigned in this order:

- Tier 1 projects – projects along the *Vision Zero* High Injury Network (HIN); the HIN accounts for five percent of streets in Denver, but 50 percent of traffic deaths.
- Tier 2 projects – high-frequency transit access projects; projects that are within 600 feet of a rail station, bike share station, or high-frequency bus stop or station (15 minute or better frequencies throughout the day) and have a high-priority destination (school, park, grocery store or health care center) within that 600 feet.
- Tier 3 projects – remaining high-frequency transit access projects.
- Tier 4 projects – remaining transit access projects (bus stops and stations not on the high-frequency bus network).
- Tier 5 projects – remaining high-priority destination (school, park, grocery store or health care center) access projects.
- Tier 6 projects – all remaining projects.

Map 3 shows Tier 1-6 projects for missing sidewalks and **Map 4** shows Tier 1-6 projects for sidewalks that are too narrow.

Sidewalks may be implemented in a variety of ways, such as a stand-alone project, with ongoing street overlays, as a part of curb replacement projects or with other projects. Therefore, *Denver Moves: Pedestrians & Trails* identifies priority tiers so that the city has a narrow

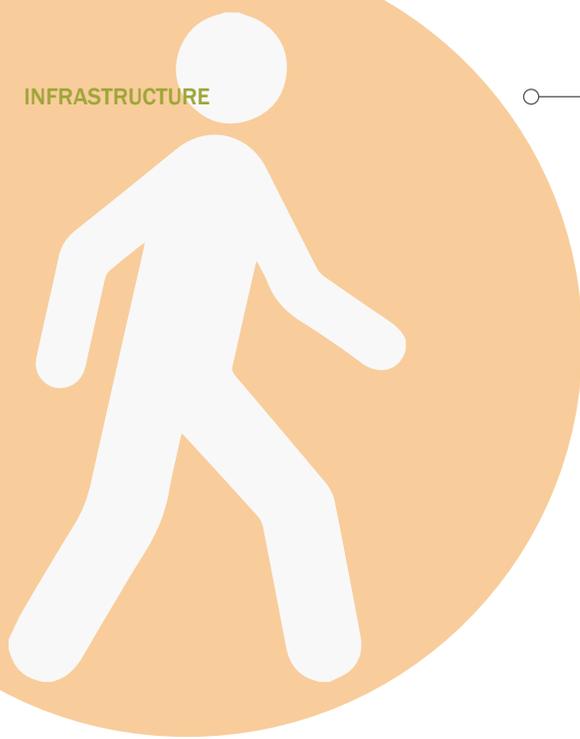
set of projects identified as priorities but can also flexibly adapt this prioritization to match sidewalk funding with overlay, curb replacement or other projects.

2017 GENERAL OBLIGATION BOND

Periodically, the City and County of Denver authorizes General Obligation (GO) Bonds to restore, replace, and expand infrastructure and capital assets across the city. In 2017, Denver voters authorized the 2017 GO Bond. In some cases, the 2017 GO Bond specifically identifies the locations of projects, such as sidewalks in the Globeville and Elyria-Swansea neighborhoods, a pedestrian and bicyclist bridge over the Union Pacific railroad at 47th Avenue and York Street, and reconstruction of Morrison Road. These projects are specifically shown in this plan's maps to denote that they will be implemented with GO Bond funds independent of their prioritization in this plan. In one case the GO Bond will rely on high-priority projects from *Denver Moves: Pedestrians & Trails*: the \$30.7 million identified for sidewalks to transit, including Sheridan Boulevard. These projects are not specifically shown in this plan's maps but are likely to come from the Tier 1 and Tier 2 sidewalk projects.

SIDEWALKS COST

The total cost of completing Denver's sidewalk network is between \$800 million (at the absolute minimum type) and \$1.4 billion (achieving the functional retrofit on all City streets where sidewalks are missing or too narrow), or \$1.1 billion on average. Completing the sidewalk network will take many years and will likely require new thinking in Denver regarding funding. For illustrative purposes, five representative scenarios show how long buildout of the sidewalk network may take depending on different funding levels. Implementation will take many years and will require future policy and funding decisions.



Completing the sidewalk network will need occur through both private and public investment by leveraging opportunities with proposed development and redevelopment, capital projects, and local, regional, or state partnerships.

- \$40 million per year – 27.5 years to complete.
- \$20 million per year – 55 years to complete.
- \$10 million per year – 110 years to complete.
- \$5 million per year – 220 years to complete.
- \$2.5 million per year – 440 years to complete.

PRIORITY TIER COSTS

Table 1 shows the cost of Tier 1-6 projects for missing sidewalks and sidewalks that are too narrow. The city should strive to meet the city’s standards wherever possible. However, these cost estimates assume that the Functional Retrofit Guidelines will be applied to many City streets and that accepted minimums may be necessary in some locations. These assumptions reflect the challenging complexities of retrofitting sidewalks into already-established rights-of-way.

TABLE 1. TIER 1-6 PROJECT COSTS

PRIORITY TIER	MISSING SIDEWALKS	SIDEWALKS THAT ARE TOO NARROW
TIER 1 PROJECTS	\$13 MILLION	\$12 MILLION
TIER 2 PROJECTS	\$44 MILLION	\$128 MILLION
TIER 3 PROJECTS	\$18 MILLION	\$49 MILLION
TIER 4 PROJECTS	\$45 MILLION	\$151 MILLION
TIER 5 PROJECTS	\$48 MILLION	\$164 MILLION
TIER 6 PROJECTS	\$105 MILLION	\$324 MILLION
SUBTOTAL	\$273 MILLION	\$828 MILLION
TOTAL	\$1.101 BILLION	



ADDITIONAL PRIORITIZATION GUIDANCE

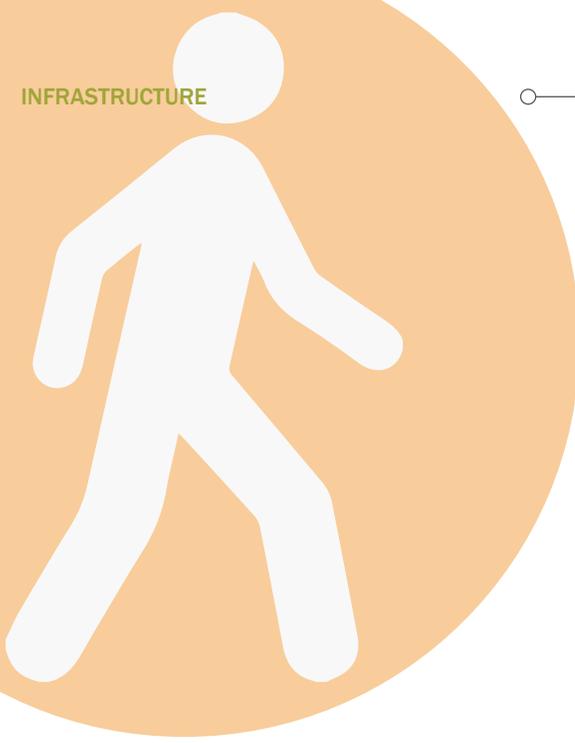
ACHIEVING EQUITABLE OUTCOMES

Denver Moves: Pedestrians & Trails' Existing Conditions Report found that whereas 40 percent of sidewalks citywide are either missing or too narrow (<4 feet), 47 percent of sidewalks in low-income areas are missing or too narrow and 44 percent of sidewalks in areas of health concern are missing or too narrow.

Through *Denver Moves: Pedestrians & Trails'* public engagement in August and September 2017, Denverites showed a strong preference for improving sidewalks in areas of most need, including low-income areas and areas of health concern, rather than improve sidewalks evenly across all parts of the city. The city heard from almost 800 people as a part of this engagement and almost 70 percent of them indicated a preference for first improving sidewalks in areas of most need. Future decisions regarding geographic distribution of sidewalk funding should reflect this preference.

IMPLEMENTING PROJECTS WITHIN A TIER

A variety of other prioritization considerations will be used to select projects from within a given prioritization tier. Within a tier, the city should further refine project selection based on possible coordination with other projects (including curb ramp construction or street maintenance such as curb and gutter replacement or overlays); matching sidewalk funding with these other projects will stretch sidewalk funding as far as possible and accelerate buildout of the Complete Network. Where no curb ramp construction or street maintenance is occurring, the city should use other datasets indicative of the need for sidewalk improvements to refine project selection within a given tier. Such datasets include, but are not limited to, Public Health & Environment's Communities of Concern model, the Pedestrian Demand Index and WALKscope.



AT-GRADE CROSSINGS

Major streets can serve as a barrier for pedestrians if there is a lack of pedestrian crossing opportunities. Arterial streets in particular can pose barriers especially if they are multi-lane or have high operating speeds. Analysis of existing conditions found that traffic signal spacing across arterials is currently 1,130 feet, over $\frac{1}{8}$ mile (currently, marked crosswalks across arterials almost exclusively exist at traffic signals).

The city's *Uncontrolled Pedestrian Crossing Guidelines* serve as a policy to guide staff in determining where and how to improve an uncontrolled crosswalk. The *Uncontrolled Pedestrian Crossing Guidelines* provide guidance to determine if a marked crosswalk is appropriate at a particular location; they then identify a range of enhancement treatments that may be appropriate depending on the site characteristics. For a location to be appropriate, the *Uncontrolled Pedestrian Crossing Guidelines* include a requirement for minimum pedestrian crossing demand. This criterion was derived based on Federal Highway Administration (FHWA) research and practices observed in peer, pedestrian-friendly cities.

Where demand suggests that a marked crosswalk is appropriate, the city intends to implement crosswalks

with appropriate enhancement treatments as funding is available. However, without having pedestrian crossing counts comprehensively throughout the city, *Denver Moves: Pedestrians & Trails* cannot identify specific locations for new at-grade crossings. Instead, *Denver Moves: Pedestrians & Trails* estimates the overall level of funding necessary to implement devices at a target crossing spacing according to the city's *Uncontrolled Pedestrian Crossing Guidelines*.

An analysis of one year's worth of crosswalk requests from Denver citizens was analyzed according to the city's *Uncontrolled Pedestrian Crossing Guidelines*. On average, requests that meet the criteria for marked crosswalks result in an average crossing spacing of 900 feet (approximately $\frac{1}{8}$ mile) on arterial and collector streets. A further analysis of traffic volumes, street lanes and operating speeds was completed to determine the breakdown of traffic signal/Pedestrian Hybrid Beacon (PHB) devices, Rectangular Rapid Flashing Beacons (RRFBs) or markings/signing/medians. 900 feet should not be viewed as a goal as the city intends to implement crosswalks with appropriate enhancement treatments where justified by the *Uncontrolled Pedestrian Crossing Guidelines*. As such, this estimate may need to be revised in the future as additional crossings are implemented.

■ On arterial streets:

- $\frac{1}{3}$ of new crossings are expected to require a traffic signal or Pedestrian Hybrid Beacon (approximately 130 traffic signals or PHBs required).
- $\frac{1}{2}$ of new crossings are expected to require Rectangular Rapid Flashing Beacons (approximately 200 RRFBs required).
- Remaining new crossings are expected to require markings, signing and medians; medians may not be feasible in all locations (approximately 70 marking/signing/median installations required).



■ On collector streets:

- ¼ of new crossings are expected to require Rectangular Rapid Flashing Beacons (approximately 90 RRFBs required).
- ¾ of new crossings are expected to require markings, signing and medians; medians may not be feasible in all locations (approximately 260 marking/signing/median installations required).

■ On local streets all crossings are expected to require markings, signing and medians. New crossings on local streets are expected to be rare due to the *Uncontrolled Pedestrian Crossing Guidelines*' criterion that accounts for pedestrian delay.

The cost to implement all of the devices described above is approximately \$80 million. These devices will only be implemented where the *Uncontrolled Pedestrian Crossing Guidelines*' criteria are met.

DECIDING WHERE TO PRIORITIZE NEW CROSSINGS

Prioritizing new crossings in Denver happens in two steps. In the first step, a new crossing location is identified and evaluated for whether or not it meets the *Uncontrolled Pedestrian Crossing Guidelines*. Once a location meets the guidelines, it is prioritized among other crossings that also meet the guidelines to determine order for funding and implementation.

IDENTIFYING NEW CROSSING LOCATIONS

Since the finalization of the *Uncontrolled Pedestrian Crossing Guidelines* the city has primarily taken a reactive role in identifying new crossing locations by evaluating citizen requests for new crossings. Moving forward, the city will take a proactive role in identifying new crossing locations that are most required to improve safety for people walking. The city will study high-priority corridors and individual locations; these are corridors and locations that are on the *Vision Zero* High Injury Network and have a relatively high distance between signalized crossings (greater than ¼ mile). **Map 5** shows high-

priority study corridors for at-grade crossings.

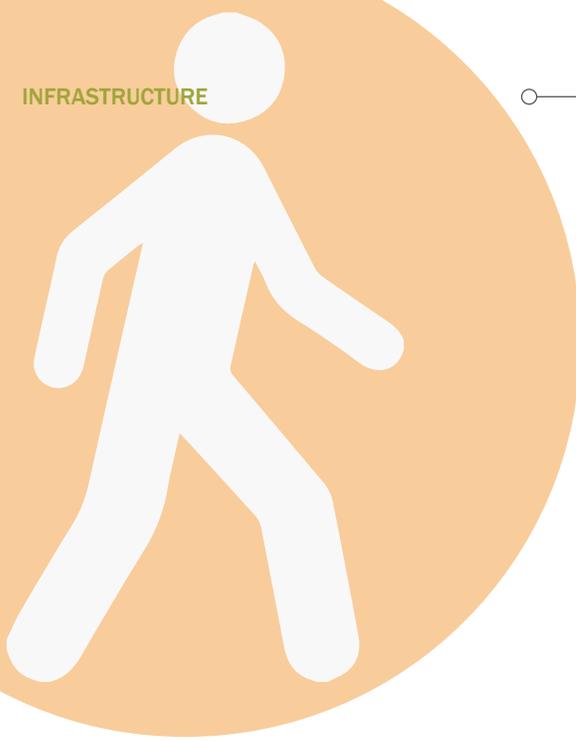
PRIORITIZING NEW CROSSINGS

Once a location meets the guidelines, it should be prioritized among other crossings. As safety should be paramount in funding and implementing new crossings, the city should establish prioritization criteria that give an indication of the safety concern of pedestrians crossing at a particular location. This prioritization should reflect three primary criteria:

■ Pedestrian crash history – locations with a known crash history involving pedestrians crossing the street should generally be funded and implemented before locations without a known crash history. There is no specific number of crashes that qualify as a crash history, rather, crash history includes one or more crashes involving pedestrians crossing the street where no reasonable alternative exists and where the problem is likely to occur again without intervention. “Near misses” may also be an indicator for crash history and some of this information may be available through past and ongoing planning efforts, such as *Vision Zero*.

■ Pedestrian-vehicle conflicts – many locations will not have had pedestrian crashes occur in the past. Using the number of pedestrian-vehicle conflicts as an indicator for the potential for crashes to occur in the future is a reasonable way of prioritizing crossings. This could simply account for the peak hour number of pedestrian crossings and the peak hour number of vehicles on the street.

■ Distance to nearest crossing – if comparing two locations with a similar crash history and number of pedestrian-vehicle conflicts, distance to the nearest crossing is a reasonable criteria to use to identify a higher priority crossing.



GRADE-SEPARATED CROSSINGS

The three main barriers in the street grid for pedestrians are freeways, railroads and rivers. These barriers may result in a significant amount of out-of-direction travel for pedestrians. Currently, the average spacing of crossings with pedestrian facilities for all three of these barriers is over 3,000 feet (almost $\frac{3}{8}$ mile).

A number of grade-separated crossings have been proposed through various planning efforts, including neighborhood plans, station area plans, corridor studies or other location-specific area plans or master plans. Some of these crossings are funded through the 2017 General Obligation Bond and others are funded through the Central 70 Project. Others are proposed by this plan for the first-time where significant gaps exist or where the public identified the need for a grade-separated crossing. Through this process, 35 proposed grade-separated crossings (not including GO Bond and Central 70 projects) were identified throughout the city.

PRIORITIZATION

These 35 crossing locations were prioritized into three tiers based on three inputs: population density in the census block that the crossing is within, employment density in the census block that the crossing is within, and distance between existing crossings along the barrier that the proposed crossing goes over or under. The population density and employment density inputs are the same inputs used for the Pedestrian Demand Index. Each crossing received a score (one through five) based on natural breaks in the data for each of the three inputs, resulting in final summed scores of three through 15. Crossings in census blocks with higher population or employment density received a higher score. Crossings at rivers, railroads or highways with longer distances between bicycle/pedestrian crossings received a higher score. Crossings then fell into a tier based on natural breaks in the final, summed score.



DESCRIPTIONS

TIER ONE

1. 47th Avenue at BNSF Railroad: This will be a new overpass over the BNSF Railroad at 47th Avenue. This will connect a wholesale and warehouse center on the west to 41st & Fox Station and a food and event center on the east.

2. Brighton Boulevard to National Western Drive at the railroad: This will be a new overpass over the railroad to connect Brighton Boulevard on the east to National Western Drive on the west connecting manufacturing and auto parts stores, as well as the United States Postal Service at Brighton Boulevard.

3. 31st Avenue at the railroad, Platte River and I-25: This is three, or potentially four, distinct separated crossings. At I-25, this will be a new overpass. This overpass may potentially need to continue over the widened BNSF railway. Over the Platte River, this will be improvements to an existing overpass. Over the railroad, this will be a new overpass. This will likely only happen with redevelopment of the parking lot and other development to the east of the railway allowing the continuous travel for bicyclists and pedestrians along 31st Street.

4. 42nd Avenue at the railroad: This will be a new overpass over the railroad connecting single family homes and mixed retail along E 42nd Avenue on either side of the railroad.

5. 23rd Street/Water Street at I-25: This will be an overpass over I-25 along 23rd/Water Street, an improvement to the existing sidewalk infrastructure and addition of new sidewalk infrastructure on an existing overpass. This will connect the Jefferson Park neighborhood with residential and retail, Fishback Park, and the Downtown Aquarium.

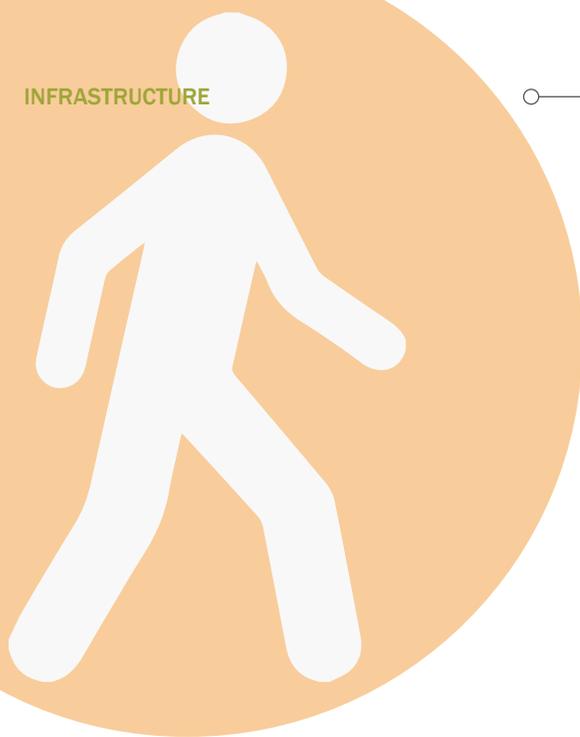
6. 13th Avenue at the railroad (Consolidated Main Line): Although not grade-separated, this project includes significant pedestrian enhancements to the at-grade crossing of Consolidated Main Line railroad at 13th Street. This will connect Lincoln Park and the Auraria Campus Athletic Complex and surrounding suppliers of various products.

7. 10th Street at the railroad (Consolidated Main Line): This will be a new overpass over the railroad at 10th Street. It will pass over three sets of railways and connect Denver Water, the Boys & Girls Club of Metro Denver, and suppliers and manufacturing industries to 10th & Osage Station and the Denver Housing Authority and Child Care Center.

8. 8th Street at South Platte River and I-25: This will be an underpass under I-25 and an overpass of South Platte River along 8th Street that is an improvement to the existing sidewalk infrastructure. This will connect Frog Hollow Park, Denver Housing Authorities, and Denver Water, as well as surrounding buildings in the manufacturing and supply industry.

9. Mississippi Avenue at the railroad: This will be an underpass under the two railways that is an improvement to the existing sidewalk infrastructure. This connects dense residential development along South Broadway and the Athmar Park/Ruby Hill neighborhoods.

10. I-25 & Broadway Station at the railroad (Consolidated Main Line) and South Platte River: This will be a new overpass connecting I-25 & Broadway Station to Vanderbilt Park. This will require the redevelopment of the I-25 & Broadway Station Area to be feasible.



TIER TWO

11. Tennyson Street at I-70: This will be an underpass under I-70 along Tennyson Street, an improvement to the existing sidewalk infrastructure. This will connect Berkeley Park, Centennial Elementary School and a shopping center to the south to Willis Golf Course to the north, as well as single family homes on both sides.

12. Lowell Boulevard at I-70: This will be an underpass under I-70 along Lowell Boulevard, an improvement to the existing sidewalk infrastructure. This will connect single family homes on the north to Rocky Mountain Lake Park on the south, also improving access to Centennial Elementary School.

13. Irving Street at I-70: This will be a new overpass over I-70 along Irving Street. This will connect single family homes and open space on the north of I-70 and to Rocky Mountain Lake Park on the south. This will require the redevelopment of single family homes on the north side of I-70 to allow an overpass to be feasible.

14. 35th Street/Arkins Court at South Platte River to Ringsby Court: This will be a new overpass over the South Platte River on 35th Street. This will connect Arkins Court and Ringsby Court connecting a preschool, Open Air Academy, and retail space on the west to mixed use retail, food service, and event space on the east, as well as the Denver Police Department fleet services.

15. 38th Street at the railroad: This will be an improvement to an existing underpass connecting 38th & Blake Station to parking for the station and surrounding mixed use development.

16. Milwaukee Street at the railroad: This will be a new overpass over the railroad connecting single family homes and mixed retail along Milwaukee Street on either side of the railroad.

17. Garfield Street at the railroad: This will be a new overpass connecting Garfield Street over the railroad that connects 40th & Colorado Station to an industrial area on the north side. Construction of the bridge will depend on redevelopment of the site north of the railroad.

18. South Platte River Trail at the South Platte River, aligned with the Aquarium: This will be a new overpass connecting two sides of the South Platte River Trail to each other and the Downtown Aquarium.

19. South Platte River Trail at the South Platte River, south of Speer Boulevard: This will be a new overpass connecting Centennial Gardens and Fishback Park and the two sides of the South Platte River Trail to each other.

20. 7th Street at the railroad (Consolidated Main Line): This will be a new overpass over the Consolidated Main Line railroad at 7th Street. It will connect



the Pepsi Center parking lot with Elitch Gardens and Pepsi Center/Elitch Gardens light rail station.

21. 11th Avenue at South Platte River: This will be a new overpass over the South Platte River at 11th Avenue. This will connect surrounding mixed use manufacturing and suppliers on the east and west of the river, as well as the Weir Gulch Trail and affordable housing. Fairview Elementary School is also on 11th Avenue west of the river.

22. Bayaud Avenue at South Platte River and I-25: This will be a new overpass over I-25 and the South Platte River at Bayaud Avenue. This will connect Valverde Park to west Baker.

23. W Virginia Avenue at I-25 and railroad and Platte River: This is three, or potentially four, distinct grade-separated crossings. At I-25, the railroad, and the river, these will be new overpasses. There is currently no existing bridge or underpass infrastructure. This will connect Alameda Station and large retail on the east and the residential single family home neighborhood and the Athmar Park neighborhood on the west of the river.

24. South Broadway at I-25: This will be an underpass under I-25 along South Broadway, an improvement to the existing sidewalk infrastructure. This will connect single family homes to the north and south and connect the Merchants Park Shopping Center and I-25 & Broadway Station.

25. Iowa Avenue at the railroad (Consolidated Main Line): This will be an underpass under the railroad, an improvement to the existing sidewalk infrastructure. This will connect Overland Golf Course, Overland Pond Park, Ruby Hill Park and Aqua Golf to the residential single family home neighborhoods to the east and the Fleming Mansion park area.

26. Evans Avenue at US 85 and the railroad (Consolidated Main Line): This will be an overpass along Evans Avenue over the railroad and US 85. This will be an improvement to the existing overpass and sidewalk infrastructure. This will connect Evans Station to Overland Golf Course, Overland Pond Park, Aqua Golf, Pasquinel's Landing, and the surrounding single family homes and nearby Ruby Hill Park.

27. Iliff Avenue at US 85 and the railroad (Consolidated Main Line): This will be a new overpass along Iliff Avenue over the railroad and US 85. This will connect single family homes and Grant Frontier Park, as well as various machine and auto shops.

28. High Street at I-25: This will be a new overpass from High Street south of I-25 over I-25 to University of Denver Station, Veterans Park, the All-City Stadium, and South High School. This will connect over the railroad and US 85. This will connect single family homes and Grant Frontier Park, as well as an industrial area.

29. Huron Street to South Platte River Trail at railroad: this will be a new overpass from Huron Street over the railroad to the South Platte River Trail connecting Cuernavaca Park and residential and retail in the Lower Downtown neighborhood.





TIER THREE

30. Sheridan Boulevard at I-70: This will be an underpass under I-70 along Sheridan Boulevard, an improvement to the existing sidewalk infrastructure. This will connect Berkeley Park, Lake Rhoda and a shopping center to the south to Inspiration Point Park and Willis Golf Course to the north, as well as single family homes on both sides.

31. Clay Street at I-70: This will be a new overpass over I-70 along Clay Street. This will connect single family homes on the north and south sides of I-70 and improve access to Beach Court Elementary School on the north and a daycare, Children's Corner Learning Center, on the south. This will likely require the redevelopment of single family homes to allow an overpass to be feasible.

32. 49th Avenue at the railroad: This will be a new overpass over the railroad at 49th Avenue. This will connect single family homes and open space on the west to a collection of trucking, restaurant, and auto supply shops.

33. Alameda Avenue at the railroad (Consolidated Main Line): This will be an underpass under the two railways and the green space along Alameda Avenue, that is an improvement to the existing sidewalk infrastructure. This will connect Alameda Station to the river via Alameda Avenue and to housing north of Alameda Avenue.

34. Mississippi Avenue at South Platte River: This will be an overpass over the South Platte River, that is an improvement to the existing sidewalk infrastructure. This connects dense residential development along South Broadway and the Athmar Park/Ruby Hill neighborhoods.

35. S Raleigh Street at US 285: This will be an underpass under Hampden Boulevard along S Raleigh Street. This will be an improvement to the existing sidewalk. This will connect single family homes and Gabin Elementary School to Bear Creek Park and Mullen High School.

36. Buchtel Boulevard at Colorado Boulevard: This will be an overpass over the railroad along Colorado Boulevard along Buchtel Boulevard that is an improvement of existing conditions. It connects various restaurants, retail stores, entertainment and a hotel.

Map 6 shows priority tiers for grade-separated crossings.



COSTS

The cost of grade-separated crossings varies significantly based on site conditions, ramp configuration (graded ramps, bridge ramps, elevators, etc.). Including minor items, design, contingency, construction management and inspection, grade-separated crossings are likely to range from \$350 per square foot for a basic grade-separated crossing to \$520 per square foot for a signature crossing designed for aesthetics. **Table 2** shows the cost of Tier 1-3 grade-separated crossing projects assuming the average of the basic and signature grade-separated crossing estimates.

TABLE 2. TIER 1-3 GRADE-SEPERATED CROSSING COSTS

PRIORITY TIER	COST
TIER 1 GRADE-SEPERATED CROSSINGS	\$56 MILLION
TIER 2 GRADE-SEPERATED CROSSINGS	\$68 MILLION
TIER 3 GRADE-SEPERATED CROSSINGS	\$15 MILLION
TOTAL	\$139 MILLION

Note: Estimates do not include projects #10 and #31, as these will likely require redevelopment.

OTHER PEDESTRIAN FRIENDLY INFRASTRUCTURE



OTHER PEDESTRIAN-FRIENDLY INFRASTRUCTURE

Many design treatments in addition to sidewalks and crossings contribute to a highly walkable environment, including geometric treatments, traffic signal treatments and streetscape treatments. While *Denver Moves: Pedestrians & Trails* focuses on the most essential elements of a transportation system for people walking, it is important to acknowledge the city's role in providing these other treatments.

GEOMETRIC TREATMENTS

Pedestrian Refuge Island (or Median)

Pedestrian refuge islands are located in the center of streets, separating traffic of opposite directions, with a pedestrian path provided perpendicular to the street being crossed. Pedestrian refuge islands provide the opportunity for pedestrians to cross the street in two stages. Pedestrian refuge islands are already allowable in Denver and are recommended in the city's *Uncontrolled Pedestrian Crossing Guidelines*.

Curb Extension

Curb extensions are elongations of the sidewalk that narrow the street, shortening the crossing distance for pedestrians and making pedestrians more visible to traffic. Curb extensions are most compatible in locations with on-street parking and are recommended in the city's *Uncontrolled Pedestrian Crossing Guidelines*.

Reduced Corner Radius

Vehicles travel faster through turns with a large turn radius than turns with a small curb radius. Reducing the radius of a corner curb is an effective way of reducing vehicle speeds. Corner radii design should acknowledge that on-street parking increases effective turn radius and that large vehicles can turn into multiple receiving lanes, if available.

Free Right-turn Lane Design

Free right-turns allow drivers to turn right on red without stopping. Since drivers are never controlled by the traffic signal, pedestrians must always treat crosswalks across a free right-turn lane as an uncontrolled crosswalk. Controlled right-turn movements are preferable for pedestrians because they require a driver to stop on red before turning right. Where "pork-chop" islands that channelize right-turns are necessary to provide acceptable turning radii, raised crosswalks are an enhancement for pedestrians.

Raised Crosswalk

Raised crosswalks are speed tables (flat-topped speed humps) outfitted with crosswalk markings and signage, providing pedestrians with a level street crossing. By raising the level of the crossing, vehicles drive more slowly through the crosswalk and pedestrians are more visible to approaching motorists. At signalized intersections, they are most appropriate where "pork-chop" islands separate channelized right-turn lanes from the adjacent through lanes.



Traffic Calming

Traffic calming encompasses a variety of nonphysical, volume control and speed control measures (including both horizontal and vertical devices). Traffic calming is intended to increase safety for all street users by reducing traffic speeds and in some cases volumes.

SIGNAL TREATMENTS

Each of the following signal treatments of operational measures is allowable per the *Manual on Uniform Traffic Control Devices*. In some cases, a recommended decision-making framework for a treatment or operational measure is included as **Appendix B** in this plan.

Pedestrian Countdown Signal

Pedestrian countdown signals give pedestrians “Walk” and “Don’t Walk” signals and inform them how long they have to cross the street. Research suggests that pedestrians are more likely to obey the “Don’t Walk” signal when delivered using a countdown signal.

No Right-turn on Red

When attempting to turn right on red, vehicles must look left to see if the street is clear; vehicles often do not look right before turning and may not see pedestrians to their right. Restricting right-turns on red can reduce conflicts between vehicles and pedestrians. Blank out turn restriction signs are more effective than conventional “No Right Turn on Red” signs. “No Right Turn on Red” signs that specify time-of-day restrictions or “When Pedestrians are Present” are confusing to motorists and are often disregarded.

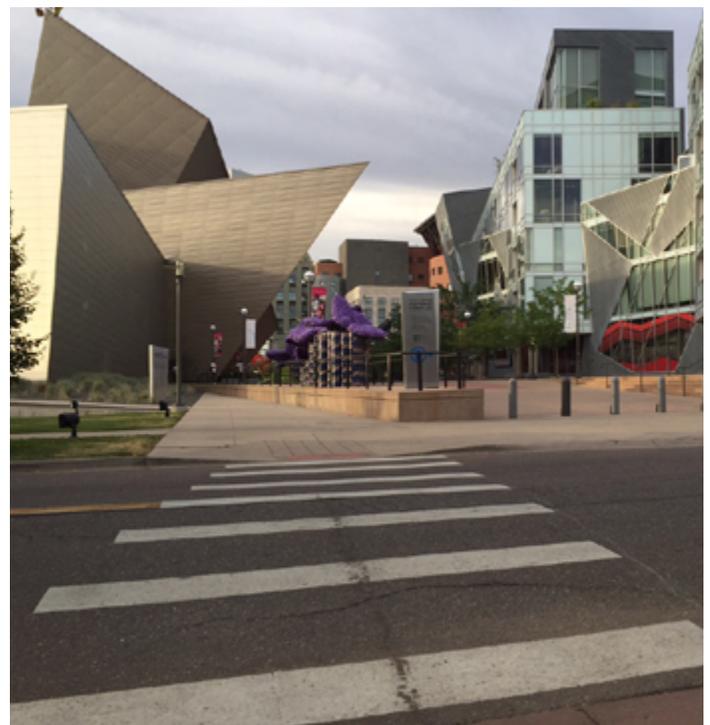
Protected Left- or Right-turn

Where left- and right-turns are permitted at the same

time as pedestrians in the crosswalk, turning vehicles can conflict with pedestrians in the crosswalk. Making left- or right-turns protected, so that they are only allowed with a green arrow exclusive from the “Walk” signal, reduces the risk of turning vehicles conflicting with pedestrians in the crosswalk. A recommended decision-making framework for protected left- and right-turns is included in **Appendix B**.

Pedestrian Scramble (or Barnes Dance)

Pedestrians usually have to cross two streets to get from one corner of an intersection to the opposite corner. A scramble phase allows a pedestrian to cross diagonally. These previously existed in downtown Denver and are sometimes called a Barnes Dance, after Henry Barnes, Denver’s first traffic engineer. Right-turn on red for vehicles should be restricted during the walk phase to ensure pedestrian safety. A recommended decision-making framework for pedestrian scrambles is included in **Appendix B**.





Short Cycle Lengths

Long cycle lengths at signalized intersections result in long pedestrian wait times to cross a street. By shortening an intersections cycle length, pedestrians do not have to wait as long to cross after pushing the button to request a “Walk” signal.

Leading Pedestrian Intervals

The “Walk” signal at a crosswalk usually begins at the same time that through-vehicles in the same direction receive a green light. A leading pedestrian interval advances the “Walk” signal for a few seconds while through-vehicles continue to receive a red light. By allowing pedestrians to get a head start into the crosswalk, it can reduce conflicts between pedestrians and turning vehicles.

Blank-out Turn Restriction Signs

The ubiquity of conventional turn restriction signs, usually for no right-turn on red, contributes to their disregard by motorists. Blank out turn restriction signs, usually for no right-turn on red, activate only when the specified movement is prohibited.

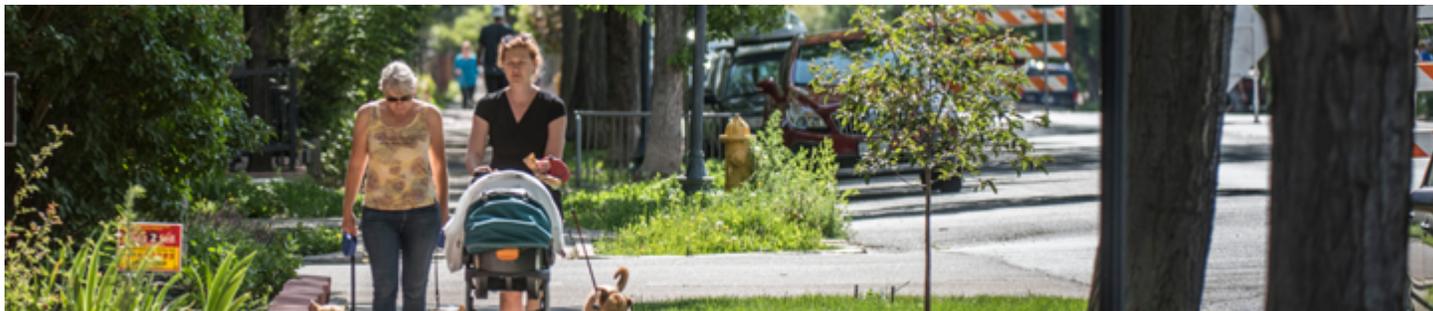
Pedestrian Recall

Pedestrian recall gives pedestrians a “Walk” signal at every cycle. No push-button or detection is necessary since a “Walk” signal will always be given. Pedestrian recalls are useful in areas with high levels of pedestrian activity. They demonstrate that an intersection is meant to serve both vehicles and pedestrians. In general, pedestrian recall should be used if pedestrians actuate a “Walk” signal 75 percent of the time during three or more hours per day. A recommended decision-making framework for pedestrian recall (or its opposite, actuated signals) is included in **Appendix B** to this plan.

STREETSCAPE TREATMENTS

Street Trees

Street trees may be located in a median or in a tree lawn/amenity zone. Street trees beautify a street and provide several environmental and quality-of-life benefits, including stormwater treatment, reducing urban heat island effects, visually narrowing a street to calm traffic and reducing noise impacts of traffic to adjacent properties. Denver’s street trees are under regulation of the City Forester, but their maintenance is a responsibility of adjacent property owners.



Green Infrastructure

Green infrastructure refers to a network of parks, open spaces, drainageways, and floodplains which help mitigate the impacts caused by impervious (hard) surfaces. The city's *Ultra-Urban Green Infrastructure Guidelines* recommend a variety of devices in urban contexts that integrate with the pedestrian realm: streetside and bulbout stormwater planters, green gutters, green alleys and tree trenches.

Street Lighting

Street lighting improves walkability at night: people walking can see better and are better seen by people driving. Street lighting exists on many scales, including street-oriented lighting (intended to light a street) and pedestrian-scale lighting. The city's *Street Lighting Design Guidelines* provide luminaire specifications, technical information and guidance for new streetlight installation and streetlight replacements.

Street Furniture

Street furniture collectively includes objects and equipment installed along streets, often in the amenity zone, including benches, bollards, mail boxes, street lights, bus shelters, and public art. In Denver, street furniture is maintained either by the owner itself (such as the US Postal Service maintaining mail boxes or RTD maintaining bus shelters), by adjacent property owners (sometime in the form of a Business Improvement District), or by the city. Some street furniture is governed by Public Works' *Rules & Regulations for Encroachments in the Public Right of Way*.

Wayfinding

Wayfinding refers to information systems that guide people through a physical environment. Pedestrian wayfinding usually includes signage and maps. Wayfinding is particularly help for pedestrians in urban centers or in transportation facilities. The city is cur-



rently developing pedestrian wayfinding installation guidelines for downtown Denver that will eventually be expanded citywide.

Café Seating

Café seating helps activate streets by creating a vibrant environment, and also helps increase the economic vitality of businesses. While activating streets, cafe seating should not prohibit the safe, comfortable, and direct path of pedestrians. Café seating in Denver is governed by Public Works' *Rules & Regulations for Encroachments in the Public Right of Way*.

INTERSECTIONS

In addition to sidewalks, at-grade crossings and grade-separated crossings, creating a walkable environment that is comfortable for all users will require improvements to many of the city's existing crosswalks at both signalized and unsignalized intersections. Through the *Denver Vision Zero Action Plan*, the city's *Neighborhood Traffic Management Program* (NTMP) and other local planning efforts, the city is identifying safety or comfort challenges for pedestrians at intersections. Funding for these types of improvements may come through *Denver Moves*, *Vision Zero*, NTMP or other sources.

An action item from the *Denver Vision Zero Action Plan* is to develop multimodal Street Design Guidelines. These guidelines may specifically address pedestrian-friendly geometric design treatments as well as pedestrian-friendly signal hardware treatments and operational strategies. For reference, **Appendix B** includes candidate decision-making flowcharts for pedestrian scrambles (also known as Barnes Dance phases in Denver) and protected turning movements.

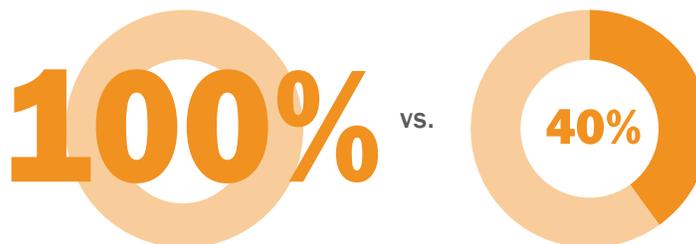




BENEFITS OF THE COMPLETE PEDESTRIAN NETWORK

Buildout of the Complete Network will achieve the city's vision for its pedestrian system by meeting the goals derived from community input. Specific benefits of the Complete Network related to each goal are:

- Completing Denver's sidewalk network would provide accessible sidewalks on nearly all city streets, including those to key destinations, those within low-income areas and areas of health concern and those along the High Injury Network.



- Currently, the average signal spacing across arterial streets is 1,130 feet. With buildout of the Complete Network the average crossing spacing will be 900 feet (approximately $\frac{1}{6}$ mile) on arterial and collector streets.

- Currently, the average crossing spacing across barriers is 3,380 feet for free-ways (almost $\frac{2}{3}$ mile), 3,150 feet for railroads (almost $\frac{2}{3}$ mile) and 3,600 feet for rivers (over $\frac{2}{3}$ mile). Collectively, with buildout of the Complete Network the average crossing spacing across these barriers will be 2,900 feet (less than $\frac{2}{3}$ mile).



MAINTENANCE

Denver Moves: Pedestrians & Trails emphasizes the importance of funding and constructing a Complete Network of sidewalks, at-grade crossings and grade-separated crossings. This plan also recognizes the importance of maintenance, particularly of sidewalks, in creating a walkable environment that is accessible and comfortable for all users of all abilities.

Individual property owners are responsible for the routine maintenance (such as snow clearance) and rehabilitation maintenance of sidewalks (repairing cracked, heaved or otherwise out-of-compliance sidewalks). Lack of education on and enforcement of Denver's Code of Ordinances has resulted in a lack of both routine maintenance and rehabilitation maintenance of Denver's sidewalk network.

NEIGHBORHOOD SIDEWALK REPAIR PROGRAM

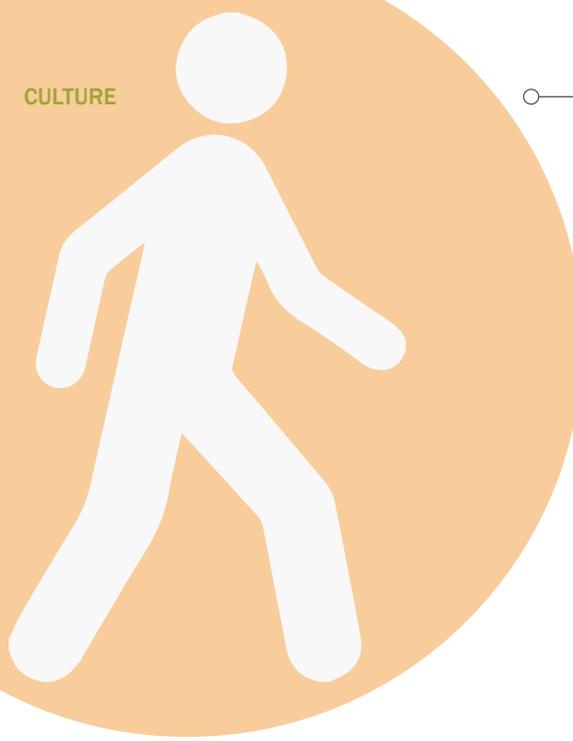
Recently, Mayor Hancock, City Council and city staff worked together to pursue improvements to maintenance practices of Denver's sidewalks. The 2018 Budget includes \$4 million for the Neighborhood Sidewalk Repair Program, a program for sidewalk inspections and repairs on a region-by-region basis. The intent of this program is to address damaged, sloping and uneven sidewalks for a more accessible network of sidewalks citywide. The program includes a systematic way of identifying and addressing sidewalks in need of repair along with financial assistance to homeowners who cannot afford the full cost of repairs. Financial assistance includes extended repayment assistance and affordability discounts for those who qualify. Along with the program, the city is also authorizing less expensive repair methods not previously allowed.

FLAGSTONE SIDEWALKS

Many older parts of Denver have flagstone sidewalks including many of Denver's landmark districts. The Neighborhood Sidewalk Repair Program will not require replacement of flagstone sidewalks that are safe and in good repair. Where the program finds that flagstone sidewalks are unsafe or in need of maintenance, property owners will have the opportunity to repair or replace flagstone sidewalks at their own cost. If replacement by the city is necessary, property owners will receive information on their options for replacing flagstone. Property owners can opt to pay the city to replace damaged flagstone sidewalks with colored concrete.

WHAT ELSE THE CITY CAN DO

The Policy & Program Action Plan component of *Denver Moves: Pedestrians & Trails* recommends evaluation of the Neighborhood Sidewalk Repair Program so that improvements can be made to the program over time. The Policy & Program Action Plan component also recommends an education program regarding routine sidewalk maintenance such as snow clearance.



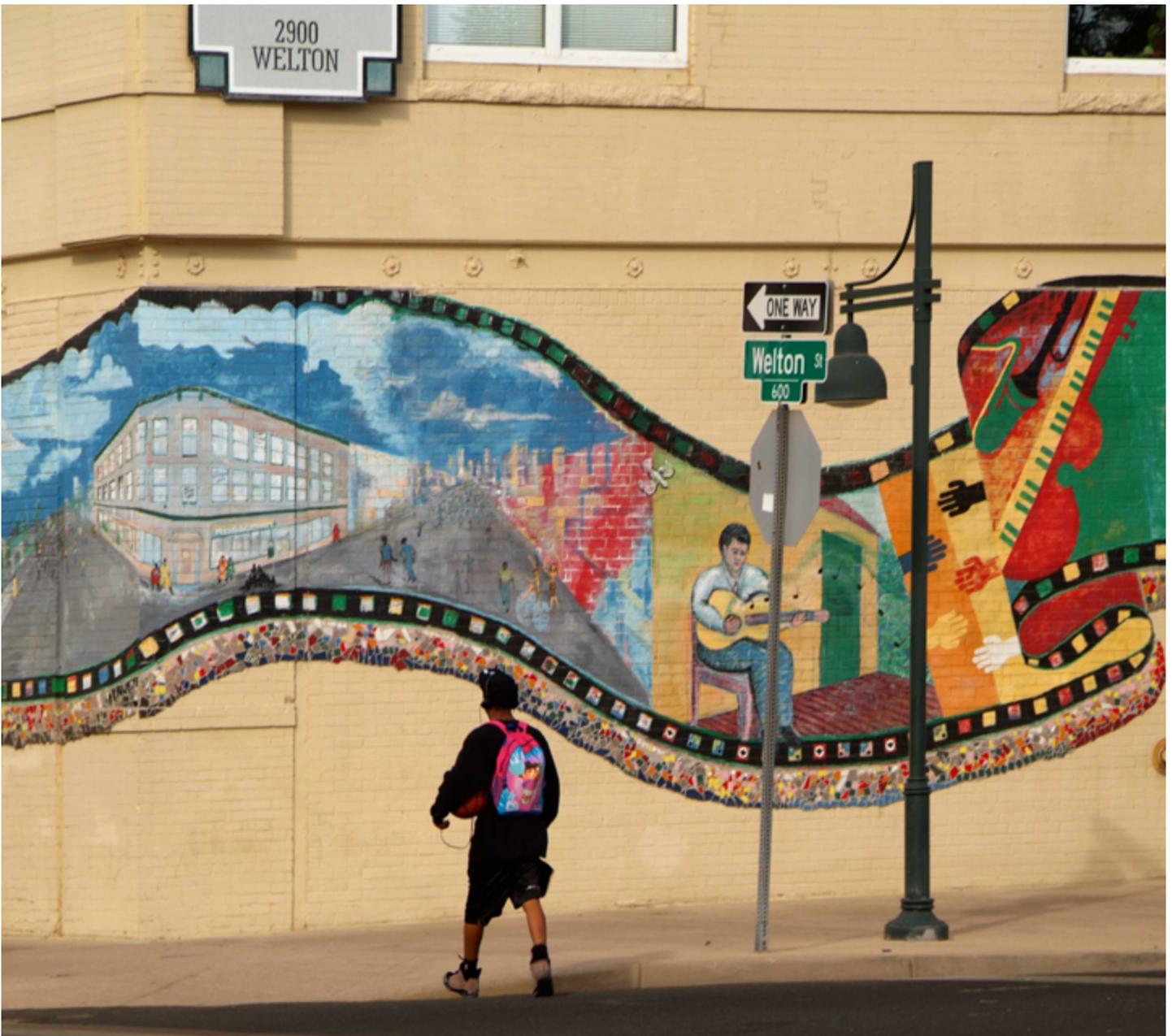
CULTURE

Creating a walkable Denver requires more than just great infrastructure. A variety of education and encouragement efforts can also increase walking in Denver and safety for people walking. A policy and program action plan recommendation is that Public Works, Community Planning and Development and Public Health & Environment work together to identify roles in developing implementing education, encouragement and enforcement programs to promote walking. These may include programs that promote a culture of safety, as recommended by the *Vision Zero Action Plan*. These may also include Safe Routes to School efforts, demonstration or interim design projects, or other programs that leverage partnerships with local advocacy organizations.



ALTERNATIVE FUNDING

Beyond city-derived funding such as capital improvement funds, general obligation bonds or other potential future funding sources, alternative funding can provide a significant amount of funding for pedestrian-related projects. Many of these funding sources are federally-derived and allocated directly through the Federal Highway Administration or indirectly through the Denver Regional Council of Governments. Others, such as CDOT's FASTER Safety program, are administered at the state and local levels. In many cases, sidewalks and crossings may only be a portion of a competitive project; however, the city should seek opportunities to apply for stand-alone pedestrian projects as well as projects with a pedestrian component that will be competitive for these funding sources.





POLICIES & PROGRAMS

Investments in sidewalks, at-grade crossings and grade-separated crossings are critical for the city to achieve its vision for its pedestrian system. However, a range of policy and program actions are also necessary for the city to achieve its vision. These policy and program actions go beyond the scope of *Denver Moves: Pedestrians & Trails*; however, completing these actions is valuable for improving the quality of street design, operations and maintenance, for collecting and applying important pedestrian data to pedestrian projects, for attracting more funding, for supporting respectful user behavior and for planning for specific needs. While city staff are likely to facilitate these policy and program actions, community input on these actions is appropriate in many cases. The Mayor's Pedestrian Advisory Committee can help advise on the issues surrounding, and proposed direction for, several of these actions.

In many cases, the *Denver Vision Zero Action Plan* identifies actions that otherwise would be relevant as policy and program actions in *Denver Moves: Pedestrians & Trails*, including: holistic street design guidelines, signalized intersection hardware and operational strategies, geometric design strategies, maintaining access during construction, pedestrian-friendly speed limits, crash data and safety projects. Many of these actions are omitted from the *Denver Moves: Pedestrians & Trails* action plan to avoid redundancy.

Denver Moves: Pedestrians & Trails has several pedestrian-related policy and program actions, some of which are identified as high-priority based on Task Force feedback. The policies identified in this section are not intended to be a final policy recommendation, but rather a starting point for City staff to explore and further refine upon implementation.



STREET DESIGN & OPERATION

1. Pedestrian-scale Street Lighting

Revise the city's *Street Lighting Design Guidelines* to provide revised guidance as to where pedestrian-scale street lighting should be considered. Whereas this document currently uses pedestrian volume as the key criteria, pedestrian-scale street lighting may be appropriate within Pedestrian Priority Areas, as defined in *Blueprint Denver*.

2. Shared Space Guidelines

Develop and adopt guidelines for shared spaces in public rights-of-way.

3. ADA Transition Plan

Develop and adopt an ADA Transition Plan that addresses the public right-of-way (including curb ramps, sidewalks and traffic signals) in addition to other City-owned facilities. Use Public Rights-of-Way Accessibility Guidelines (PROWAG) to identify opportunities for deploying ADA best practices, especially focusing on two curb ramps per corner, push button placement, and driveway cross-slope.

High-priority

4. Maintaining Sidewalk Width with Café Seating

Review and revise Public Works' Rules & Regulations regarding café seating in the public right-of-way to ensure that adequate space is reserved for pedestrian throughput and other streetscape elements, especially in areas with high pedestrian volumes.

5. Pedestrian Accommodations with Transportation Network Companies

Work with Transportation Network Company (TNC) providers (e.g. Uber, Lyft) to establish protocols for TNC operations to ensure safe pickup and drop off (such as geofences or neighborhood pickup/drop off locations). Coordinate TNC operations with pedestrian-scale wayfinding (below).

6. Pedestrian-scale Wayfinding

Develop and adopt guidelines for the implementation of pedestrian-scale wayfinding in the public right-of-way.

Middle-priority

<p>7. Parklet Installation Guidelines</p> <p>Develop and adopt guidelines for parklet installation within the public right-of-way that enables the city to leverage relationships with private sector partners; these guidelines may be appropriate as a part of Denver’s Community Streets Program.</p>	
<p>8. Pedestrian-related Elements of Street Design Guidelines</p> <p>Denver’s <i>Vision Zero Action Plan</i> identifies an action to develop holistic Street Design Guidelines. While these will inherently include pedestrian related elements of street design, they should also include non-safety related elements including geometric, signal and streetscape elements.</p>	<p>High-priority</p>
<p>9. Accommodations during Construction.</p> <p>Develop a policy that outlines provisions for accommodating pedestrians during construction projects that otherwise infringe on or prohibit pedestrian movement.</p>	<p>High-priority</p>

DATA COLLECTION

<p>10. Pedestrian Count Data and Database</p> <p>Acquire necessary equipment and develop a program to routinely collect pedestrian volume data and record it in a database, including guidance for the collection of pedestrian and bicyclist count data as a part of vehicle counts.</p>	<p>High-priority</p>
<p>11. Uncontrolled Pedestrian Crossing Database</p> <p>Develop an asset database (possibly in a Geographic Information System) of marked, uncontrolled pedestrian crossings including attribution regarding markings, signage, beacons or signal devices; develop a GIS database of traffic volumes (Average Daily Traffic at minimum) so that the city’s <i>Uncontrolled Pedestrian Crossing Guidelines</i> can be evaluated at locations citywide.</p>	<p>Middle-priority</p>



12. Database for Other Pedestrian Infrastructure

Develop additional asset databases of, or expand existing databases to include, pedestrian infrastructure including geometric, signal and streetscape treatments.

13. Sidewalks Constructed by Development

Middle-priority

Upon inspection, record and track new sidewalk constructed by development, or sidewalk that is brought into compliance through development.

FUNDING & IMPLEMENTATION

14. Identify and evaluate funding options for sidewalk construction on existing streets without sidewalks.

High-priority

15. Allocate annual funding to address uncontrolled pedestrian crossings or pedestrian safety-related improvements, consistent with Vision Zero's recommendations for systemic crash location review and countermeasure identification.

High-priority

16. Develop an approach to complete installation of pedestrian signal heads where missing at existing signalized intersections.

High-priority

17. Identify on the 6 and 12 year Capital Improvement Plan high-cost improvements, including grade-separated crossings of freeways, railroads, rivers and other barriers. Seek grant funding or other funding opportunities for design and construction.

High-priority

18. Sidewalk Installation with Development (New Construction or Major Renovations)

Revise Public Works' *Rules & Regulations for Sidewalk and Curb Ramp Construction* to ensure that sidewalks are being appropriately constructed with development, including new construction or renovations even if density is not changing.

High-priority



MAINTENANCE

19. Neighborhood Sidewalk Repair Program Evaluation

Evaluate the efficacy of the Neighborhood Sidewalk Repair Program. Key considerations in this evaluation should include whether the program is resulting in well-maintained pedestrian infrastructure and whether the program is affordable for Denver residents and property owners. Consider modifications to the Neighborhood Sidewalk Repair Program based on the program evaluation.

High-priority

20. Routine Maintenance Policies

Explore limitations to the current policy on sidewalk maintenance. Examine areas where sidewalks are not regularly maintained due to property/access constraints and identify potential solutions.

High-priority



EDUCATION, ENCOURAGEMENT & ENFORCEMENT

21. Maintenance Education & Encouragement

Develop an education and encouragement campaign regarding property owner responsibilities for routine maintenance (snow removal) and rehabilitation maintenance of sidewalks.

22. Other Education, Encouragement & Enforcement Efforts

Identify Public Works', Community Planning and Development's and Public Health & Environment's roles in developing and implementing education, encouragement and enforcement programs to promote walking, including programs that implement the city's *Vision Zero* goal, Safe Routes to School efforts, and programs that leverage partnerships with local advocacy organizations. In some cases, these may include demonstration or interim design projects. Implement education, encouragement and enforcement efforts consistent with the identified roles.

23. Policy Enforcement Needs Assessment

Identify resource needs to enforce policies that affect the pedestrian realm, including routine/rehabilitation maintenance violations, tree maintenance violations and other violations of rules and regulations regarding encroachments in the public right-of-way. Program funds to implement enforcement. Focus enforcement in Pedestrian Priority Areas.

24. Complete Streets Policy

Update Denver's Complete Streets policy so that it reflects current city transportation values and priorities, as well as national best-practices for Complete Streets policies.



MONITORING PROGRESS

Achieving Denver’s vision for a walkable, comfortable transportation system will take time. While the pedestrian network builds out, the city can monitor its progress annually so that the Denver community, decision-makers and City staff understand the progress that the city is making towards its vision and goals.

At minimum, Denver Public Works will prepare a brief annual report of pedestrian projects completed. The annual report will identify:

- Capital (not maintenance) pedestrian projects completed and whether or not they were identified by *Denver Moves: Pedestrians & Trails*; for projects not identified by *Denver Moves: Pedestrians & Trails*, provide a description of why the project was identified and selected.



■ For each project:

□ A brief description of how the project helps achieve the goals of *Denver Moves: Pedestrians & Trails* (Accessibility, Connectivity, Destination Access, Equity, Health and Safety); for example:

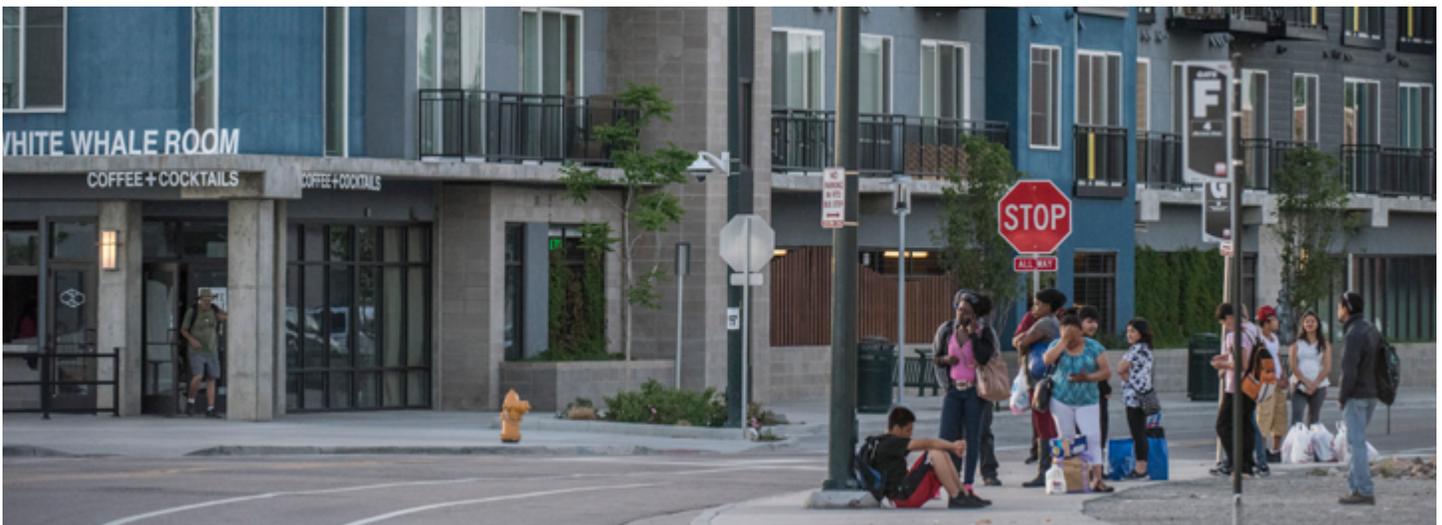
- Which projects filled in missing sidewalk segments, including gaps?
- Which projects provided access to a transit facility or high-priority destination?
- Which projects were completed in low-income areas or areas of health concern?
- Which projects were completed along the High Injury Network?

□ Identify the funding source or sources used.

■ Policy and program actions achieved.

Every two years as a part of this annual report Denver Public Works will provide some updated performance measure status per the Goals & Performance Measures identified by *Denver Moves: Pedestrians & Trails*. Specifically, performance measures to be included are:

- Citywide percent of sidewalks complete, too narrow and missing; same percentages near high-priority destinations: transit facilities, schools, parks, grocery stores; same percentages within low-income areas and areas of health concern; same percentages along the *Vision Zero* High Injury Network.
- Average signal spacing across arterial streets and along the *Vision Zero* High Injury Network.
- Average crossing spacing across barriers.



TRAILS ELEMENT

Vision, Statement of Purpose, Goals & Performance Measures

VISION

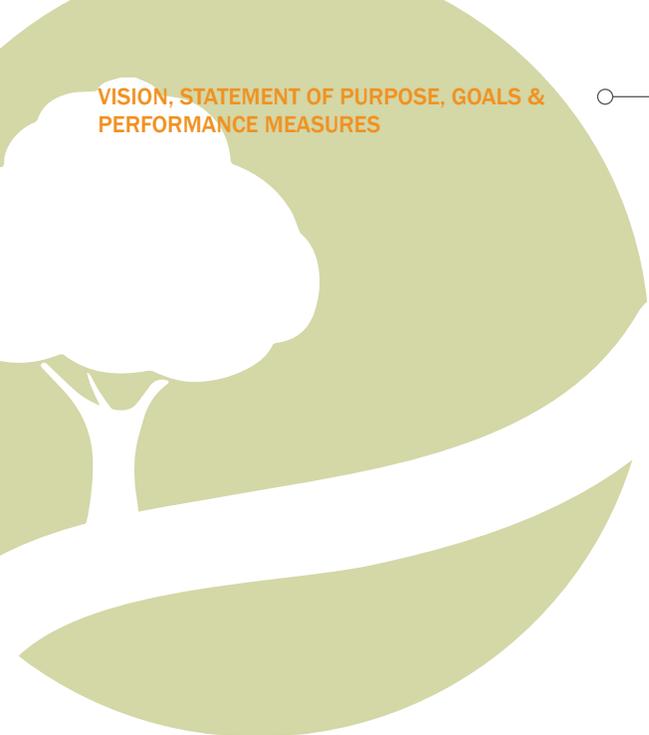
The vision for the trails network in the City and County of Denver is one that provides residents, employees and visitors with a safe and connected set of off-street facilities that are comfortable for multiple user groups. The trails network will be accessed safely and conveniently, with a focus on connectivity to all parts of the city. Trails will provide a vital component to an integrated system of off-street trails, on-street bikeways, walkways, and transit that will create a world-class recreation and multimodal transportation network that is safe, well-maintained and beautiful in context and design. The trail network will provide connections to important destinations, direct routes throughout the city, important regional connectivity, and an opportunity for all ages and abilities to comfortably bike and walk for recreation and transportation.





STATEMENT OF PURPOSE

Denver Moves: Pedestrians & Trails establishes a Complete Network for trails including new trail segments (including singletrack trail systems), widening of existing trail segments, new trail connections, street crossing upgrades, trail connection upgrades and high-priority on-street bikeway connections. The Complete Network relies on trail design guidelines and street crossing types that, when implemented, will create a high-quality trail system for users of all ages and abilities. Denver Moves: Pedestrians & Trails prioritizes elements of the Complete Network so staff from Denver Parks & Recreation and Denver Public Works have clear direction for project implementation. For high-priority projects, Denver Moves: Pedestrians & Trails includes conceptual designs of selected projects. Lastly, Denver Moves: Pedestrians & Trails identifies the overall funding need to buildout the Complete Network, along with a portrayal of how long buildout will take at different funding levels and how those different funding levels affect the goals and objectives derived from community input.



GOALS & PERFORMANCE MEASURES

Trails-related goals were derived from community input. Each goal is followed by a performance measure so that the goals are measurable and so that progress can be tracked over time. Performance measures are written in italics following each goal.

Goal 1: Connectivity

A trail network without gaps that can be conveniently and comfortably accessed by residents and visitors biking and walking throughout the city.

Gaps in the trail network; presence of existing and proposed, high and low ease of use bicycle facilities providing direct access to trail connections; proximity to trails and access to other high ease of use bicycle facilities; and sidewalk completion (≥ 4 feet) within $\frac{1}{2}$ mile of trail connections.

Goal 2: Destination Access

A trail network with access points and crossings that provide comfortable connections to trails from

key destinations including grocery stores, parks, schools, rail stations and bus stops.

Density of key destinations (grocery stores, parks, schools, bus stops, rail stations) in combination with distance from the nearest trail access point.

Goal 3: Equity

A trail network that can be accessed comfortably and conveniently from throughout the city, especially low-income areas.

Sidewalk completion around trail access points and bicycle access to trails in census tracts where at least 20 percent of the population is below the Colorado state poverty level.

Goal 4: Health

A trail network that can be accessed comfortably and conveniently from throughout the city, especially areas of health concern and can be used to access other facilities that support local health indices.

Sidewalk completion around trail access points and bicycle access to trails in areas of high childhood obesity rates.

Goal 5: Safety

A well-maintained network of appropriately designed trails and access points that fosters a high level of personal safety, infrequent conflicts between bicyclists and pedestrians and infrequent conflicts between trail users and vehicles at street crossings and access points.

Percent of trails that meet trail design standards; trail counts.



EXISTING CONDITIONS RECAP

The *Denver Moves: Pedestrians & Trails Existing Conditions* report (May 2017) summarizes each of the trails-related goals and performance measures. The Existing Conditions report establishes a baseline so that the city can measure progress moving forward. Key findings from the Existing Conditions report are:

Goal 1: Connectivity

- There are a number of locations throughout the trails network missing segments of trail, including gaps along the Weir Gulch Trail, East Harvard Gulch Trail and other trails in the eastern part of the city.
- Within ½ mile of trail access points, 61 percent of sidewalks are complete and sufficiently wide (≥ 4 feet).



- Several City neighborhoods are beyond one mile from an existing trail, especially distant neighborhoods: Skyland, City Park, Park Hill and surrounding neighborhoods; West Highland and Sunnyside; portions of Westwood and Athmar Park; portions of Washington Park; Southmoor Park, Fort Logan and Marston.

Goal 2: Destination Access

Several trail segments have long distances between access points which makes it difficult to access nearby destinations, including segments of the South Platte River Trail, Sand Creek Trail and High Line Canal Trail.

Goal 3: Equity

Only 50 percent of sidewalks are complete and sufficiently wide (≥ 4 feet) within ½ mile of trail access points in low-income areas as compared to 61 percent within ½ mile of trail access points citywide.

Bicycle access to trails in low-income neighborhoods is slightly better as compared to citywide; 22 percent of trail access points within low-income neighborhoods are connected to an existing *Denver Moves: Bicycles* bicycle facility as compared to 19 percent citywide.

Goal 4: Health

Sidewalk completion and width within ½ mile of trail access points are equal both in areas of health concern and citywide (61 percent).

Bicycle access to trails in areas of health concern is slightly better as compared to citywide; 24 percent of trail access points within areas of health concern are connected to an existing *Denver Moves: Bicycles* bicycle facility as compared to 19 percent citywide.

Goal 5: Safety



Some of Denver's trails experience high user volumes. Trails with weekend day counts exceeding 1,000 users per day are: the South Platte River Trail, the Cherry Creek Trail and the Bear Creek Trail.

INFRASTRUCTURE

Complete Network

Denver Moves: Pedestrians & Trails establishes a Complete Network for trails including a variety of project types to achieve the city's vision for its trails system:

New trail segments include both and singletrack trails. New **hard-surface trails** fill gaps in the existing paved trail system, create new trails within or between neighborhoods, and serve new, developing areas of the city. **Singletrack trails** are typically proposed within the same corridors as hard-surface trails but create opportunities for mountain biking or trail running. The intent of the plan is to provide a series of singletrack trail facilities located throughout the city. **Skills courses** are areas along the singletrack trail corridors where challenge features are created including berms, rocks, logs, ramps and other features.

trail corridors where challenge features are created including berms, rocks, logs, ramps and other features.

Widening of existing trail segments are identified where trails need to be widened from their existing condition to meet the proposed design guidelines for Denver's trails.

New trail connections are trail access points that typically connect to a nearby street. **Trail connection upgrades** are designated in locations where the existing trail access point does not function comfortably or safely, usually where a connection could be relocated to connect to a nearby street at a traffic signal rather than mid-block. In some cases, existing connections that these replace may be future candidates for removal. Some reasons why they may be removed include directing trail users to unsafe intersections or street crossings or being spaced too close to new trail connections or to trail connection upgrades as to constitute a safety hazard for users on the trail. Removing an existing connection will not take place until the new/relocated connections are in place.

Street crossing upgrades are designated in locations where a trail crosses a street and may include marked crossings, flashing beacons, signals or grade-separated crossings (underpasses or bridges). In general, street crossing upgrades are identified to improve user comfort and safety. If the crossing remains at-grade, the necessary upgrades will be consistent with the city's *Uncontrolled Pedestrian Crossing Guidelines* (September 2016). Grade-separated crossings are proposed primarily at major streets where they will create a high-quality user experience by allowing trail users to completely avoid conflict with roadway traffic.

High-priority on-street bikeway connections are connections from the off-street trails to existing or proposed on-street bikeways from *Denver Moves: Bicycles*. These connections are especially important to create a seamless system of bicycle facilities citywide.

Maps 7 and 8 show the Complete Trails Network.

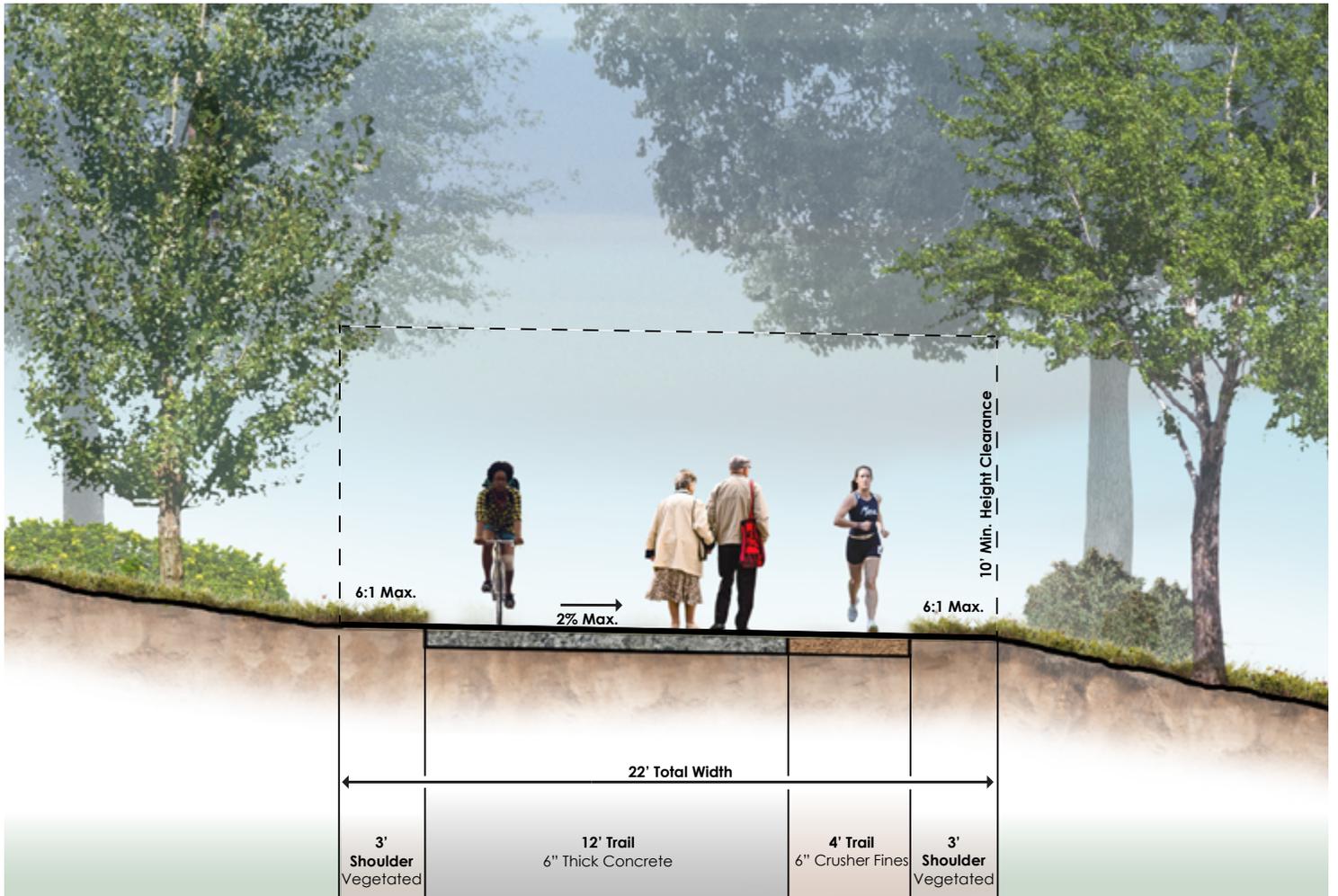


TRAIL DESIGN

Trail design guidelines

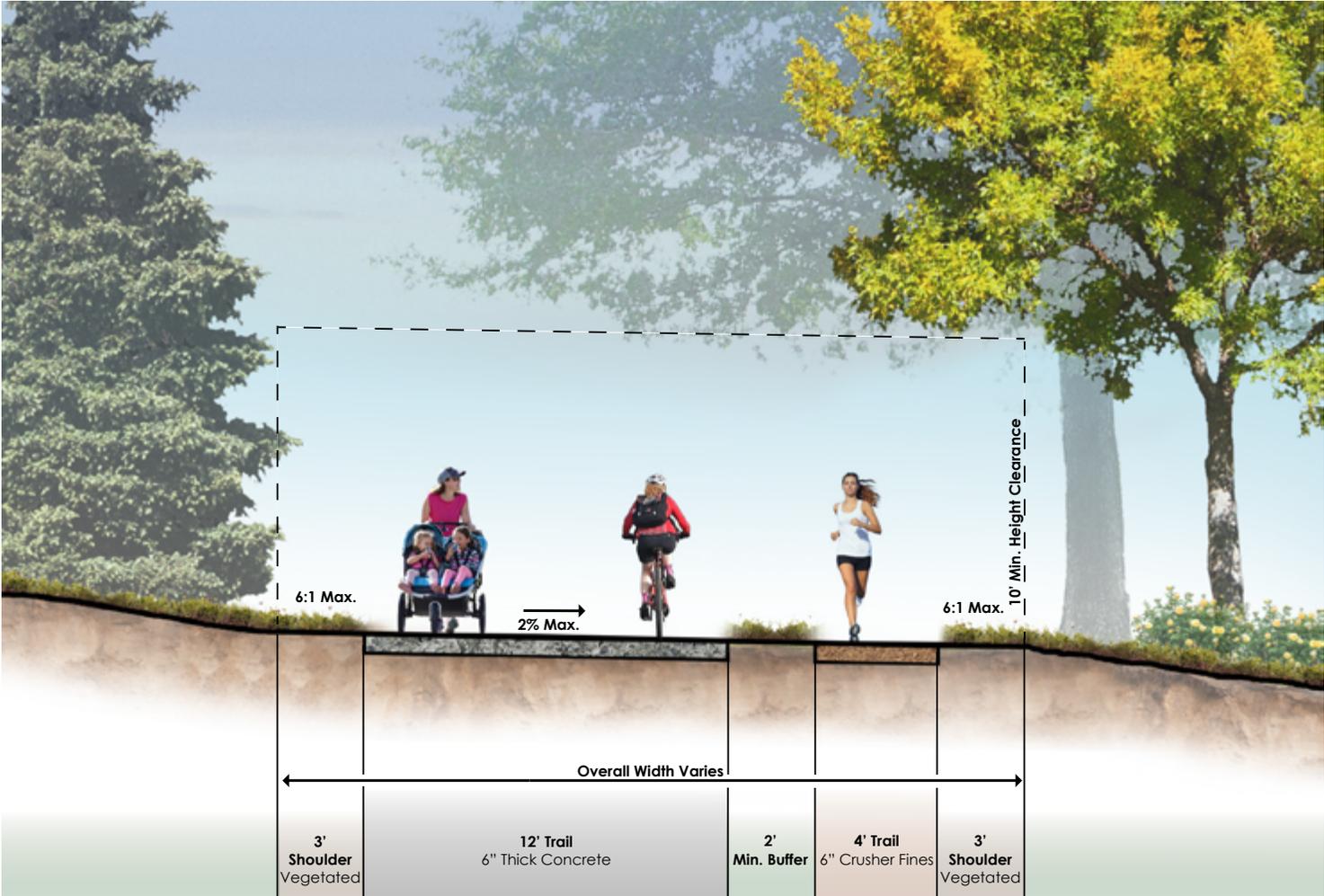
were developed through *Denver Moves: Pedestrians & Trails*. These guidelines were developed based on relevant design guidelines including AASHTO's *Guide for the Development of Bicycle Facilities, 4th Edition* and other relevant information including counts collected on the trails network and the project team's combined trails planning and design experience.

The Parks & Recreation Department will strive to achieve these design lines through new trail construction and trail retrofits; upon adoption by the Parks & Recreation Department these can become trail design standards. These trail design guidelines are summarized in the following figures.

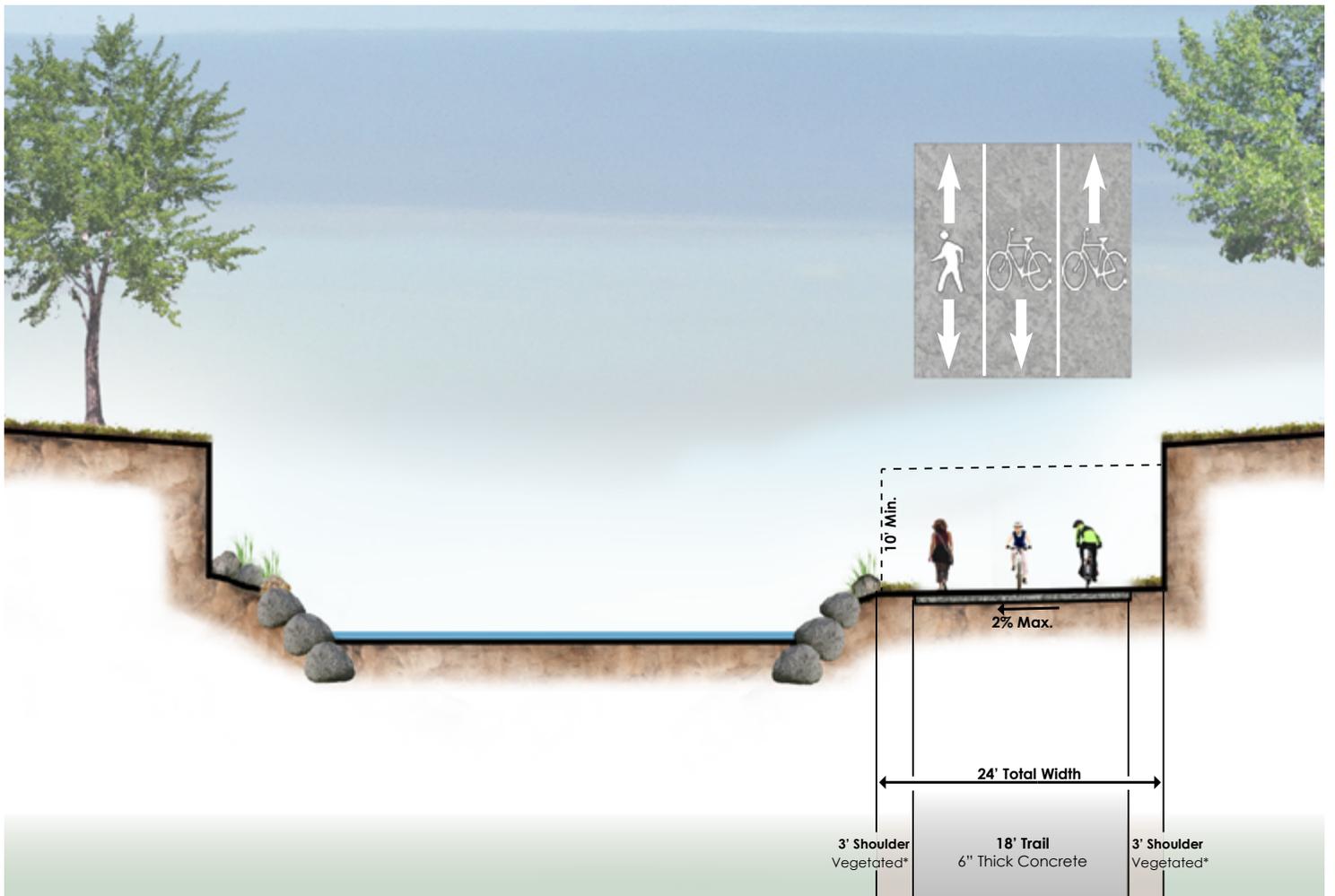


Regional Trail
with Adjacent Crusher Fines Trail





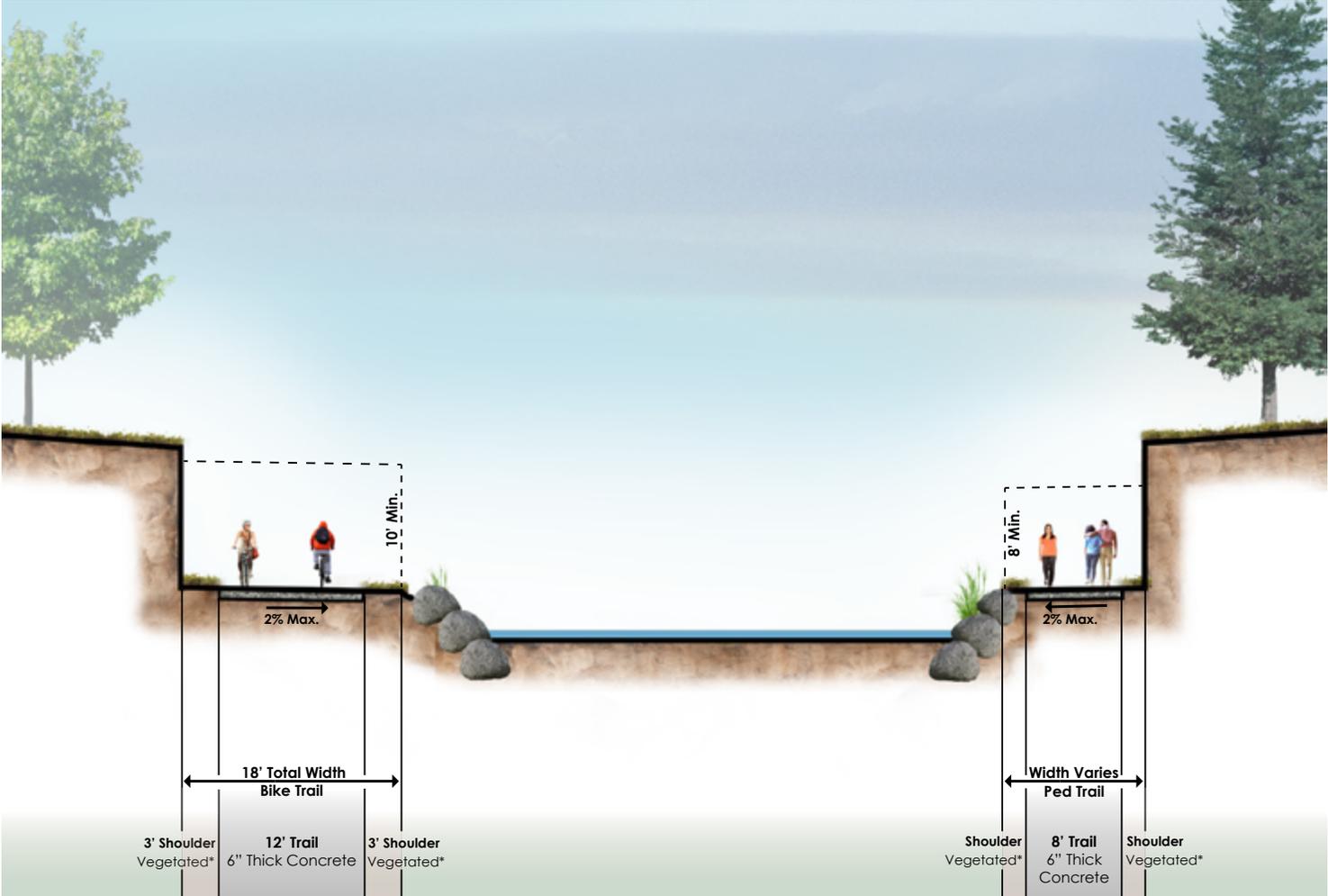
Regional Trail
with Detached Crusher Fines Trail



Regional Trail
Cherry Creek (Downing St. to Colfax Ave.)

* Concrete rumble strip when adjacent to wall or boulders.

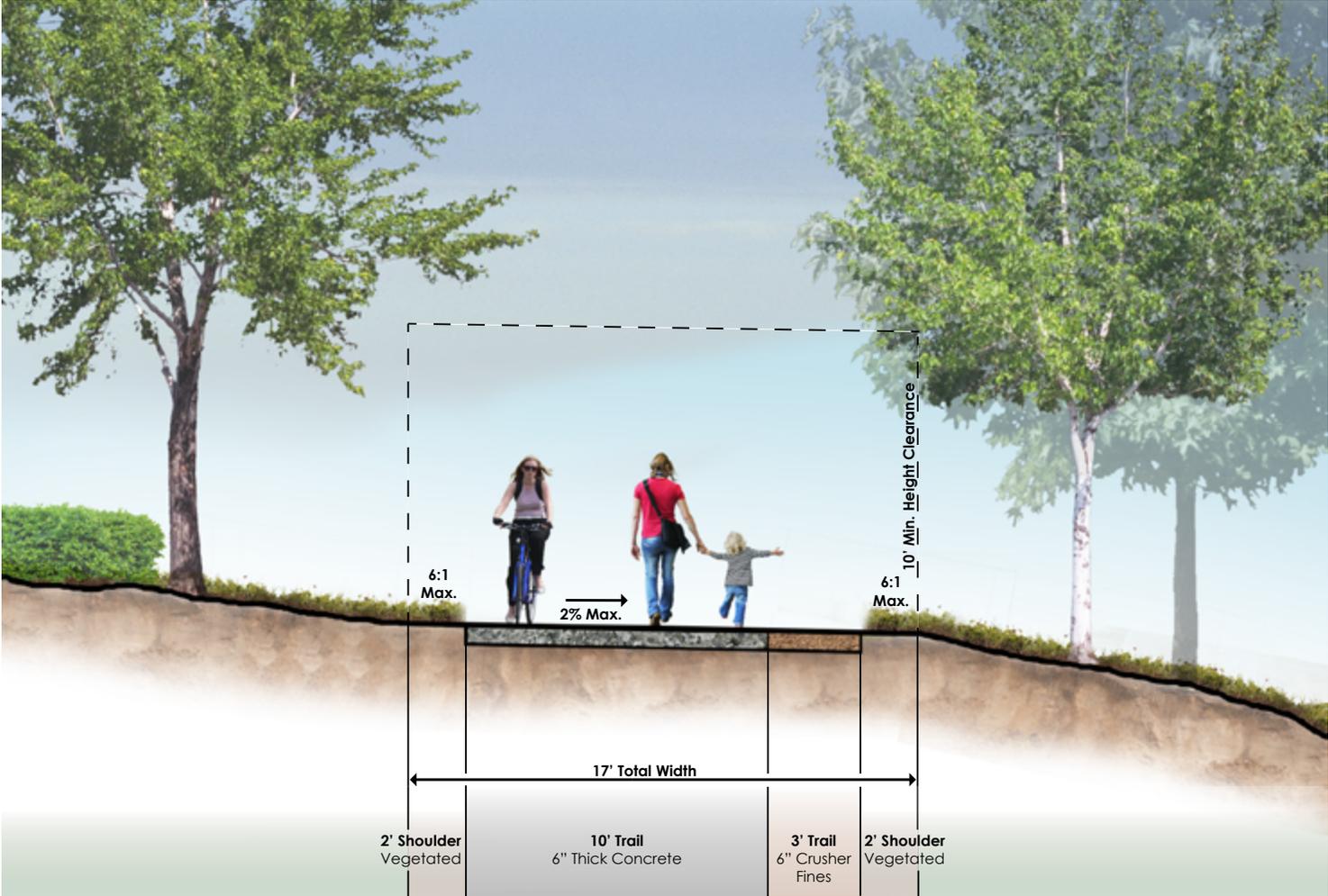




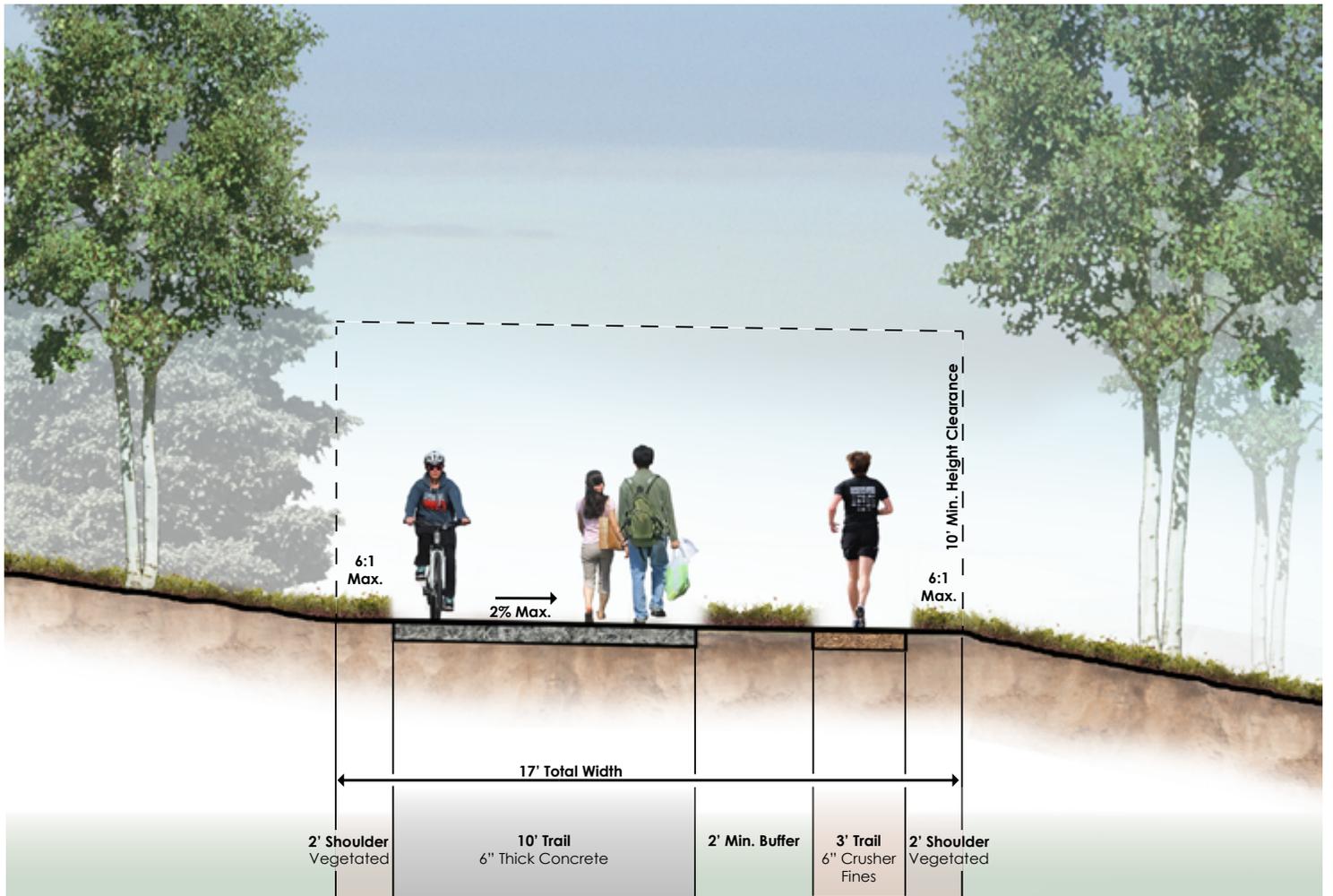
Regional Trail
Cherry Creek (Colfax Ave. to South Platte River)

* Concrete rumble strip when adjacent to wall or boulders.



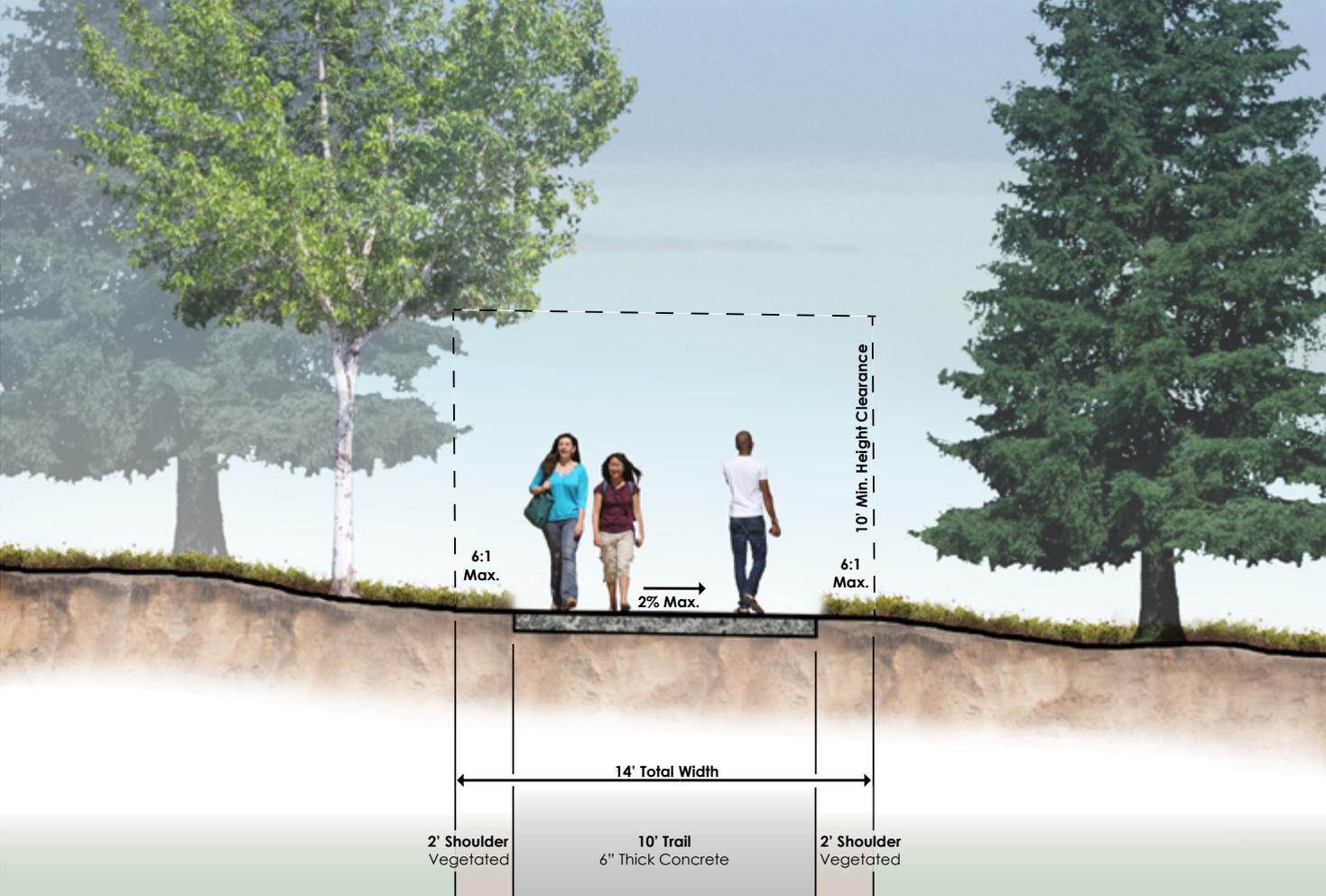


Collector Trail
with Adjacent Crusher Fines Trail

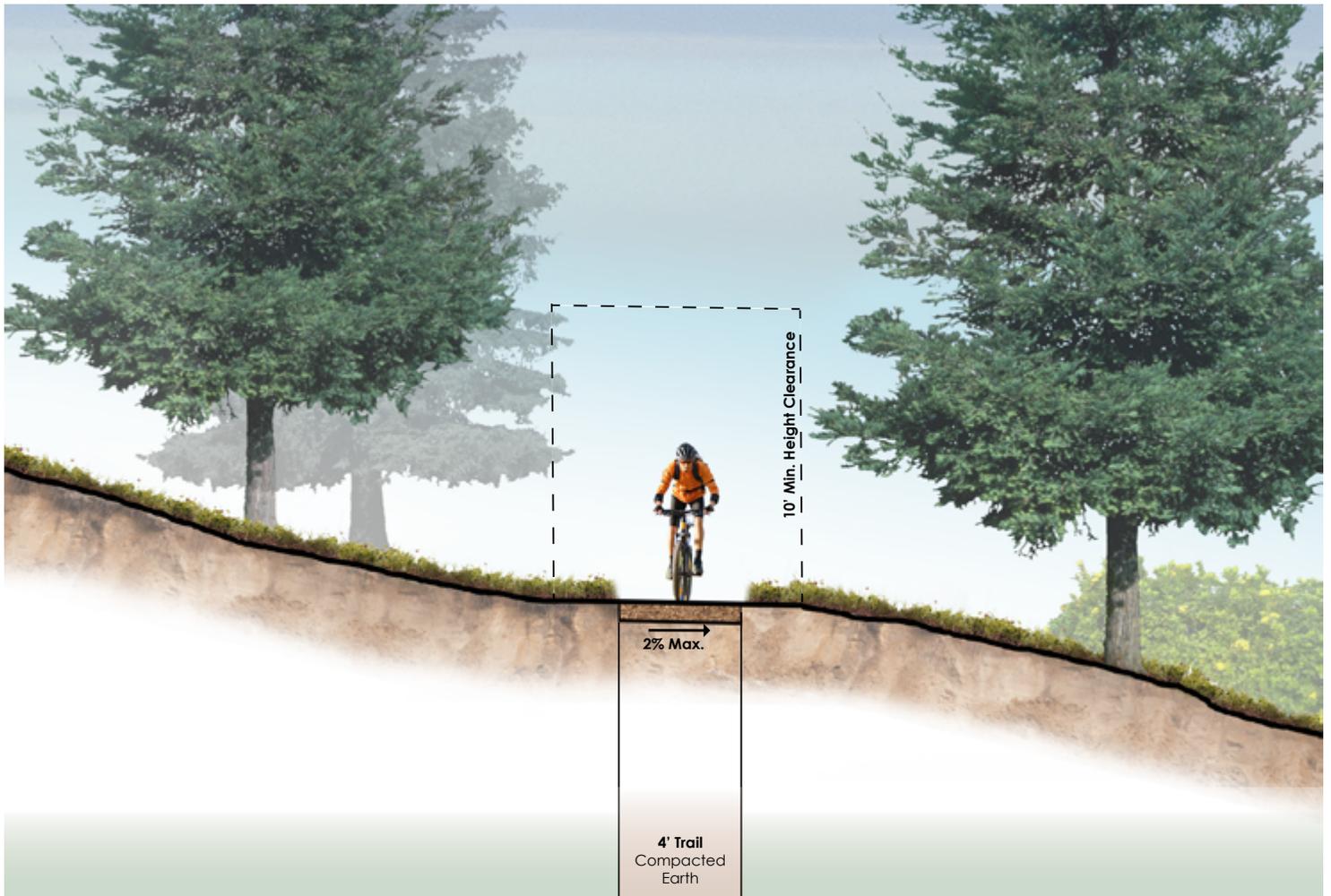


Collector Trail
with Detached Crusher Fines Trail



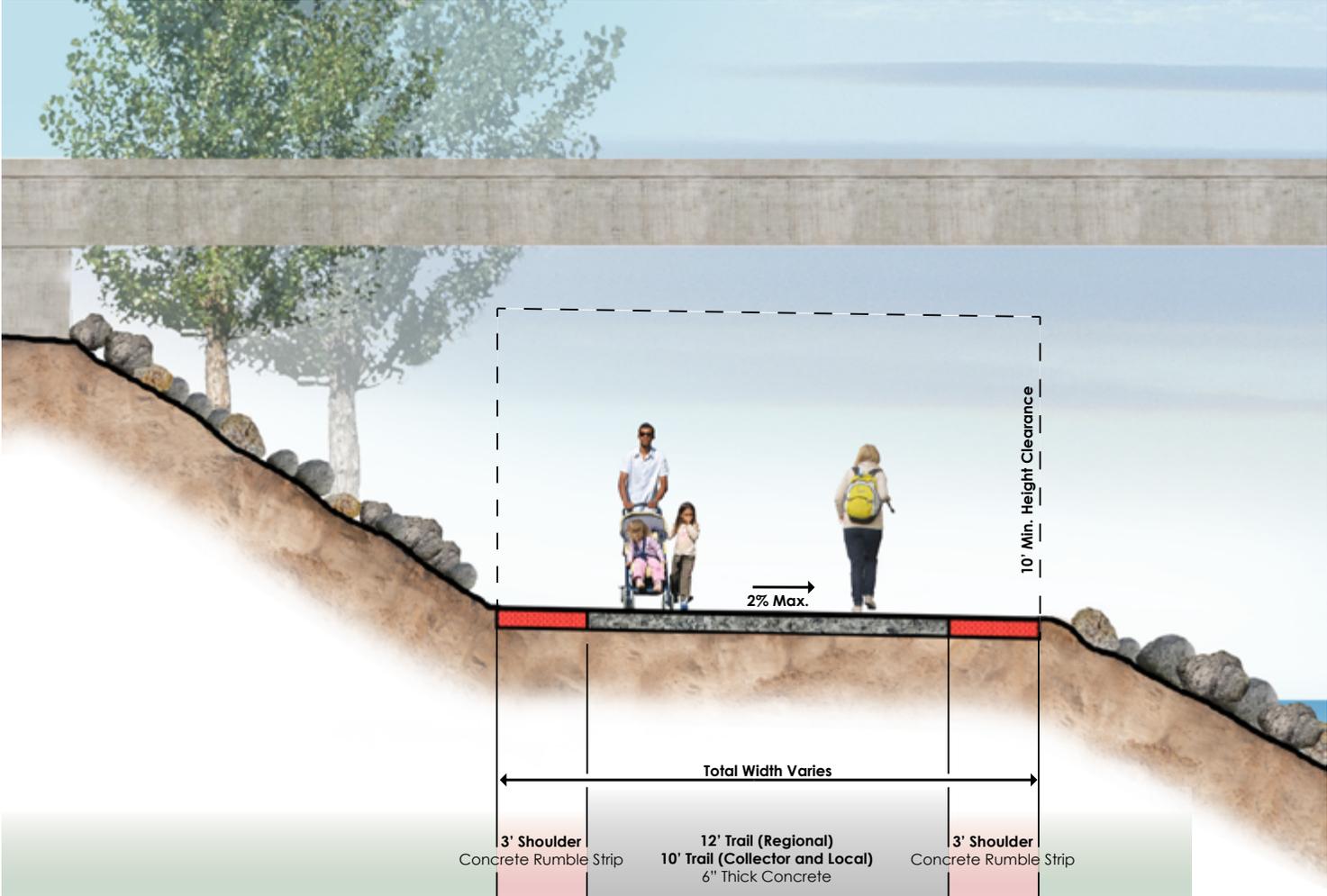


Local Trail

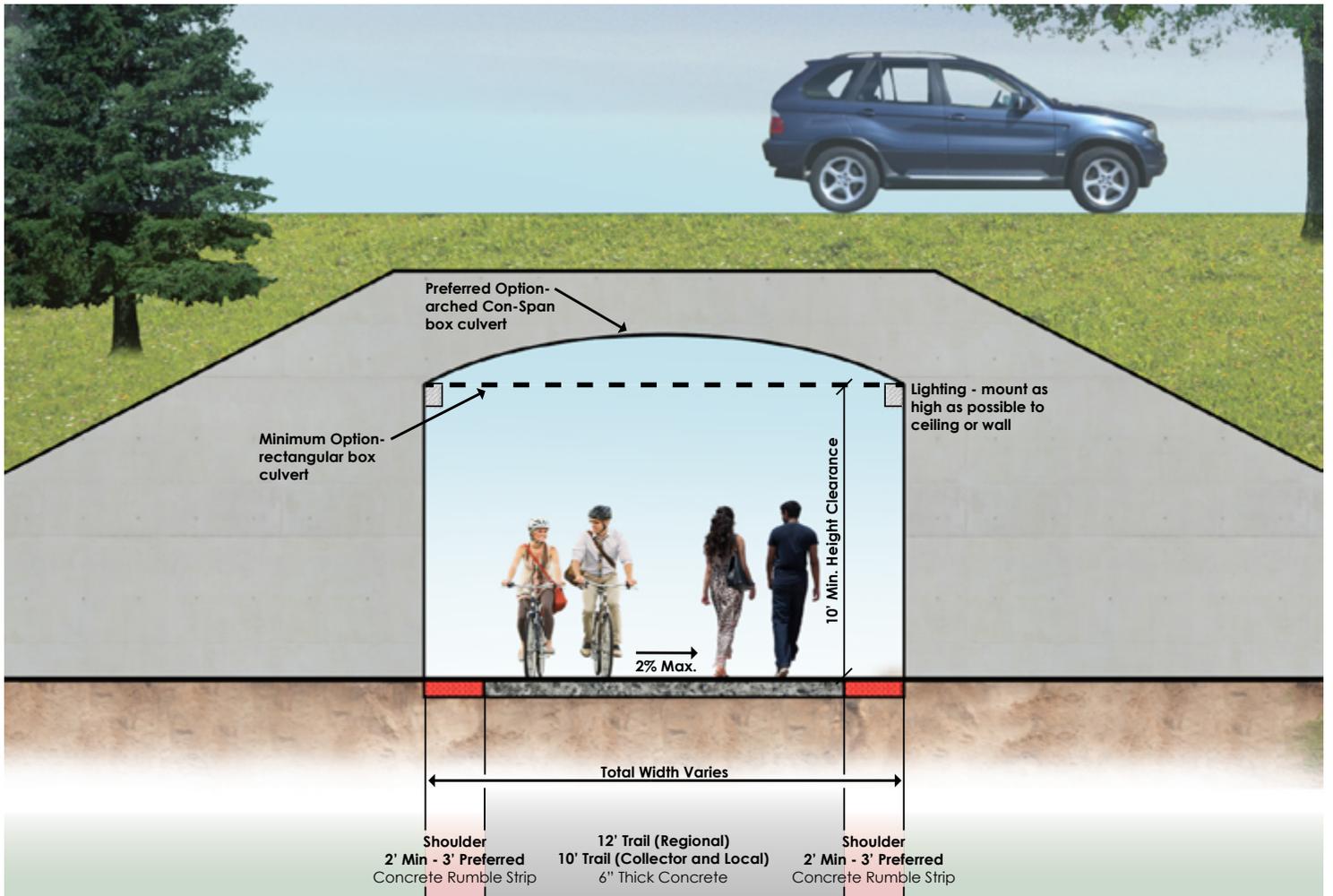


Single Track Trail





Bridge Undercrossing



Box Culvert Undercrossing







STREET CROSSING TYPES

Where a Denver trail crosses a street the crossing will be designed so that it is comfortable and safe for users. Grade-separated crossings are established to create a high-quality user experience where users can travel significant distances along a trail without crossing a major street at-grade.

AT-GRADE CROSSINGS

Denver's *Uncontrolled Pedestrian Crossing Guidelines* (September 2016) establish a framework for evaluating candidate crossing locations and identify appropriate crosswalk treatments and geometric treatments. Where the guidelines' framework identifies a location as being appropriate for a marked crosswalk, three levels of crosswalk treatment are identified based on traffic volume (Average Daily Traffic, or ADT), street operating speed and street configuration (number of lanes and median presence). **Table 2** of the guidelines identifies specific devices for different combinations of traffic volume, operating speed and configuration; however, a general description of these devices is:

Level A devices feature crosswalk markings and signing. These are generally appropriate on streets with lower traffic volumes and operating speeds and fewer travel lanes.

Level B devices feature markings, signing and Rapid Rectangular Flashing Beacons. These are generally appropriate on streets where markings and signing alone are not sufficient but where Rapid Rectangular Flashing Beacons have demonstrated efficacy in inducing drivers to yield.

Level C devices feature markings and either a Pedestrian Hybrid Beacon or a traffic signal. These are generally appropriate on streets with higher traffic volumes and operating speeds and more travel lanes.



Table 2: Recommended treatment at marked crosswalks

Roadway Type	Vehicle ADT ≤9,000			Vehicle ADT >9,000 to 12,000			Vehicle ADT >12,000 to 15,000			Vehicle ADT ≥15,000		
	≤30 mph	35 mph	40 mph	≤30 mph	35 mph	40 mph	≤30 mph	35 mph	40 mph	≤30 mph	35 mph	40 mph
Two Lanes	A	A	B	A	A	B	A	A	C	A	B	C
Three lanes	A	A	B	A	B	B	B	B	C	B	C	C
Multilane with raised median	A	A	C	A	B	C	B	B	C	C	C	C
Multilane without raised median	A	B	C	B	B	C	C	C	C	C	C	C

Notes:

- A= Level A, B= Level B, C= Level C
- Explore geometric treatments prior to the implementation of the treatment identified in the table.
- RRFBs should be side-mounted and median-mounted where median is present and side-mounted and overhead mounted where median is not present.

Geometric treatments that can be combined with these devices include pedestrian refuge islands, split pedestrian crossover refuge islands, curb extensions and parking prohibition. The guidelines also suggest that staff investigate the feasibility of reducing travel speeds along a street, narrowing or eliminating travel lanes, reducing the street's traffic volume or other traffic calming.

STOP OR YIELD SIGN ORIENTATION

According to relevant design standards and guidelines, street crossings can be considered intersections between a trail and a street. Generally, at street crossings where intersection control is necessary and the *Uncontrolled Pedestrian Crossing Guidelines* recommend a Level B or Level C device, STOP signs should be positioned on the trail. However, at street crossings where intersection control is necessary and the *Uncontrolled Pedestrian Crossing Guidelines* recommend a Level A device, STOP or YIELD signs may be positioned either on the trail or on the street. The volume of path users relative to the traffic volume on the street may inform whether STOP or YIELD signs should be positioned on the trail or on the street; the *Manual on Uniform Traffic Control Devices* (FHWA, 2009) provides guidance in Section 2B.04 and Section 9B.03 on STOP or YIELD sign orientation.

MUTCD Section 2B.04 provides the following guidance:

Engineering judgment should be used to establish intersection control. The following factors should be considered:

- Vehicular, bicycle, and pedestrian traffic volumes on all approaches;*
- Number and angle of approaches;*
- Approach speeds;*
- Sight distance available on each approach; and*
- Reported crash experience.*



Once the decision has been made to control an intersection, the decision regarding the appropriate roadway to control should be based on engineering judgment. In most cases, the roadway carrying the lowest volume of traffic should be controlled. A YIELD or STOP sign should not be installed on the higher volume roadway unless justified by an engineering study.

MUTCD Section 9B.03 provides the following guidance:

When placement of STOP or YIELD signs is considered, priority at a shared-use path/roadway intersection should be assigned with consideration of the following:

- A. Relative speeds of shared-use path and roadway users,
- B. Relative volumes of shared-use path and roadway traffic, and
- C. Relative importance of shared-use path and roadway.

Speed should not be the sole factor used to determine priority, as it is sometimes appropriate to give priority to a high-volume shared-use path crossing a low-volume street, or to a regional shared-use path crossing a minor collector street.

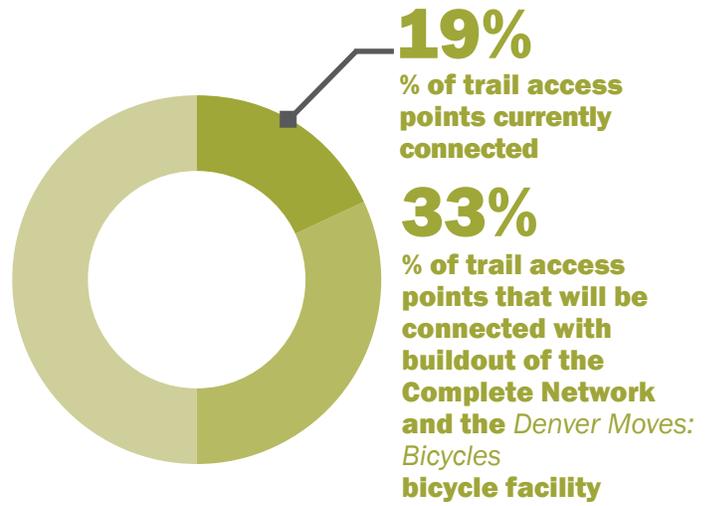
When priority is assigned, the least restrictive control that is appropriate should be placed on the lower priority approaches. STOP signs should not be used where YIELD signs would be acceptable.



WAYFINDING

Additional wayfinding on Denver's trails system will make it easier to get to the trails system and from the trails system to on-street bikeways and to a variety of regional and neighborhood destinations. Denver recently developed installation guidelines for on-street bikeways. The guidelines identify the different types of wayfinding signs typically used including confirmation signs, turn signs and decision signs. The guidelines also specify the criteria used to identify specific destinations on wayfinding signs. Lastly, the guidelines make suggestions for where signs should be located along bikeways. In many cases, these guidelines can be applied to Denver's trails system to result in a consistent system across both on-street bikeways and trails that is intuitive, useful and clear for users. Wayfinding should be included as a part of trails projects, including new trail segments, widening of existing trail segments, new trail connections, trail connection upgrades and street crossing upgrades. Additionally, it may also be appropriate for the city to develop wayfinding projects for entire trails or major trail segments.





BENEFITS OF THE COMPLETE NETWORK

Buildout of the Complete Network will achieve the city’s vision for its trails system by meeting the goals derived from community input. Specific benefits of the Complete Network related to each goal are:

- The Complete Network fills in missing segments of trail including gaps along the Weir Gulch Trail, East Harvard Gulch Trail and other trails in the eastern part of the city
- Currently, 19 percent of trail access points are connected to an existing *Denver Moves: Bicycles* bicycle facility. With buildout of the Complete Network and the *Denver Moves: Bicycles* network 33 percent of trail access points will be connected to a *Denver Moves: Bicycles* bicycle facility. Within low-income neighborhoods and areas of health concern, 37 and 35 percent of trail access points, respectively, will be connected to an existing *Denver Moves* bicycle facility.

- Buildout of the Complete Network and *Denver Moves: Bicycles* network will create a seamless user experience from all parts of the city, including neighborhoods that are distant from the trails system.
- The Complete Network reduces access barriers to nearby destinations, including segments of the South Platte River Trail, Sand Creek Trail and High Line Canal Trail.
- 100 percent of trails will meet the proposed trail design guidelines for regional trails, collector trails and local trails, compared to seven percent in the existing condition.



- Opportunities for a singletrack trail experience throughout the city.



TRAILS COSTS



The total cost of completing Denver’s trails network is between \$350 million and \$400 million. Completing the trails network will take many years and will require dedicated funding sources for trails. For illustrative purposes, four representative scenarios are identified to show how long buildout of the trails network will take depending on different funding levels. Completing the trails network will take many years and will need to occur through local investment, grant programs, and other regional or state partnerships.

- \$15 million per year – 24 years to complete.
- \$10 million per year – 37 years to complete.
- \$5 million per year – 73 years to complete.
- \$2.5 million per year – 146 years to complete.

Table 3 shows the cost of high-priority trails, high-priority connections and crossings and later priority projects.

TABLE 3. TRAILS COST BREAKDOWN

PRIORITY TYPE	COST SUBTOTAL
HIGH-PRIORITY TRAILS	\$35 MILLION
HIGH-PRIORITY CONNECTIONS AND CROSSINGS	\$60 MILLION
LATER-PRIORITY SINGLE TRACK AND TRAIL WIDENING	\$225 MILLION
LATER-PRIORITY CONNECTIONS AND CROSSINGS	\$45 MILLION
TOTAL	\$365 MILLION







TRAILS COSTS

The total cost of completing Denver's trails network is between \$350 million and \$400 million. Completing the trails network will take many years and will require dedicated funding sources for trails.

IMPLEMENTATION

City staff worked with the community to develop prioritization criteria for projects from the Complete Network. High-priority projects include:

- New hard-surface trails
- Widening of existing trails segments where the trail is much too narrow compared to the proposed design guidelines (>2 feet too narrow)
- New trail connections, trail connection upgrades and crossing upgrades where the trail connects to an existing or proposed *Denver Moves: Bicycles* on-street bikeway
- Crossing upgrades where the trail crosses a major street

All other projects from the Complete Network are later priorities.

Map 9 shows high-priority trail projects and **Map 10** shows later priority trails projects.

PRIORITIES FOR SINGLETRACK TRAILS AND SKILLS COURSES

Singletrack trails and skills courses are facility types that do not currently exist on a large scale anywhere on the city's trail system. Denver Parks & Recreation has a small number of mountain bike parks and skills courses located within existing parks, including in Garfield Park and in Ruby Hill Park, as well as plans for a number of small segments of singletrack trails along the South Platte River Trail known as Gateway Trails. These existing facilities are different than those proposed in *Denver Moves: Pedestrians & Trails*. This plan proposes a series of singletrack trail loops throughout the city, meant to allow users a continuous singletrack trail experience along trail corridors, and the ability to build and hone skills. Denver Parks & Recreation must determine how expanding the city's trails system to include this relatively new facility type compares in priority to other possible new facilities. Upon determining that singletrack trails and skills courses are high-priority for funding, a pilot system of singletrack trails and skills courses should be constructed so that the department can learn how to plan, design, operate and maintain these facilities and how the operations and maintenance needs of these facilities are similar to or different from singletrack trails and skills courses within parks. The ideal pilot project would be one that creates a continuous mountain biking or trail running loop with skills courses along the way; one such project is the singletrack loop proposed in the south-east part of the city near Bible Park and Kennedy Golf Course.





HIGH-PRIORITY PROJECT DESCRIPTIONS

Map 9 shows high-priority trail projects from the Complete Network. Each project is numbered for easy reference between **Map 9** and the project descriptions below. The projects are not listed in order of importance, and all meet the criteria for high-priority projects as outlined in this Plan. Implementation priority will be influenced by funding availability, adjacent development, political importance, or other factors. More information on high priority projects is available in **Appendix C**.

1. Clear Creek Trail crossing at 52nd Avenue/ Gray Street – an at-grade crossing of 52nd Avenue to connect the Clear Creek Trail north of 52nd Avenue to Gray Street so that people using the Clear Creek Trail can seamlessly use 0.2 miles of on-street bikeway to continue along the trail.

2. 37th Avenue Trail from Yates Street to Wolff Street – a 330-foot trail along the Rocky Mountain Ditch to better connect residences west of Wolff Street with businesses at the 38th Avenue/Wolff Street intersection.

3. South Platte River Trail connection at 47th Avenue – a ramp connection from 47th Avenue to the South Platte River Trail on the south side of 47th Avenue to connect to proposed bike lanes on 47th Avenue.

4. South Platte River Trail connection at 45th Avenue – replacement of the existing ramp connection at 45th Avenue. The project will improve safety of the trail crossing through the parking lot, and improve the configuration and comfort for users as it crosses the levy and connects to the South Platte River Trail.

5. South Platte River Trail connections at 15th Street – an at-grade crossing of 15th Street to provide a connection between the South Platte River Trail and the on-street bicycle facility along 15th St.

6. South Platte River Trail connector to City of Cuernavaca Park trails – a 150-foot segment of new trail south of the South Platte River Trail and on the east side of City of Cuernavaca Park to formalize the connection between the South Platte River Trail and the City of Cuernavaca Park trails.

Refer to South Platte River Trail study for concept

7. South Platte River Trail crossing at Fishback Park – a bridge crossing of the South Platte River west of Speer Boulevard that connects the Cherry Creek Trail via Little Raven Street to Water Street without going through Confluence Park. Multiple possible bridge crossing locations and types (bicycle/ pedestrian-only vs. all modes) are being considered as a part of the Central Platte Valley Auraria District Downtown Area Plan Amendment; at minimum, at least one of the bridges should address this identified need.

Refer to South Platte River Trail study for concept



8. Broadway Station Trail from the South Platte River Trail to Broadway – a 1,730-foot trail from the South Platte River Trail at Vanderbilt Park, over the South Platte River (bridge required), through the I-25/Broadway Station Area, over the Consolidated Main Line (bridge or underpass required) and connecting to Broadway. This trail provides an important connectivity between the South Platte River, Broadway Station, and Washington Park.

9. South Platte River Trail connection at Jewell Avenue – a bridge connection over the South Platte River connecting the South Platte River Trail on the east side to Jewell Avenue on the west side. Refer to South Platte River Trail study for concept

10. Lakewood Dry Gulch Trail crossing at Perry Street – an at-grade crossing of Perry Street to connect to a proposed neighborhood bikeway on Perry Street.

11. Weir Gulch Trail crossing at 8th Avenue/ Federal Boulevard – a grade-separated crossing of Federal Boulevard and 8th Avenue so that Weir Gulch can connect directly to the South Platte River Trail. One continuous bridge crossing both roadways is likely the most feasible; however, an undercrossing should also be considered as part of an alternatives analysis and feasibility study.

12. Weir Gulch Trail crossing at 1st Avenue – an at-grade crossing of 1st Avenue to connect to proposed buffered bike lanes on 1st Avenue.

13. Weir Gulch Trail crossing at Bayaud Avenue – an at-grade crossing of Bayaud Avenue to connect to proposed bike lanes on Bayaud Avenue and a proposed neighborhood bikeway on Stuart Street.

14. Weir Gulch Trail at Alameda Avenue – a grade-separated crossing of Alameda Avenue to pro-

vide a high-quality trail user experience rather than having to cross Alameda Avenue.

15. Westwood Trail – a 1.8-mile combined trail and on-street bikeway from Sheridan Boulevard to Zuni Street generally following an overhead power line easement. The Westwood Neighborhood Plan identifies elements of this trail and area residents have a vision for integrating this trail into a larger recreational loop. Generally, the Westwood Trail would be an on-street bikeway from Sheridan Boulevard to Perry Street, a trail (already existing) from Perry Street to Meade Street, an on-street bikeway from Meade Street to Lowell Boulevard, and a trail from Lowell Boulevard to Mississippi Avenue.

16. West Harvard Gulch Trail crossing at Federal Boulevard – an at-grade crossing of Federal Boulevard to connect neighborhoods west of Federal Boulevard to the West Harvard Gulch Trail. Further study of this project should consider relocating the existing pedestrian signal north of Harvard Avenue to the south side of Harvard Avenue or to Vassar Avenue.

17. Bear Creek Trail connection at Golden Way – a bridge connection over Bear Creek connecting the Bear Creek Trail on the south side to the Dartmouth Avenue/Golden Way intersection on the north side, providing improved connectivity to Henry Middle School and Traylor Elementary School.

18. Bear Creek Park trail from Kenyon Avenue to Raleigh Street – a 3,440-foot trail through Bear Creek Park connecting Kenyon Avenue near its intersection with Sheridan Avenue to the Raleigh Street underpass of US 285. This requires an improved bridge crossing over Bear Creek.



19. Marston Trail – a 3.4-mile (1.6-miles in Denver) combined trail and on-street bikeway from Garrison Street to the Bear Creek Trail at S. Pierce Street. Generally, the Marston Trail would be a trail from Garrison Street to Quincy Avenue and a shared-use sidewalk along Quincy Avenue to Wadsworth Boulevard. From Wadsworth Boulevard, the trail would likely be a combination of shared-use roadway and trail to the Bear Creek Trail. This trail will require coordination with the City of Lakewood.

20. Wagon Trail from Grand Avenue to Belleview Avenue – a 470-foot trail to connect the Wagon Trail to Belleview Avenue.

21. Marston Lake Trail – a 1,970-foot trail along the south side of Marston Lake that will connect portions of the Marston neighborhood to Pinyon Drive in Bow Mar, and ultimately to the Bear Creek Trail via the shared-use roadway along Sheridan Boulevard. The trail will require coordination with the Town of Bow Mar.

22. East Harvard Gulch Trail crossing at University Boulevard – an at-grade crossing of University Boulevard to provide a high-quality trail user experience rather than having to travel 850 feet out-of-direction to comfortably cross University Boulevard at Yale Avenue.

23. East Harvard Gulch Trail from Jackson Street to Colorado Boulevard – a 300-foot trail to connect from Jackson Street to Colorado Boulevard via an existing pathway through the Schlessman Family YMCA’s parking lot.

24. High Line Canal Trail crossing at Yale Avenue (west of Holly Street) – a grade-separated crossing of Yale Avenue to provide a high-quality trail user experience rather than having to cross Yale Avenue; this project is included in the 2017 General Obligation Bond.

25. High Line Canal Trail crossing at Holly Street – a grade-separated crossing of Holly Street to provide a high-quality trail user experience rather than having to cross Holly Street.

26. High Line Canal Trail crossing at Yale Avenue (west side of James A. Bible Park) – a grade-separated crossing of Yale Avenue to provide a high-quality trail user experience rather than having to cross Yale Avenue.

27. High Line Canal Trail crossing at Yale Avenue (east side of James A. Bible Park) – a grade-separated crossing of Yale Avenue to provide a high-quality trail user experience rather than having to cross Yale Avenue.



28. High Line Canal Trail crossing at Quebec

Street – a grade-separated crossing of Quebec Street to provide a high-quality trail user experience rather than having to cross Quebec Street.

29. Cherry Creek Trail connection at Yosemite

Street – a street connection to Yosemite Street to connect to the existing shared roadway on Yosemite Street.

30. High Line Canal Trail crossing at Dayton

Street – an at-grade crossing of Dayton Street to provide a high-quality trail user experience by increasing user comfort in crossing Dayton Street.

31. Oneida Street on-street bikeways connection

– replacement of the existing staircase along Oneida Street north of Leetsdale Drive with either a staircase with a bicycle channel or a ramp and switchback to the east of the existing staircase (requires property owner coordination).

32. Goldsmith Gulch Trail crossing at I-225

– reconfiguration of the I-225/Tamarac Street/DTC Boulevard interchange to increase user comfort crossing the southbound off-ramp and northbound on-ramp; reconfiguration options include modifying free right-turn movements to encourage slower vehicle speeds, increase yield compliance at the crosswalks or require drivers to stop.

33. Kennedy Soccer Complex trail

– 2,900-foot trail on the west side of Kennedy Soccer Complex to connect the Hampden Heights neighborhood to the Dayton Station and the Cherry Creek Trail south (requires collaboration with the City of Aurora).

34. Westerly Creek Trail extension at Lowry

Sports Complex – a 1.4-mile trail on the west side of Westerly Creek Dam Pond connecting Alameda Avenue at Xenia Street to the Westerly Creek Trail at Lowry Boulevard.

35. Westerly Creek Trail connection to Verbena

Park – a 400-foot shared-use sidewalk on the north side of 11th Avenue from Uinta Way to Verbena Park.

36. Sand Creek Trail connector to Airlawn Road

– a 1,520-foot trail that will connect the Sand Creek Trail to Airlawn Road near 41st Avenue. This is a critical connector trail providing connectivity to Denver's trail system for Park Hill and surrounding neighborhoods.

37. Sand Creek Trail connection at Smith Road

– a ramp connection from the Sand Creek Trail to Smith Road.

38. Northfield Trail

– a 1.1-mile trail from 56th Avenue to the north city limits.

39. Peña Trail from Bolling Drive to Green Valley

Ranch Boulevard – a 1,650-foot trail from Bolling Drive to Green Valley Ranch Boulevard.

40. Peña Trail from Green Valley Ranch Boulevard to 56th Avenue

– a 1.0-mile trail from Green Valley Ranch Boulevard to 56th Avenue.

41. Derby Lateral Trail from Peña Trail to 44th

Avenue at Telluride Court – a 1.2-mile trail from the Peña Trail to 44th Avenue at Telluride Court. The trail will cross under Peña Boulevard on the north side of Green Valley Ranch Boulevard, cross to the south side of Green Valley Ranch Boulevard at the northbound ramps intersection, cross under the RTD A Line at Derby Lateral and follow Derby Lateral to the Denver city limits near Telluride Street where it will connect with a City of Aurora trail.

42. First Creek Trail from 39th Avenue to High

Line Canal Trail – a 3,370-foot trail from 39th Avenue to the High Line Canal Trail.



43. First Creek Trail from Green Valley Ranch Boulevard to the High Line Canal Trail – a 750-foot trail from Green Valley Ranch Boulevard to the High Line Canal Trail (requires coordination with the Town Center Metropolitan District).

44. High Line Canal Trail from Maxwell Place to 56th Avenue – a 1,340-foot trail from the Maxwell Place to 56th Avenue.

45. First Creek Trail crossing of Green Valley Ranch Boulevard (east of Malaya Street) – an at-grade crossing of Green Valley Ranch Boulevard.

46. High Line Canal Trail crossing of 56th Avenue – a grade-separated crossing of 56th Avenue.

47. Second Creek Trail from City limits near 66th Avenue to north City limits – a 2.4-mile trail from the city limits near 66th Avenue to the north City limits near 18000 E. 81st Avenue. Starting at the city limits near 66th Avenue, the trail follows Second Creek to the RTD A Line, crosses underneath the RTD A Line at Tower Road and follows Second Creek underneath Peña Boulevard to the north City limits.

48. Peña Trail from the First Creek Trail to Denver International Airport – an 8.5-mile trail from the First Creek Trail west of Peña Boulevard to Denver International Airport.

49. Cherry Creek Trail connections at Lawrence Street and Arapahoe Street – improvements to the sidewalk between Speer Boulevard and Cherry Creek to create a shared-use sidewalk that provides access to the existing ramps at Cherry Creek Trail ramps at Lawrence Street and between Arapahoe Street and Champa Street.

50. Cherry Creek Trail connection at Champa Street – a ramp connection at Champa Street to connect to proposed buffered bike lanes. The existing ramp headed toward Arapahoe Street should remain.

51. Cherry Creek Trail connection at 14th Avenue – a ramp connection at 14th Avenue to connect to existing protected bike lanes.

52. Cherry Creek Trail connection at 11th Avenue – a ramp connection at 11th Avenue to connect to existing bike lanes.

53. Cherry Creek Trail connections (two) at Bannock Street – a pair of ramp connections at Bannock Street both north and south of Speer Boulevard to make continuous north-south travel on Bannock Street possible without biking on or along Speer Boulevard.

54. Cherry Creek Trail connection at Broadway – a ramp connection at Broadway to connect to the proposed protected bike lanes.

55. Cherry Creek Trail connections at Washington Street and Clarkson Street – a ramp connection between Washington Street and Clarkson Street to connect to the proposed bike lanes on these streets.



56. Cherry Creek Trail connection at Ogden

Street – an at-grade crossing of Speer Boulevard to connect the Cherry Creek Trail to the proposed neighborhood bikeway on Ogden Street (requires a shared-use sidewalk from Corona Street to Ogden Street).

57. Cherry Creek Trail crossing at 1st Avenue/

Speer Boulevard – modifications to the 1st Avenue/Speer Boulevard/Downing Street intersection to increase comfort for people riding northbound on the shared-use sidewalk east of Downing Street connecting to the Cherry Creek Trail.



High Priority Bikeways

In many cases, high-priority trails projects directly connect to proposed *Denver Moves: Bicycles* facilities. *Denver Moves: Bicycles* identifies existing bikeways as well as three implementation phases. The following shows which high-priority trails projects connect to existing, Phase 1 or Phase 2 *Denver Moves: Bicycles* facilities.

Existing

- 12. Weir Gulch Trail crossing at 1st Avenue
- 15. Portions of the Westwood Trail
- 18. Bear Creek Park trail from Kenyon Avenue to Raleigh Street
- 29. Cherry Creek Trail connection at Yosemite Street
- 31. Oneida Street on-street bikeways connection
- 34. Westerly Creek Trail extension at Lowry Sports Complex
- 49. Cherry Creek Trail connections at Lawrence Street and Arapahoe Street
- 50. Cherry Creek Trail connection at Champa Street
- 51. Cherry Creek Trail connection at 14th Avenue
- 52. Cherry Creek Trail connection at 11th Avenue
- 53. Cherry Creek Trail connections at Bannock Street
- 55. Cherry Creek Trail connections at Washington Street and Clarkson Street

Phase 1

- 15. Portions of the Westwood Trail
- 35. Westerly Creek Trail connection to Verbena Park
- 54. Cherry Creek Trail connection at Broadway
- 56. Cherry Creek Trail connection at Ogden Street

Phase 2

- 4. South Platte River Trail connection at 45th Avenue
- 10. Lakewood Dry Gulch Trail crossing at Perry Street
- 11. Weir Gulch Trail crossing at 8th Avenue/Federal Boulevard
- 13. Weir Gulch Trail crossing at Bayaud Avenue
- 15. Portions of the Westwood Trail
- 16. West Harvard Gulch Trail crossing at Federal Boulevard
- 19. Marston Trail
- 24. High Line Canal Trail crossing at Yale Avenue (west of Holly Street)
- 26. High Line Canal Trail crossing at Yale Avenue (west side of James A. Bible Park)
- 27. High Line Canal Trail crossing at Yale Avenue (east side of James A. Bible Park)
- 37. Sand Creek Trail connection at Smith Road
- 39 & 40. Peña Trail from Bolling Drive to 56th Avenue
- 41. Derby Lateral Trail from Peña Trail to 44th Avenue at Telluride Court
- 43 & 45. First Creek Trail from Green Valley Ranch Boulevard to the High Line Canal Trail and First Creek Trail crossing of Green Valley Ranch Boulevard (east of Malaya Street)
- 44. High Line Canal Trail from Maxwell Place to 56th Avenue
- 57. Cherry Creek Trail crossing at 1st Avenue/Speer Boulevard



POLICIES & PROGRAMS

Investments in trails infrastructure projects are critical for the city to achieve its vision for its trails system. However, a range of policy and program actions are also necessary for the city to achieve its vision. These policy and program actions go beyond the scope of *Denver Moves: Pedestrians & Trails*; however, completing these actions is valuable for improving the quality of trail design, operations and maintenance, for collecting and applying important data to trails projects, for attracting more funding, for supporting respectful user behavior and for planning for specific needs. *Denver Moves: Pedestrians & Trails* has several trails-related policy and program actions, some of which are identified as high-priority based on Task Force feedback.

TRAIL DESIGN & OPERATION

1. Lighting

Develop and adopt guidelines for the installation of lighting along off-street trails. These guidelines should address under which conditions trails should be lighted, levels of lighting to be met, and types of light fixtures to be used along trails.

High-priority

2. Amenities

Develop and adopt guidelines for amenities along Denver's trail system. At a minimum, guidelines should address trailheads, restrooms, repair/air stations, drinking fountains/bottle fillers, and rest areas. The guidelines should address frequency of the various types of amenities and design guidelines for each.

High-priority

3. Access points

Develop and adopt guidelines for access points to the trail system. These guidelines should address access points located on both public and private property, and conditions under which each is allowed.

High-priority

4. Place making

Develop and adopt guidelines for placemaking features along the trail system. The guidelines should be flexible enough to allow designers freedom to design unique elements, but also provide standards with regards to specific safety requirements for trails.

5. Signage

Develop and adopt guidelines for signage along the off-street trail system. The guidelines should address wayfinding, regulatory, and interpretive signage.



<p>6. Regional coordination vs. Denver standard for design features</p> <p>Develop and adopt guidelines for design coordination with other trail providing agencies. There have been efforts in the past to coordinate among multiple agencies along specific trail corridors to develop signs, site furnishings, and other design features that are unique and specific to the trail corridor rather than have each agency utilize their standard in their portion of the trail. These guidelines need to consider the regional importance of some of the trails in Denver.</p>	
<p>7. Reference to/adoption of other design guidelines</p> <p>There are currently national design standards and guidelines that may be applicable to various design elements of trails. These include the American’s with Disabilities Act, the American Association of Highway and Transportation Officials Guidelines for the Design of Bicycle Facilities, and the Universal Building Code. The city should make clear how, or if, these other standards and guidelines influence, or are referenced in the city’s design guidelines.</p>	
<p>8. Trail design</p> <p>Develop and adopt guidelines for the physical design of trails. At a minimum, the guidelines should address design speed, horizontal and vertical curves, site distance, construction materials, recovery zones, and safety elements such as railings. Some or all of these items could reference other guidelines as discussed above.</p>	<p>High-priority</p>
<p>9. Grade-separated Street Crossings</p> <p>Develop and adopt guidelines for determining whether street crossings should be at-grade vs. grade separated.</p>	<p>High-priority</p>
<p>10. Detour practices</p> <p>Develop and adopt guidelines for when detours shall be used, as well as guidelines for physical elements of detour routes. At a minimum, these guidelines should address acceptable surface materials, barriers, signage, use of on-street facilities, and maintenance routines.</p>	<p>High-priority</p>



TRAIL OPERATIONS AND MAINTENANCE

11. Trails maintenance

Develop and adopt a maintenance plan for the trail system including standard maintenance practices and frequencies of operations.

High-priority

12. Trails maintenance responsibilities

Clarify and standardize responsibilities for various maintenance operation between the City Wide Trails Group and the various maintenance districts.

High-priority

13. Adopt-a-Trail program

Determine the feasibility/need/design to implement an adopt-a-trail program.

14. Organized events

Develop and adopt guidelines for the use of trails for organized events (running or cycling races, charity walks, festivals, etc.). At a minimum, these guidelines should address whether trails can be closed to the public, acceptable lengths of time for use of facilities, maintenance and clean-up of facilities by the event organizer after the event, signage (prior to and during the event), and liability.

TRAIL OPERATIONS AND MAINTENANCE

15. Trail counters

Determine specific objectives for collecting trail user count data. Consider developing a list of locations to collect user count data, a regular schedule for rotating the counters, and a standard duration for placement of counters at various locations.

High-priority

16. Street crossing database

Develop a database of all street crossings in the trail system, categorized by grade-separated, controlled at-grade, and uncontrolled at-grade.



FUNDING AND IMPLEMENTATION

17. Partnerships

Identify and pursue opportunities to partner with other organizations to help fund trail projects. These could include public/private partnerships, or partnerships with other agencies or non-profits.

High-priority

EDUCATION, ENCOURAGEMENT AND ENFORCEMENT

19. Trail behavior and user conflicts

Develop education and encouragement programs specially aimed at reducing behaviors that result in user conflicts. If necessary to complement education and encouragement programs, develop an enforcement program.

20. Allowable vehicle types

Evaluate existing ordinances regarding types of vehicles allowed on trails (e-bikes, motor assist vehicles, Segway, scooter, etc.).

21. Enforcement needs assessment

Review current enforcement capabilities and identify additional needs.

High-priority

22. Rules and regulations

Review rules and regulations and update as necessary on an annual basis.

High-priority



FUTURE PLANNING NEEDS

23. Citywide needs

Identify and fund further planning studies regarding trails in Denver. These could include: mountain bike/gateway trails/single-track trail system planning, citywide at-grade crossing study, lower Cherry Creek corridor).

High-priority

24. Trail-oriented development

Develop a planning study to encourage and provide guidelines for trail oriented development. Explore opportunities to acknowledge and embrace trails and trail users in new developments.



REGIONAL PARTNERS

In many cases, implementing some of the projects recommended in this plan will require coordination with regional partners. Some likely partners with whom coordination may be necessary are:

Bear Creek Trail – City of Lakewood

Clear Creek Trail – Adams County, City of Wheat Ridge

Goldsmith Gulch Trail – City of Greenwood Village

Highline Canal Trail – Arapahoe County, City of Aurora and the High Line Canal Conservancy

Lakewood Gulch Trail – City of Lakewood

Northfield Trail – City of Commerce City

Sand Creek Trail – City of Commerce City and City of Aurora

Sanderson Gulch Trail – City of Lakewood

Wagon Trail/Marston Trail – Jefferson County, City of Lakewood and Foothills Parks & Recreation District

Weir Gulch Trail – City of Lakewood

West Harvard Gulch Trail – City of Englewood



MONITORING PROGRESS

Achieving Denver’s vision for a world-class trail system will take time. While the trail system builds out, the city can monitor its progress annually so that the Denver community, decision-makers and City staff understand the progress that the city is making towards its vision.



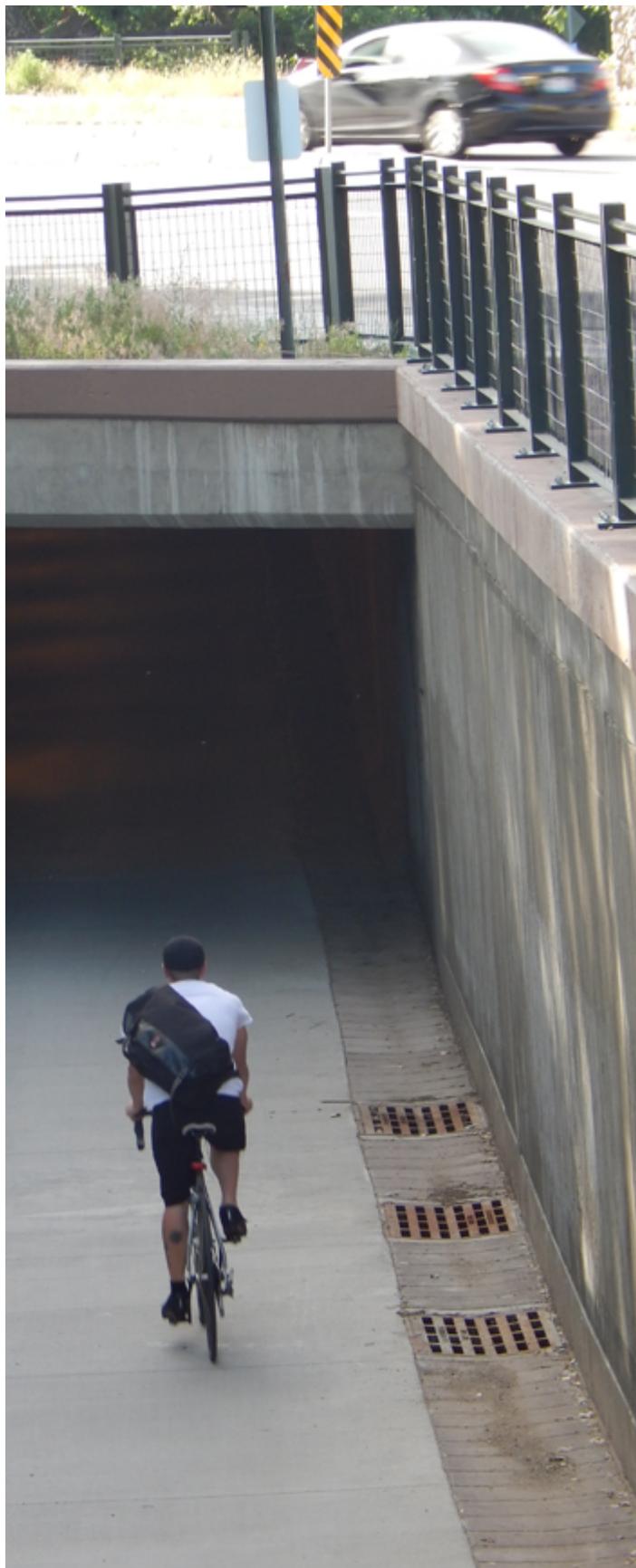
At minimum, Denver Parks & Recreation will prepare a brief annual report of projects completed along the trail system. The annual report will identify:

- Capital (not maintenance) projects completed along the trail system and whether or not they were identified by *Denver Moves: Pedestrians & Trails*; for projects not identified by *Denver Moves: Pedestrians & Trails*, provide a description of why the project was identified and selected.
- For each project:
 - A brief description of how the project helps achieve the goals of *Denver Moves: Pedestrians & Trails* (Connectivity, Destination Access, Equity, Health and Safety); for example:
 - Which projects filled in missing segments of trail, including gaps?
 - Which projects connected to an existing or proposed *Denver Moves: Bicycles* on-street bikeway?
 - Which projects connected to an existing or proposed *Denver Moves: Bicycles* on-street bikeway that improved trail system connectivity for neighborhoods that are distant from the trails system?
 - Which projects connected the trail system to nearby destinations?
 - Which projects brought the trail’s design up to the proposed trail design standards?
 - Identify the funding source or sources used.
- Policy and program actions achieved



Every two years as a part of this annual report Denver Parks & Recreation will provide some updated performance measure status per the Goals & Performance Measures identified by *Denver Moves: Pedestrians & Trails*. Specifically, performance measures to be included are:

- Percent of intersections between off-street trails and Denver Moves on-street bikeways that provide a connection between the two.
- Percent of trails that meet the proposed trail design guidelines.
- Percent of new trail constructed as recommended by this plan.
- Number of street crossings that meet Denver’s *Uncontrolled Pedestrian Crossing Guidelines*.
- If available, updated trail count data at the segments counted for the Existing Conditions Report (ideally this would include all segments, but this should at least include busy trails segments or trail segments nearby to major trail projects).



EDUCATION AND OUTREACH

Through the development of *Denver Moves: Pedestrians & Trails*, city staff and the project team identified candidate ways that the Denver Moves' brand could transcend beyond transportation planning to also serve as a brand that promotes a culture of safety and sharing of transportation resources. If it occurs, and extension of the Denver Moves brand will occur after the finalization of *Denver Moves: Pedestrians & Trails*; however, *Denver Moves: Pedestrians & Trails* identified top themes that could be incorporated into signage or a marketing campaign:

■ For multimodal transportation, including walking:

- Slowing down to create a safe street for all users
- Avoiding distractions while driving
- Complying with traffic laws
- Sharing the street with all users
- Encouraging multimodal transportation, including walking, biking and transit

■ For trails:

- Keeping trails clean
- Sharing the trail
- Being courteous to other trail users (trail etiquette, etc.)
- Managing pets on the trail, in particular dog leashes
- Yielding the most vulnerable users; for instance, bicyclists yielding to pedestrians

INTEGRATING WITH DENVER MOVES: BICYCLES AND DENVER MOVES: TRANSIT

PLAN DEVELOPMENT

Development of *Denver Moves: Pedestrians & Trails* was coordinated with both the existing *Denver Moves: Bicycles* network and key components of *Denver Moves: Transit* that were also under development in 2016 and 2017. Specifically, coordination occurred in the following areas:

- *Bicycles* – *Denver Moves: Pedestrians & Trails* coordinated locations of trail connections and crossings with proposed on-street bikeways from *Denver Moves: Bicycles*. In some cases, recommendations were made to relocate or revise recommended *Denver Moves: Bicycles* facilities to better connect the trails system to the on-street bikeway system and key destinations. Public Works intends to later formalize these updates in *Denver Moves: Bicycles*.

- *Transit* – *Denver Moves: Pedestrians & Trails* gives a high priority to many transit access projects. Specifically, Tier 2 and 3 sidewalk projects are those that serve existing high-frequency transit corridors (many of these corridors are also proposed for transit investments by *Denver Moves: Transit*). And, Tier 4 includes sidewalk projects that serve other remaining transit corridors.

MOVING FORWARD

The Denver Moves program recognizes that transportation functions as a system. Many Denverites use multiple modes of transportation throughout their day. Most transit passengers also walk, bike or drive for a portion of their trip. And, most Denver streets serve multiple modes of transportation. As such, implementation of any project from a Denver Moves plan should consider what other projects may be appropriate to include with it. For instance:

- Implementing investments on a *Denver Moves: Transit* corridor, planners and engineers should also identify possible priorities from *Denver Moves: Pedestrians & Trails* (such as high-priority sidewalks and at-grade crossings) and *Denver Moves: Bicycles* (such as on-street bikeways along or across the corridor) that could be implemented with the transit improvements.
- Implementing on-street bikeways from *Denver Moves: Bicycles*, planners and engineers should also identify possible high-priority sidewalks, at-grade crossings and trail connectivity projects that could be implemented, especially where the *Denver Moves: Bicycles* project requires geometric changes (concrete or asphalt construction) to the street.





INTEGRATING WITH THE NEIGHBORHOOD PLANNING INITIATIVE

PLAN DEVELOPMENT

In 2016 the Department of Community Planning and Development launched the *Neighborhood Planning Initiative*, a long-term commitment to develop an area plan for all parts of the city over the next 10 to 14 years. To accelerate plan development within 10 to 14 years, neighborhoods with similar characteristics were grouped into planning areas.

Transportation and connectivity are key concepts in each neighborhood plan and transportation is likely to play a role in Transformative Projects, a key concept of *Neighborhood Planning Initiative*. Recommendations from *Denver Moves: Pedestrians & Trails* can be further

developed and refined through *Neighborhood Planning Initiative* (NPI). Specifically:

- For sidewalks, NPI can identify neighborhood-specific priorities that are not well-captured by *Denver Moves: Pedestrians & Trails*' tiers, in particular, locations with missing sidewalks where a lot of people are already walking.
- For at-grade crossings, NPI can complete relevant study per the *Uncontrolled Pedestrian Crossing Guidelines* to identify locations that meet the guidelines' criteria and what devices are appropriate at those locations.
- For trails, NPI can identify planning area-specific priorities for new trails or for connections and crossings, in particular those that connect to *Denver Moves: Bicycles* on-street bikeways or those that improve access to key planning area destinations.

About Denveright

Denveright is a set of community-driven plans that shape Denver's future land use, mobility, parks, recreational resources, and more.



Citywide strategies from Comprehensive Plan 2000, the 2002 Blueprint Denver land use and transportation plan and the 2003 Game Plan for parks and recreation have served Denver well for the last decade and a half. They have guided our transportation choices; promoted new mixed-use development; created and enhanced parks, trails and recreation centers; and catalyzed areas of change while preserving the character of stable neighborhoods.

But a lot has changed since those plans were adopted.

RTD's FasTracks system has added significant new transit options to the region. Our population has experienced rapid growth. We've learned smarter and more modern ways to plan for the future of our city with inclusivity and climate change in mind.

Denveright represents an unprecedented opportunity to align citywide plans to guide future investments so that the whole is greater than the sum of its parts. Denveright strategies come straight from the community, and are designed to help the city prepare for and deliver a future that is responsive to their goals, visions and priorities.

Your Vision for Denver

You helped planners create six “vision elements” that serve as the foundation for each plan and drive each plan’s goals.

Equitable,
Affordable and
Inclusive



Economically
Diverse and
Vibrant



Environmentally
Resilient



Well Connected,
Safe and
Accessible Places



Healthy and
Active



Strong and
Authentic
Neighborhoods



Your Voice

Thousands of Denverites shared their unique perspectives on what makes Denver great and how it can evolve to be even better. You shared your voice in many ways – by attending meetings and workshops; taking online map-based surveys; talking with the Denveright street team at festivals, community events and transit stations; joining a Community Think Tank; and more. Through coordinated Denveright outreach and the individual plans’ efforts, there were limitless opportunities to help shape our city’s future.



Denverright.

Your Voice. Our Future.

Comprehensive Plan

The comprehensive plan — an update of the city's guiding vision from 2000 — reflects the voice of Denver today on issues spanning land use, mobility, parks, neighborhood authenticity, equity, economic growth, arts, culture and sustainability. This modern comprehensive plan will chart the course of the Mile High City for 20 years.

Blueprint Denver

Civic leaders who had a vision for Denver in 2002 created Blueprint Denver, a citywide plan to link land use and transportation. Innovative for its time, the plan served us well — promoting a walk- and bike-friendly city, increasing transit service on major corridors, more housing in mixed-use areas, and directing new development to areas where growth is most appropriate. Based on community input, the Blueprint Denver 2018 update focuses on creating a blueprint for an inclusive city made up of “complete” neighborhoods with infrastructure and amenities, diversity of housing choices, further attention to urban design, and more.

Parks & Recreation Game Plan

In a city as active and outdoor-oriented as Denver, a great parks system is essential to our quality of life. In 2003, a community-based process created the first Game Plan, which emphasized the vision of “a city in a park” and set priorities on the environment, engagement, equity and sound economics. With the updated Game Plan for a Healthy City, we're responding to climate change, growth, increased use and a lack of funding by prioritizing new parks, recreation and community programming, drought resiliency and upgrading existing facilities.

Denver Moves: Transit

As our population grows, Denver needs more transportation choices to move more people efficiently and safely on our existing street network. For the first time, and with input from the community, Denver is creating a 20-year transit vision and implementation plan for Denver. The Denver Moves: Transit plan creates a local transit vision by convening community conversations to understand the existing transit system and how we can make it even better for all Denver residents, workers and visitors.

Denver Moves: Pedestrians & Trails

The Denver Moves: Pedestrians & Trails plan will help make walking a viable and primary way for people to get around town and access recreational resources — comfortably and safely. With guidance from the community, the plan identifies citywide needs and defines priorities for improving and connecting Denver's pedestrian and off-street trail network; it also examines costs, funding options and policies to achieve the community's vision.

PREPARED BY:

FEHR & PEERS

WITH SUBCONSULTANTS:

