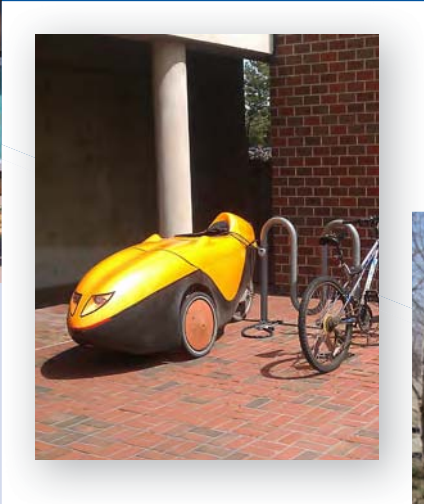


November 1, 2011



City of Littleton

Bicycle and Pedestrian Master Plan

Acknowledgements

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"Communities Putting Prevention to Work Initiative"**

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Overview and Goals

The Littleton Pedestrian and Bicycle Master Plan development process began in January of 2011. Funded by a “Communities Putting Prevention to Work” (CPPW) grant from Tri-County Health, its primary goals are to:

- Engage the community in discussions about desired and necessary pedestrian and bicycle improvements
- Interface with Littleton Public Schools to promote walking and bicycling to school and to identify potential improvements for walking and bicycling access
- Develop an inventory of existing pedestrian and bicycle facilities
- Determine potential improvements to the pedestrian and bicycle system
- Develop programs and materials to promote walking and bicycling in Littleton

The CPPW grant includes funding for both the planning and engagement process, as well as for implementation of programs and infrastructure to encourage walking and bicycling. All of the grant money must be spent by March of 2012. Because of time constraint, the Plan focused on short-term and implementable improvements and programs in the Littleton area while tying those short term improvements to a longer-term vision and plan for Littleton. The Plan’s specific focus was on-street type facilities and not off-street trails because much planning and assessing of the off-street trail network has already taken place, and the main gaps in the bicycle and pedestrian system are related to on-street travel to and from major destinations such as downtown, trailheads, libraries, schools, community centers, and transit hubs.

The following sections of this Plan detail the Involvement and Outreach, Existing Conditions, Proposed Programs and Facilities, and Implementation Plan.

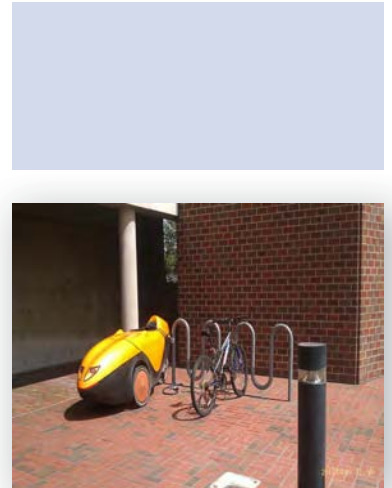
Community Outreach

Community outreach and education was an important element of the City's Bicycle and Pedestrian Master Plan process and essential to developing bicycle and pedestrian recommendations that reflected local interests. The outreach program was comprised of the following key elements: a Stakeholder Focus Group, an online Public Survey, two Public Open House meetings, meetings with Littleton Public Schools Principals within the study area and a Town Hall meeting with District 4 Councilwoman, Debbie Brinkman. Throughout the planning process, residents commented on today's bicycle and pedestrian conditions and on recommendations for future improvements. This section highlights the process and findings of the community outreach effort.

Stakeholder Focus Group Meetings

The Stakeholder Focus Group met twice during the planning process, once at the beginning of the process to help identify biking and pedestrian issues, and again during the development of Plan recommendations. This group consisted of local residents who are "system users" and who were able to share their bicycle and pedestrian experiences of the city and the network. Their input was essential and comments are shown below:

- Bike lane on Rio Grande would be great.
- Littleton Boulevard needs to be more pedestrian and bicycle friendly.
- Little's Creek trail near Echostar could be improved.
- More bike parking downtown and near Little's Creek trail would be good.
- Bike box on Mineral at Jackass Hill would address westbound right turn conflict problems.
- Add bike lane on Mineral east of Broadway.
- Improve Bowles to allow for bikes and pedestrians.
- Trail along Dutch Creek through Columbine Valley.
- Coal Mine Road should be improved.
- Broadway from Mineral to Orchard should be improved to accommodate bicycles.
- Prefer "Sharrows" over bike lanes – bike lanes get slippery when wet.
- Bike lane on Mineral west of Broadway (1st block or two).
- Continue bike lane on Mineral west of Jackass Hill.
- Better signing from Mineral to Platte River Trail.
- Bike lanes or "Sharrows" on Prince Street, north of West Lake.
- Broadway/Mineral and Santa Fe/Mineral intersection improvements.
- Belleview is too busy for bikes.



Public Open House Meetings

The first Public Open House was held April 13, 2011. Nearly 40 members of the public attended and informed city staff and the consultant team of their bicycle and pedestrian interests in Littleton.

Comments from the meeting were collected at computer stations, on paper comment forms, flip charts and through discussion. The majority of input was gathered at tables with large-scale aerial maps of the city that identified existing bicycle facilities, routes and recreational paths and inventoried existing sidewalks or gaps in the sidewalk infrastructure. These notes and comments were essential to understanding today's bicycle and pedestrian network and identifying challenges and opportunities for improvement. A detailed listing of comments made at this open house can be found in Appendix A.

The Second Open House was held June 27th. There were 28 attendees at the meeting, along with some Littleton Planning Commissioners. The consultant team presented the recommended bike routes, pedestrian crossing locations, and bike marking or "sharrows", among other recommendations. comments are shown below:

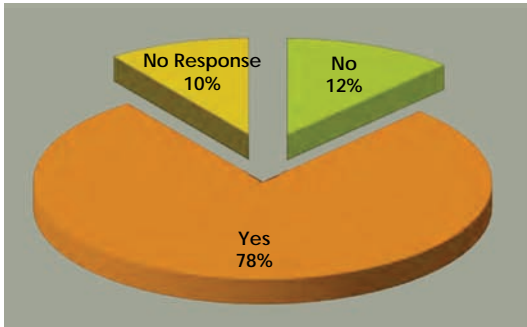
- Prince Street as a main connection should be pedestrian friendly also, not just bikes.
- Additional signage should be provided at Jackass Hill – "sidewalk is continuation of the path."
- Speed bumps on Jackass Hill approaching the pedestrian crossing would also help slow traffic at this crossing.
- Social path connection from neighborhood to Mineral needs steps.
- Underpass/Overpass options should remain on the table as long-term improvements.
- An underpass should be considered at Caley and Broadway.
- Other long-term underpass projects should be developed to connect to the Highline Canal trail, including Mineral, Ridge and Arapahoe Road.
- Powers, west of Prince Street, should have wider sidewalks on both sides of the street.



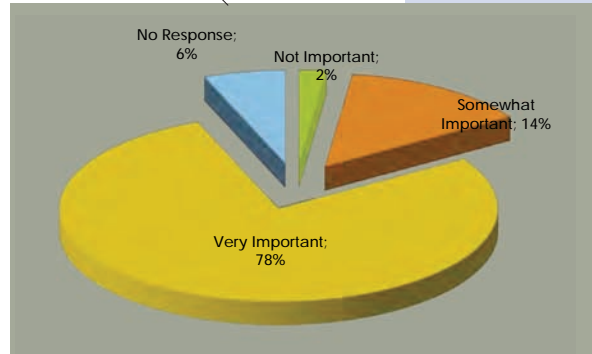
Online Survey

An online survey was conducted via the City of Littleton’s website. The survey focused on gathering public input from residents regarding the importance of walking and biking in the community, frequency of these activities today, difficulties or barriers to walking or biking, and suggestions for improvements. Nearly 50 people responded to the survey. Results are shown below.

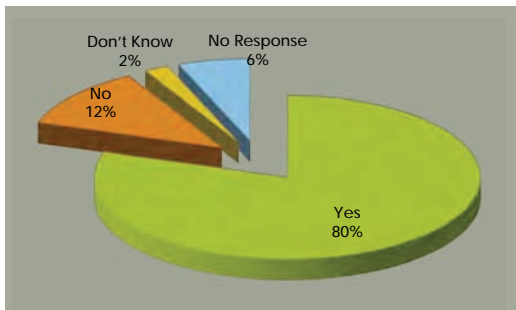
Do you reside in the City of Littleton?



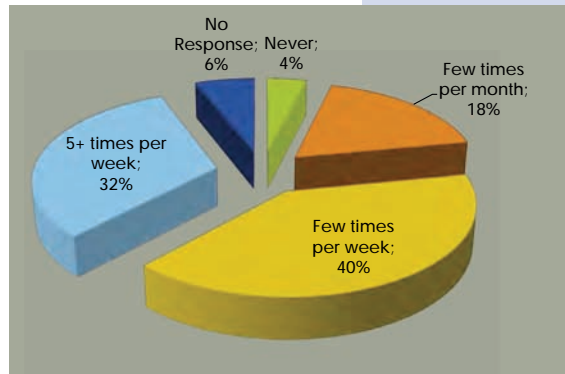
How important to you is improving walking and biking conditions in the City of Littleton?



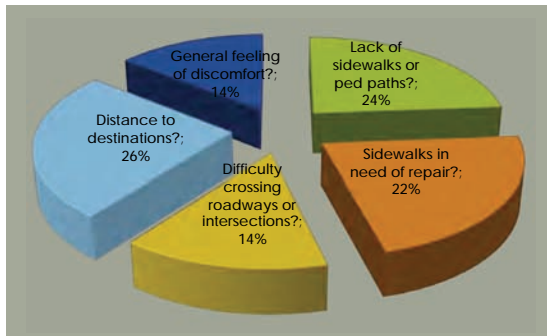
Should non-automobile transportation be a priority in the City of Littleton?



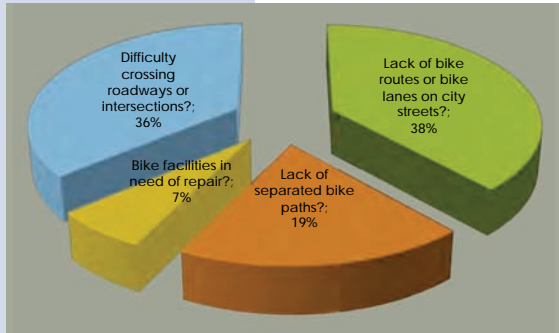
How often do you walk now?



What keeps you from walking more today?



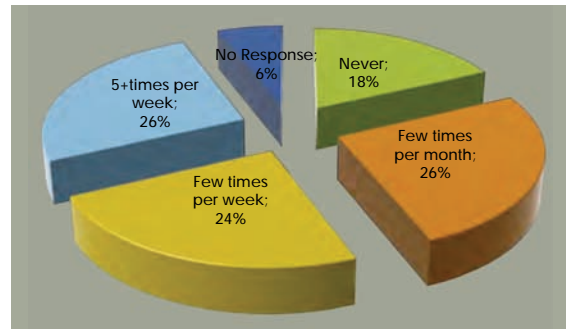
What keeps you from biking more today?



Specifically what improvements would you recommend to improve walking conditions?

- Add sidewalks to gaps, widen sidewalks, and/or improve condition
- Safe crossings with crosswalks, pedestrian activated signals, signage, and or flashing lights
- ADA compliant curb ramps
- Zoning requiring sidewalks everywhere and on both sides
- Sidewalks/path on Bowles
- Jackass Hill/Prince St crosswalk needs improvement and signage and/or flashing lights
- Improve walkability downtown
- Prince St crossing improvements around LRT station and RR tracks
- Littleton Blvd crossings improved
- Improve code enforcement for snow removal and keeping sidewalks clear
- Underpasses for the Highline canal trail constructed in the future for the crossing at Mineral (west of Windermere) and at Broadway (at Caley)
- Longer cycle times for pedestrians at major intersections
- Tunnels under Broadway and Prince
- More set back sidewalks
- Broadway/Jamison intersection and sidewalk improvements for hospital and bus stop
- Eliminate parking or add traffic calming to Windermere with bike lanes
- Install a bridge over City Ditch and a short trail at Crestline and Prescott
- Southbridge path/trail repair
- Reinstate sidewalk repair program
- More right turn islands
- Plan trails for all users
- Pedestrian connection from Belleview (Lowe's & Home Depot) to the downtown area
- More trails under Sante Fe/Safer crossings of Sante Fe

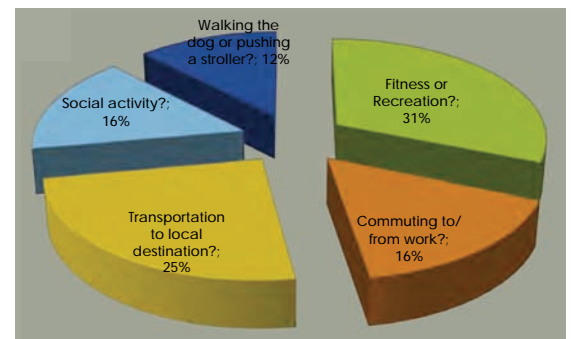
How often do you bike now?



Specifically what improvements would you recommend to improve biking conditions?

- Add bike lanes on streets including Broadway to E-470, Bowles, Lowell, Littleton Blvd to Sheridan, and Windermere
- More signage
- Bike racks/parking at destinations and downtown
- Better intersection crossings with signals and timers
- Improved access for more of the community to the trail system
- Connections with transit
- Bike lane and path snow removal
- Better access to Platte River across Sante Fe
- A north-south trail on the east side of Sante Fe
- Bicycle traffic enforcement by LPD
- Eliminate at-grade trail crossings of major streets
- Southbridge path/trail repair
- Highline canal crossings put over or under major roadways such as Mineral
- East/West bike ways
- Driver and cyclist education

For what purposes do you walk or bike most now?



School Outreach

A key component of the public involvement plan was targeted outreach to local elementary and middle schools. The consultant team worked with Littleton Public Schools Administration, School Principals and District Wellness Coordinator, and Bicycle Colorado, to identify the key issues regarding walking and biking to and from area schools. The team also developed educational materials encouraging more students to walk and bike.

From March through May 2011, the consultant team visited with school Principals, inventoried pedestrian and bicycle facilities and observed whether students were walking or biking to school. It was observed that all schools within the City of Littleton have painted crosswalks at intersections adjacent to the schools and all have signalized or marked pedestrian crossings at the primary entrance, or closest available location, to the school. Most streets approaching the schools have sidewalks, although there are sometimes gaps in these facilities, or they are located on only one side of the street. Bike routes are present on some streets approaching schools. Biking is allowed on the sidewalks in the City of Littleton, but few students bike to school and most bike racks are relatively empty during the school day.

The majority of students arrive at school by private automobile or bus and all schools operate a car line. Principals shared several factors that contribute to the low levels of walking and biking: Littleton Public Schools is an open enrollment district and many students attend schools that are not within their immediate neighborhoods; street crossings, while marked, can present difficulties for students trying to walk or bike; and parents sometimes perceive walking and biking to be unsafe. While some Principals expressed specific issues or ideas for improvements at or near their school, the majority of Principals felt that the sidewalks and pedestrian crossings adjacent to their school were sufficient and that education and awareness would be important in working to increase walking and biking activities.

The consultant team developed an online parent survey that was shared with each school. The results of the school survey highlighted some of the key concerns by parents, including the speed of the traffic along the route, the distance of travel, the safety of the intersections or roadway crossings, violence or crime and vehicle congestion at the school itself. Suggestions for improvements included adding sidewalks or pathways along Lowell Boulevard between West Berry Avenue and Bowles Avenue, the addition of pathways over or under major roadways, and better patrolling of pathways.

In addition, a meeting was held with Robyn Zagoren, Littleton Public Schools Wellness Coordinator. The consultant team worked with Bicycle Colorado to develop "back to school" kits for teachers and students and to coordinate the dissemination of information to schools promoting safe biking and walking for students. A key component of this informational material was a one-page, front-back, bilingual handout for all classrooms the first week of school. All materials were also made available to the City as a resource for the City's website. All materials were developed in both English and Spanish.

LETTER TO THE PARENTS


We are pleased to present ideas to help alleviate safety hazards and traffic congestion associated with the drop-off and pick-up of students at your school.

The Walking School Bus program helps parents to identify other parents who want to share in the duties of getting children to and from school. This can include walking, talking or carpooling.

You can help form and/or join up with your neighbors to either:

- Join a Walking School Bus**
A Walking School Bus has at least one adult leader who walks along an agreed route to and/or from school. The routes can pick children up at their homes, or meet at designated "bus stops" along the way.
- Join a Bike Train**
A Bike Train is the same as a Walking School Bus only on bicycles. It is largely for older students and requires more skills and adult supervision.
- Join a Car Pool**
For those who live too far away to walk or bike to school, we encourage you to form a carpool with at least one or more of your neighbors.

Thank you for working with us to help improve safety by decreasing traffic congestion around your school.



Colorado Rules of the Road

- Bicyclists are required to obey the same laws as cars. This means that bicyclists can get tickets for the same reasons as cars.
- When driving a car and when riding a bicycle.

- Bicyclists must ride on the right, going the same direction as traffic.** This is important as a high number of crashes are from bicyclists riding the wrong way.
- Bicyclists must use hand signals.** Like a car, it is important to let traffic and pedestrians know which way you are going.
- Bicyclists must obey traffic signs and signals.** Stop at stop signs. Stop at lights. Riders who are predictable help to follow the same laws as the car's and much less likely to be involved in a crash.
- Bicyclists must yield to pedestrians (people walking).** When riding on a path, a sidewalk or through an intersection, bicycle riders must yield to a pedestrian walking.

- Bicyclists must pass slower traffic or pedestrians (walkers) on the left.** Ring a bike bell or "shout out" on your left when passing slower traffic or people walking. If you let them know you are passing, then they won't suddenly stop in front of you or let their dog out in front of you.
- Bicyclists must use lights at night.** At dusk or at dark, you must have both a headlight and a taillight on your bike. Over 10% of bicycle crashes happen at night. Not only is this true, but this is just smart bicycling.
- Ride single file when appropriate.** You must ride single file when around traffic (cars or people walking) so that you don't clog up the flow of other traffic.

Note to parents and educators: for lesson plans, curriculum and additional bicycle/pedestrian education materials, please visit www.StrideRulesColorado.org.

Tips for Walking and Biking

Walking is an energizing and fun way to get to school. Follow these tips to make sure that your walk is safe and fun.

- WALK TOGETHER:** Walk with a friend, neighbor or parent. Pick a safe route and stick with it, and never take rides from strangers.
- BE SEEN:** Wear bright clothing to help drivers see you. If it is dark, carry flashlights or wear reflective gear.
- LOOK FOR TRAFFIC:** Watch out for cars and trucks at every driveway and intersection.
- CROSS THE STREET SAFELY:** Look both ways and always walk (don't run) across the street.
- OBEY TRAFFIC SIGNS, SIGNALS AND SCHOOL CROSSING GUARDS:** They are there to keep you safe!

Can you think of a more exciting way to get to school than by bike? Riding to school leaves you arriving refreshed and revitalized. Just make sure you get there safely by following these tips:

- ALWAYS WEAR YOUR HELMET!** Wearing a helmet is the number one essential component to riding your bike. It keeps your brain and skull protected in case of a crash. Make sure it fits properly (level on your head and fits snugly).
- DRESS APPROPRIATELY:**
 - Wear bright, reflective colors so motorists can easily see you.
 - Make sure shoe laces are tied and pant legs are rolled up so they don't get caught in the chain or other bike parts.
 - Wear a HELMET!
 - Bring a sharp and alert mind so you can react quickly to any situation.

Proper Helmet Fit

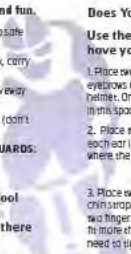



Does Your Helmet Fit Correctly?

Use the Two-Finger Test to make sure you have your helmet on right.

- Place two fingers between your eyebrows and the bottom of the helmet. Only two fingers should fit in this space.
- Place two fingers underneath each ear in a "Y" shape (this is where the straps should go).
- Place two fingers under the chin strap to make sure that only two fingers fit snugly. If you can fit more than two fingers, you need to tighten the strap.

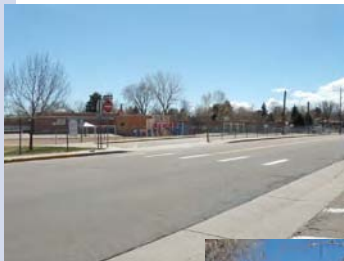
Helmet Fun Facts

- All helmets are intended to protect your brain in a crash only once. If a helmet has a crack or any damage after a fall, replace it immediately.
- All helmets must meet the same safety standards - whether a helmet costs \$20 or \$150 dollars - it will still protect your brain.
- All helmets should be replaced (no matter what) after five years.

The following highlights specific school meetings and input from each school.

East Elementary 5933 South Fairfield Street



Meeting with Principal Mr. Greg Sumlin on April 4, 2011

East is a second-language center school and very few students ride, or own, a bicycle. A high percentage of students are bussed to the school. School families do not typically view bicycling and walking as recreational activities. The school has hosted a bike rodeo and bike giveaways, but additional bilingual outreach and education would be very important for these students. The crosswalk placement and markings are good.

Centennial Academy of Fine Arts 3306 West Berry Avenue



Meeting with Principal, Ms. Mary Ellen Dillman on March 17, 2011

Few students in the area ride their bikes to school. Roughly 40% of the students are enrolled by choice and the remaining 60% come from the attendance area. The school itself is surrounded by Federal Boulevard, West Berry Avenue, Irving Street and Lowell Boulevard, and crossing these streets can be difficult for students. Students coming from the apartments on the east side of Federal Boulevard do not have a marked crosswalk for crossing Federal. Some students from the neighborhood adjacent to the school do walk and bike. The sidewalk along Berry Park works great because it is off set from the road. Some parents even park in the park parking lot and walk their children to school. There is definite interest on the part of the school to offer walking and biking education.

Ralph Moody Elementary 6390 South Windermere Street



Meeting with Principal Mr. Doug Andrews on April 4, 2011

The school is 45% open enrollment and 55% students from the attendance area. About 25% of the students at Ralph Moody walk to school and there is a walking path that connects to the playground on the east side of the school. There is a

signalized crosswalk on Windermere, although some students continue to cross at the four-way stop at Windermere and Caley. The school would like to consider a crosswalk on Caley.

Damon Runyon Elementary 7455 South Elati Street



Meeting with Principal Drive David Hilliard on April 4, 2011

The school has approximately 25% open enrollment students. Over half the students walk from adjacent neighborhoods, but very few bike. The traffic levels at the entry/exit point in the morning and afternoon are difficult for students to navigate. They would like to focus student crossings at the one crosswalk that is in place on Elati, rather than along the length of the street. Additionally, the school would be very interested in creating a pathway along the northern edge of the school connecting the Lee Gulch Trail to Heritage High School. This connection would provide a great non-street alternative to many students in surrounding neighborhoods. The school would also be very interested in bicycle education for third grade and above.

Littleton Academy Charter School 1200 West Mineral Avenue



Meeting with Principal, Ms. Jan Pote on April 7, 2011

School does not have bus service, majority of all students arrive and are picked up by vehicle in carpool line. There are students who walk along Mineral Boulevard from neighborhoods west of the school. The wide sidewalks along the south side of Mineral are good, despite the heavy traffic on Mineral. The pedestrian crossing at Windermere Street and Mineral is used by many of these students and parents and seems to work well. No specific improvements requested.

Littleton Preparatory Charter School 5151 S. Federal Boulevard, Ste.1



Meeting with Principal, Ms. Kimberly Ash on April 5, 2011

The school is a "school of choice" but is part of Littleton Public Schools. Many students access the school via Irving, whether they are walking or being dropped off. There is a lot of student pedestrian activity on Irving, but it is not a particular problem. Anything to increase visibility of student walking or biking on Irving would be important. The school would be interested in a walking and bicycling education program.

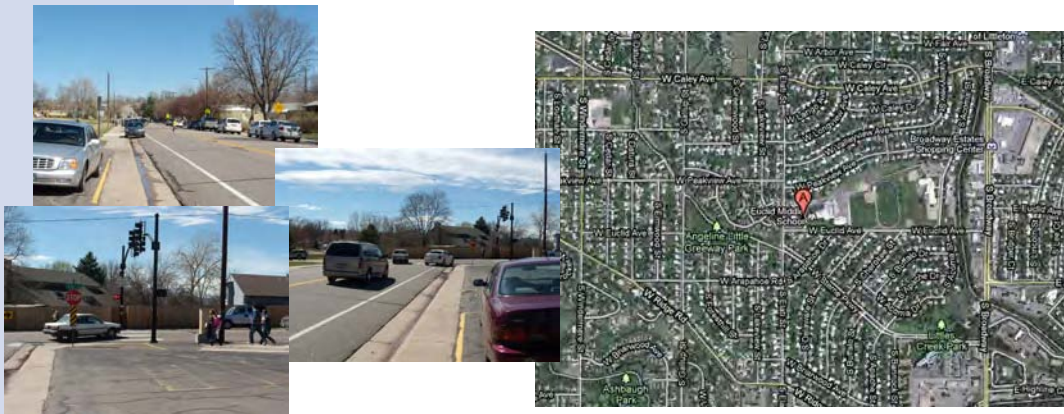
Saint Mary's Catholic School 6833 South Prince Street



Meeting with Principal, Ms. Mary Cohen on April 7, 2011

The existing pedestrian crossing is located on Prince Street at the top of the hill, at the entry /exit of the school and church. Students using this crossing have to navigate the parking lot with numerous entering or exiting vehicles. Many students walk from adjacent neighborhoods via the Lee Gulch trail. This trail crossing at Prince Street is located at the bottom of the hill, does not seem to be visible to vehicles and is not well marked or signalized. The school would like to see a very visible crossing treatment color, flashing lights, etc., that would draw attention to this crossing at the bottom of the hill.

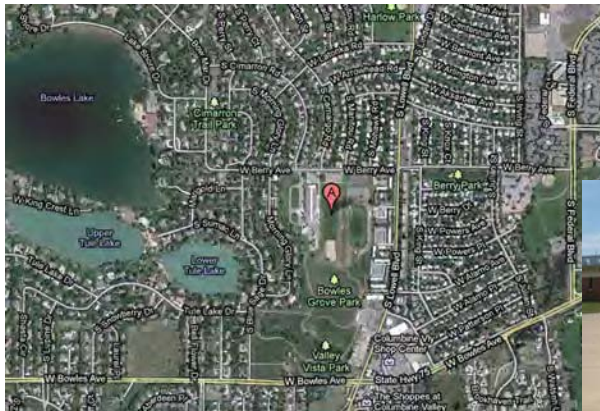
Euclid Middle School 777 West Euclid Avenue



Meeting with Principal, Mr. Gary Hein on April 4, 2011

The most important issue facing the school is the visibility and operation of the pedestrian signal at Euclid and Elati. It is confusing to motorized traffic. The parent committee and school would like a three-way vehicular stop or a continual red flashing pedestrian light during main school hours to be considered. The Principal also expressed concern over the number of students who cross Euclid between parked cars when school lets out. It might be better to provide a designated crosswalk across Euclid to reduce the number of crossing points on this busy pick-up and drop-off street. **Note: three-way stop sign was installed at Euclid in August 2011.**

Goddard Middle School 3800 West Berry Avenue



Meeting with Principal, Ms. Kathleen Ambron on April 7, 2011

There are a number of students who bicycle from the Bow Mar neighborhood. There should be marked and designated bike routes along Berry Avenue, continuous to the pedestrian crossing. The biggest issue for the school is at the vehicular entry/exit of the school. Students coming from Bow Mar walk or bike along the south side of Berry and the sidewalk ends before it reaches the school. The pedestrian crosswalk at the entry point, inside the school property, is located too close to the vehicular entrance on Berry. Cars entering off Berry enter at too fast a speed for students crossing just inside the entrance. The school would like the location of their property crossing to be reconsidered so that it works better with the entrance off Berry. The entrance off Berry should be signalized and not allow for a free turning movement.

Ongoing Community Outreach and Education

The consultant team, in conjunction with Bicycle Colorado, developed bilingual education and safety materials that were made available to the schools, and can be made available to the community through the City's website. The city-wide walking and biking mapping, along with education materials, could be a great resource for the community and promote the use of the City's walking and biking network.



The City should also continue to work with Bicycle Colorado and Littleton Public Schools to support the annual Bike and Walk to School Day held October 5th each year. Additionally, several elementary schools in Littleton Public Schools applied for and received educational Safe Routes to School grants for programming in the spring of 2012. Damon Runyon Elementary and Centennial Elementary were among the successful applicants. These schools will receive funding for educational programs to teach and encourage children and parents safe methods of walking and biking to school.

Outreach to the adult community is also important. The City can share much of what it is addressing through this plan on the City's website. Mapping of the system developed through this project will be fundamental to sharing the bicycle and pedestrian network. Additionally, the City can coordinate with Bicycle Colorado to implement community education programs that are geared toward the recreational and commuter cyclist, such as the following:



- Commuter Education 101
- Confident Cycling
- Basic Bike Mechanics/Flat Changing
- Group Ride/Skills Course

In the long term, the City may wish to promote walking and bicycling by hosting a community bike event or sectioning off a roadway for bike or walk-only rides. These kinds of events can be very effective in promoting multi-modal options for getting around town.

Existing Conditions

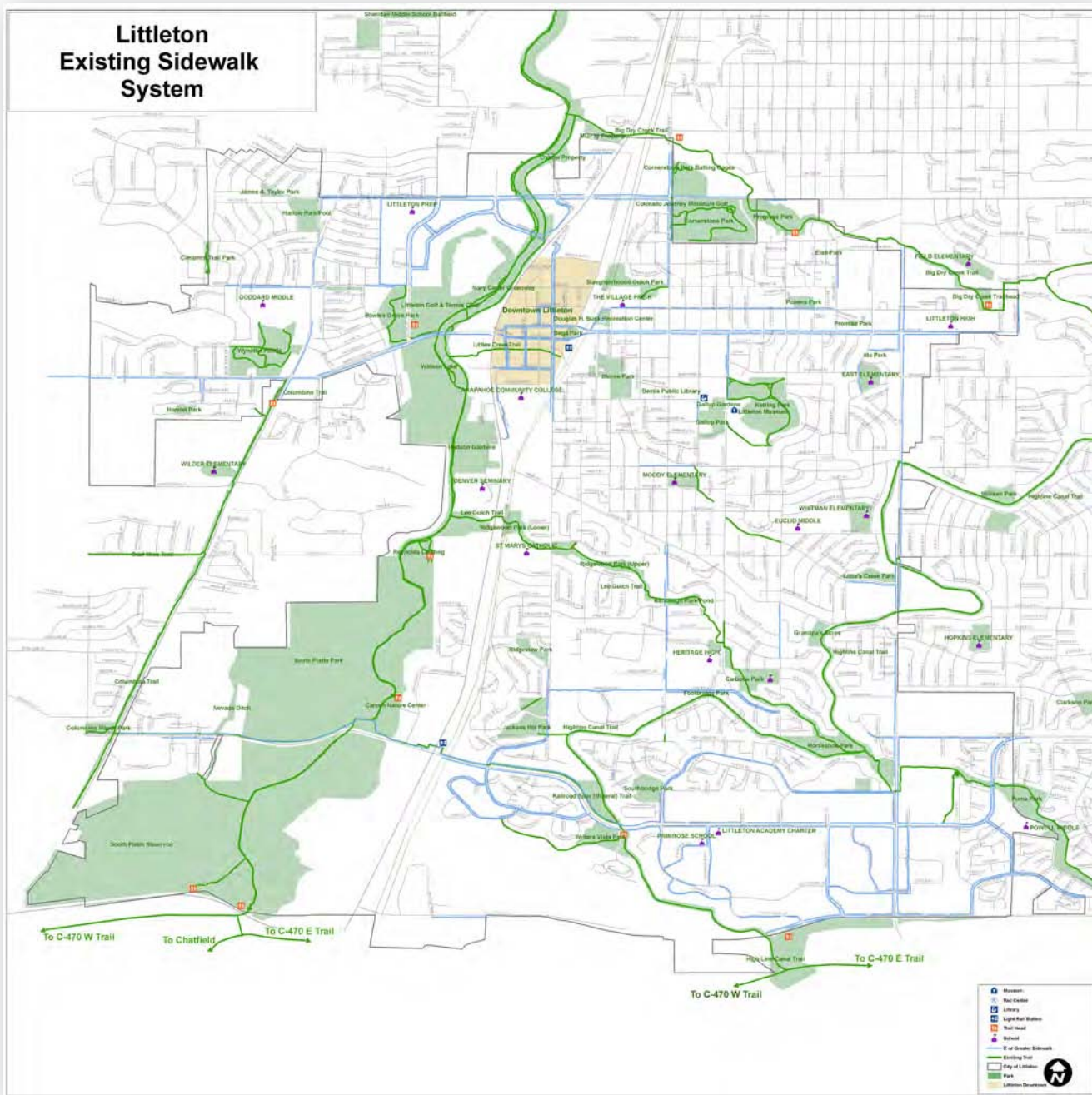
An important part of the Plan development process is inventorying and evaluating the existing bicycle and pedestrian system to identify needed improvements for improved bicycle and pedestrian travel. As part of this effort, data collection and field verification tasks were completed for both the existing pedestrian and existing bicycle systems in Littleton. This data was then used to determine gaps and needs in the system that fed into the Plan development process.

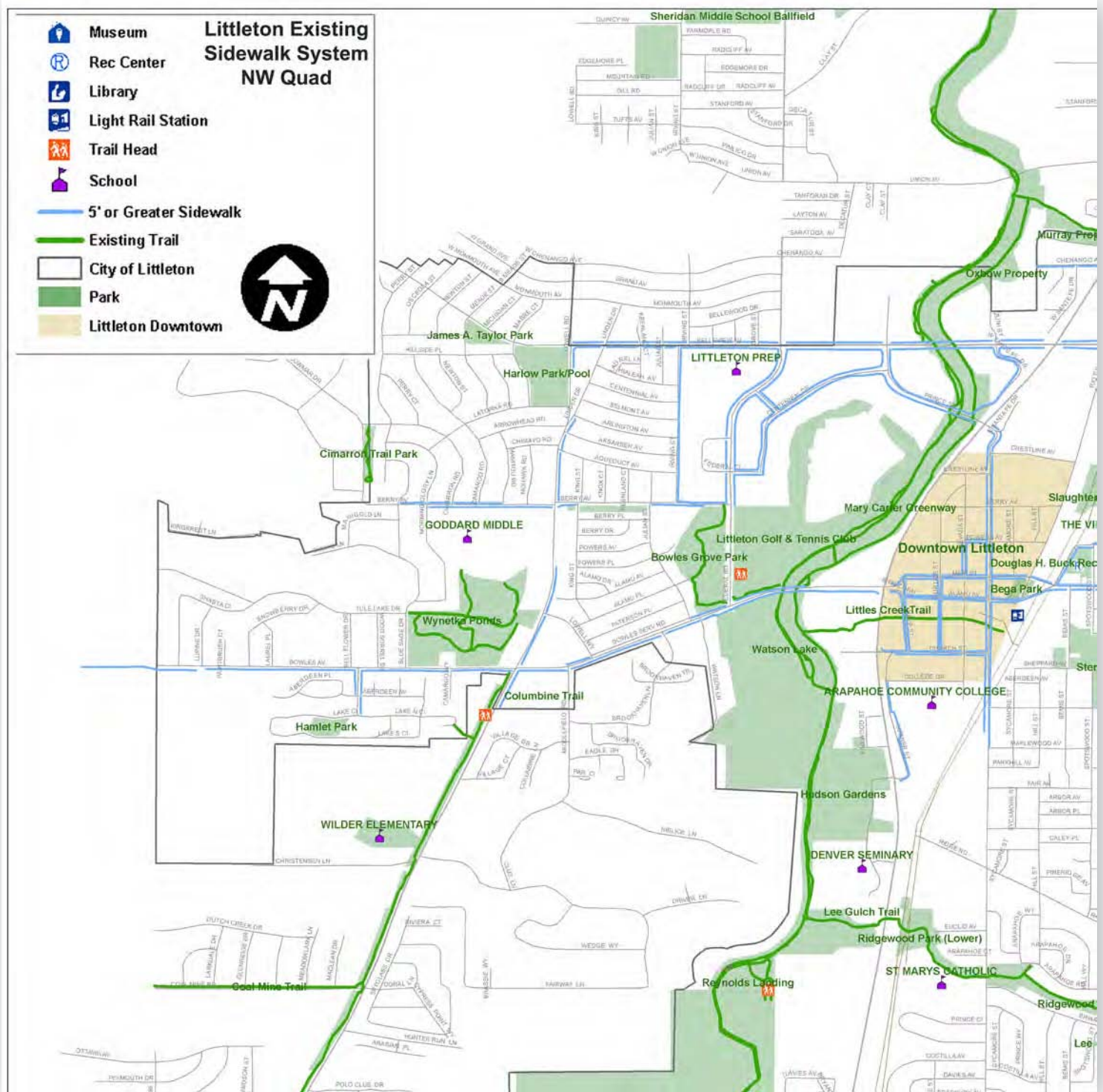
Pedestrian Facilities

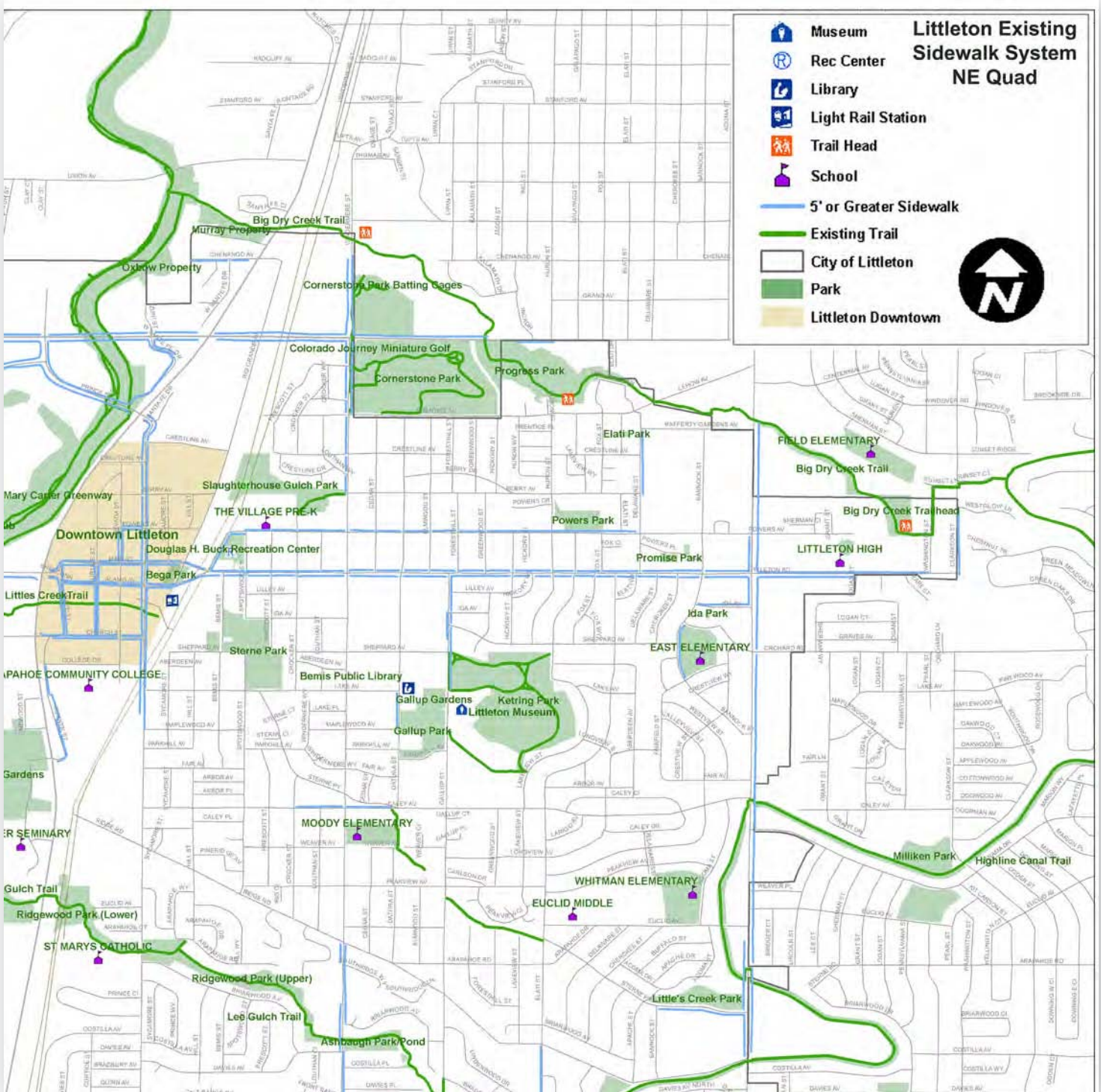
A large-scale data collection effort was undertaken to assess and inventory all sidewalks or lack of sidewalks along both sides of Littleton streets classified as collector streets or higher. Over the course of two days (February 17-18, 2011), data collection personnel traveled all streets with a designated functional classification of collectors and higher in Littleton and inventoried sidewalks in three categories; no sidewalk present, sidewalk present less than five feet in width, sidewalk present five feet in width or greater. The maps on the following pages show the results of the sidewalk inventory where sidewalks on collector streets was five feet wide or wider.



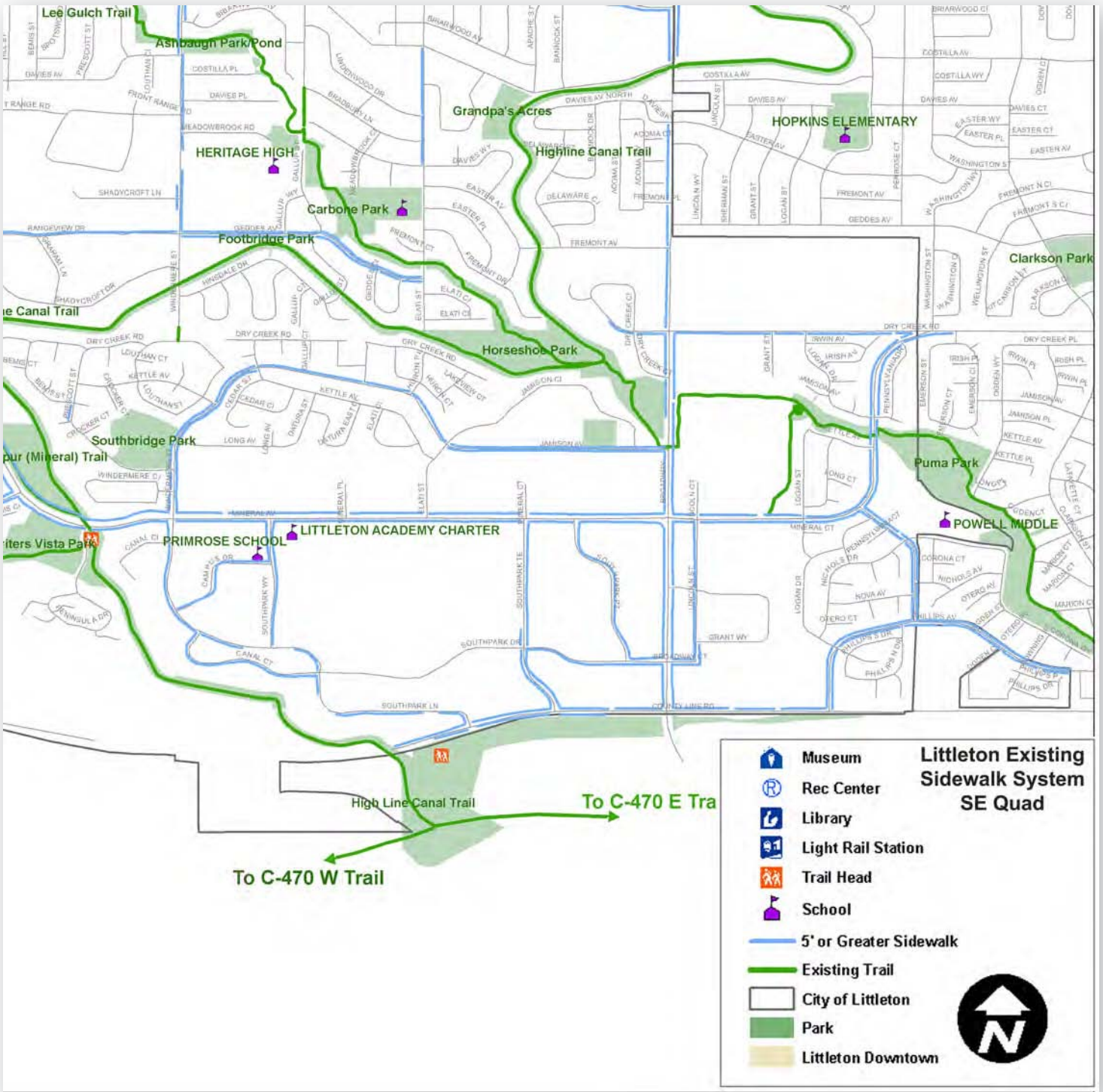
Existing Pedestrian System









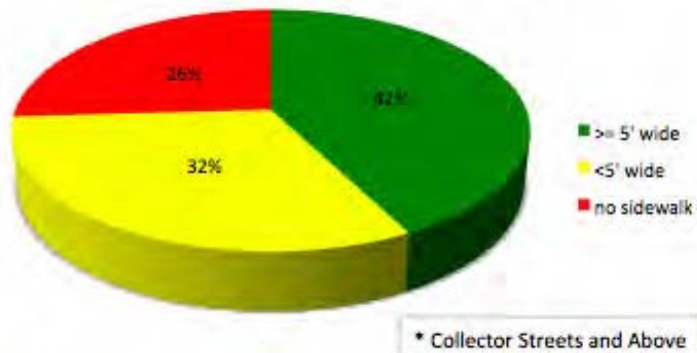


Sidewalk Inventory Summary

The following data and chart summarizes the sidewalk inventory of collector streets and above in Littleton on February 17-18, 2011.

- Total Sidewalk Inventoried 97.5 miles
- Sidewalk 5' wide or wider 50.0 miles
- Sidewalk less than 5' wide 32.4 miles
- No Existing Sidewalk 15.1 miles

Sidewalk Inventory: 2/17-18/11*



As shown in the data above, well over half of all collector street miles in the City either has no sidewalk or sidewalk less than 5' wide.

Sidewalk Key Gaps

The sidewalk inventory also identified several key gaps in the Littleton pedestrian system. They were identified as such because they are in locations that are on major roadways and/or make it difficult to access important destinations like the Big Dry Creek Trail underpass of Belleview or the Highline Canal Trail. They are:

- Belleview Avenue east of Windermere Street (south side)
- Prince Street south of Ridge Road (east Side)
- West Berry Avenue just west of Prince (south side)
- Peakview west of Gallup (south side)
- County Line east of the Highline Canal (north side dead-ends and doesn't connect to Highline Canal trail)
- Platte Canyon southeast of Mineral (east side)
- Santa Fe Drive/US 85 south of Church Street (west side to be installed when road is widened)

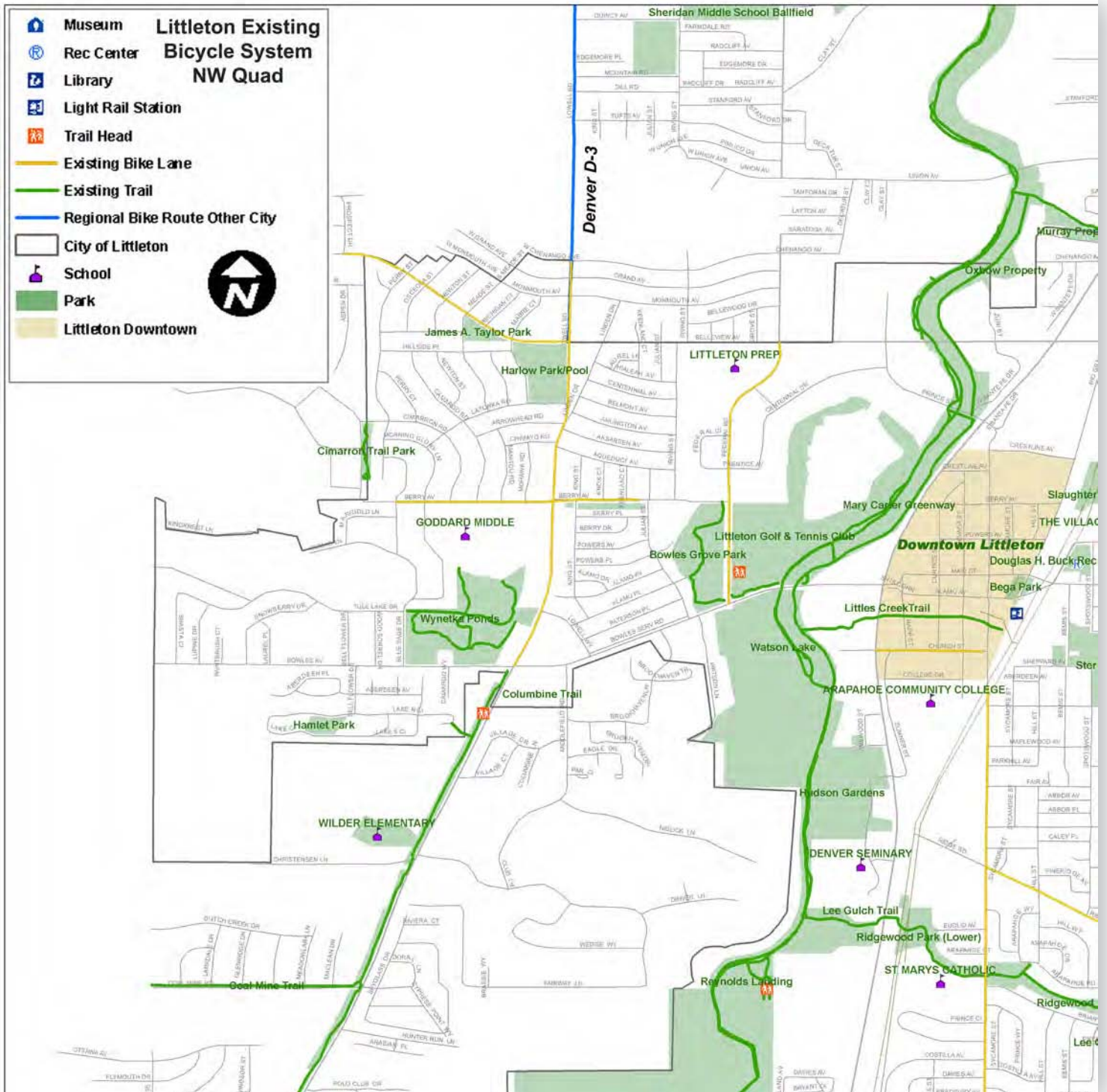
Lack of Sidewalk along
Bellevue Avenue east of Windermere Street



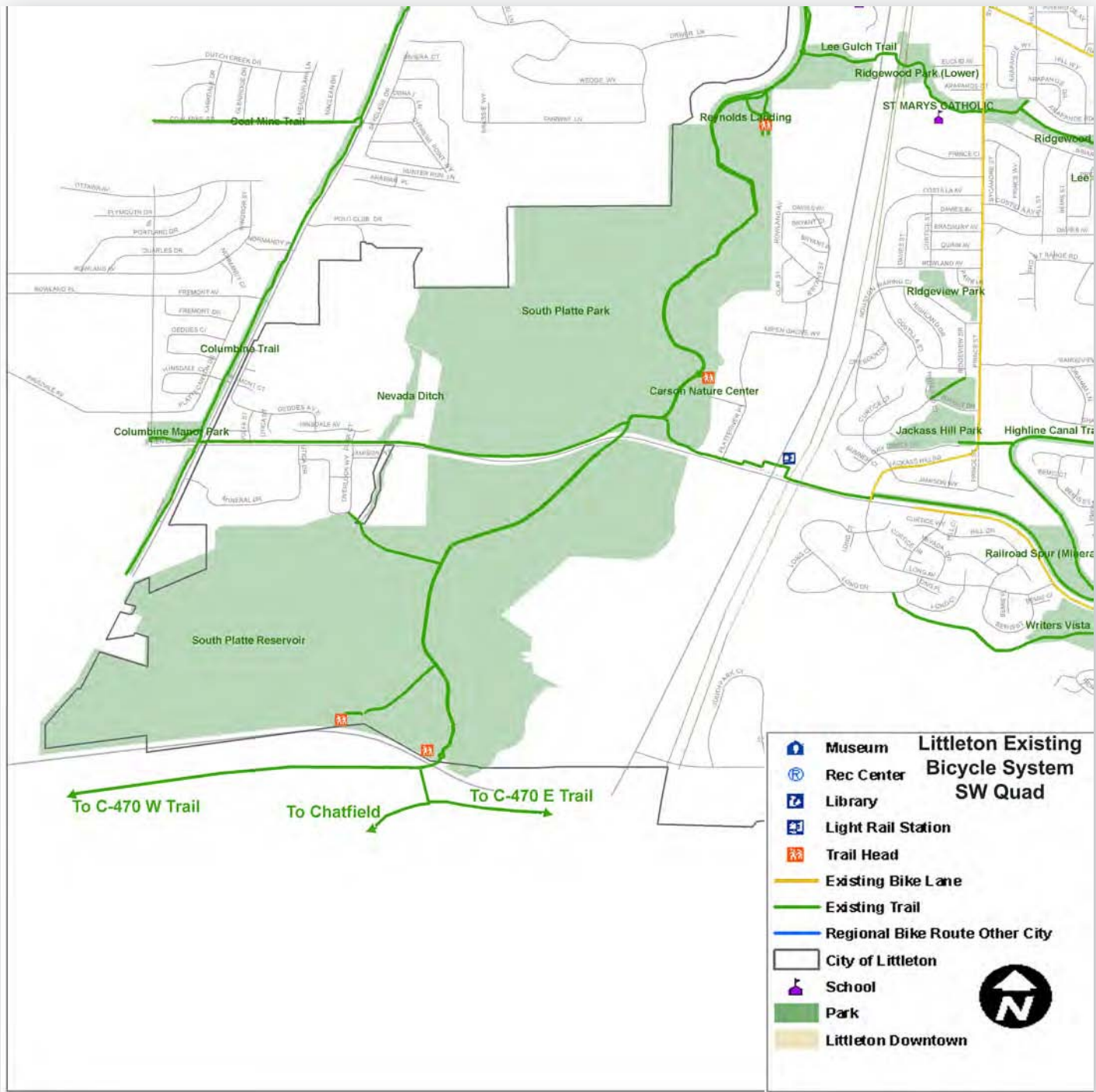
Discontinuous Sidewalk along County Line Road near the Highline Canal Trail

Bicycle Facilities

A similar process was completed for the existing bicycle facilities in Littleton. The City provided mapping of the existing bicycle facilities in Littleton to the team. This information was then field-verified and final maps of existing bicycle facilities were produced. The data show that there are currently 16.8 miles of on-street bicycle lanes in Littleton. The maps on the following pages show the existing bicycle system in Littleton as of Spring of 2011.









Proposed Pedestrian and Bicycle Improvements

The information gathered through the existing conditions inventory and the community engagement process was used along with land use information showing major use nodes such as schools, the two light rail stations, downtown, the community center, library, museum, etc. to develop proposed improvements and programs that would complete gaps in the existing system and facilitate higher numbers of pedestrians and bicyclists in Littleton. The next section describes the proposed elements for pedestrian and bicycle improvements including detailed information and mapping.

Toolbox

A variety of elements are proposed to increase pedestrian and bicycle mobility and safety in Littleton. Below are descriptions of some of these elements.

Activated Pedestrian Crossings

Many types of Activated Pedestrian Crossings are in place throughout the United States. They are generally intended to be installed at unsignalized mid-block crossings such as where a trail crosses a road (Lee Gulch at Prince Street is a good example). They consist of a marked crosswalk, pedestrian crossing signs, a flashing yellow beacon, and a push button actuator. Some installations include in pavement lighting systems and auditory information for the crossing pedestrian. Recent research in the area of Activated Pedestrian Crossings has focused on the type and characteristics of flashing yellow beacon used in the system. The Federal Highway Administration approved a research request by the City of St. Petersburg, Florida to evaluate "Rectangular Rapid Flashing Beacons" (RRFB) as an alternative to the 12" circular flashing yellow beacon commonly used. The FHWA website states that:

"In addition to "before" data, the city collected "after" data at intervals for 1 year at all sites and for 2 years at the first 2 implemented sites. For the first 2 sites, the city collected data for overhead and ground-mounted pedestrian crossing signs supplemented with standard round yellow flashing beacons, for comparison purposes, before the RRFBs were installed. The data show very high rates of motorist "yield to pedestrians" compliance, mostly in the high 80s to close to 100 percent, in comparison to far lower rates (in the 15 to 20 percent range) for standard beacons. The very high yielding rates are sustained even after 2 years in operation, and no identifiable negative effects have been found. The RRFB's very high compliance rates are previously unheard of for any device other than a full traffic signal and a "HAWK" hybrid signal, both of which stop traffic with steady red signal indications. The St. Petersburg data also shows that drivers exhibit yielding behavior much further in advance of the crosswalk with RRFB than with standard round yellow flashing beacons. These data clearly document very successful and impressive positive experience with the RRFBs at crosswalks in that city.

Based on this research data and information it is recommended that any Activated Pedestrian Crossings installed in Littleton be of the RRFB type.



Activated Pedestrian Crossing with RRFB, Boulder, CO



Typical Activated Pedestrian Crossing Elements, Golden, CO

HAWK Signals

HAWK stands for High intensity Activated crossWALK. This type of signal is a special type of hybrid traffic signal that has red and yellow indications, is pedestrian activated, and is intended to help pedestrians cross busy streets without necessitating a full traffic signal at the crossing location. This signal type has shown a 97% driver compliance rate in research studies throughout the United States which is comparable to a traditional traffic signal while being less expensive to install and causing less delay to motor vehicles than a traditional traffic signal.

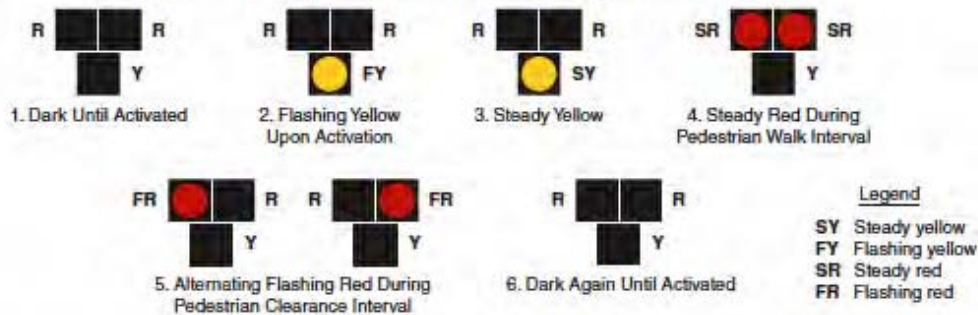


View of a HAWK Signal Installation

2009 Edition

Page 511

Figure 4F-3. Sequence for a Pedestrian Hybrid Beacon



How a HAWK Signal works, source: MUTCD 2009 Edition Page 511

"Sharrows"

"Sharrows" is short for Shared Lane Marking. A "Sharrows" is a white pavement marking consisting of a bicycle symbol and two white chevrons above it that is placed directly on the pavement surface. They are used where there are no bike lanes and where it is desired to remind motorists and bicyclists to share the roadway space. An example is shown below:



"Sharrows" on Rio Grande Street, Littleton, CO

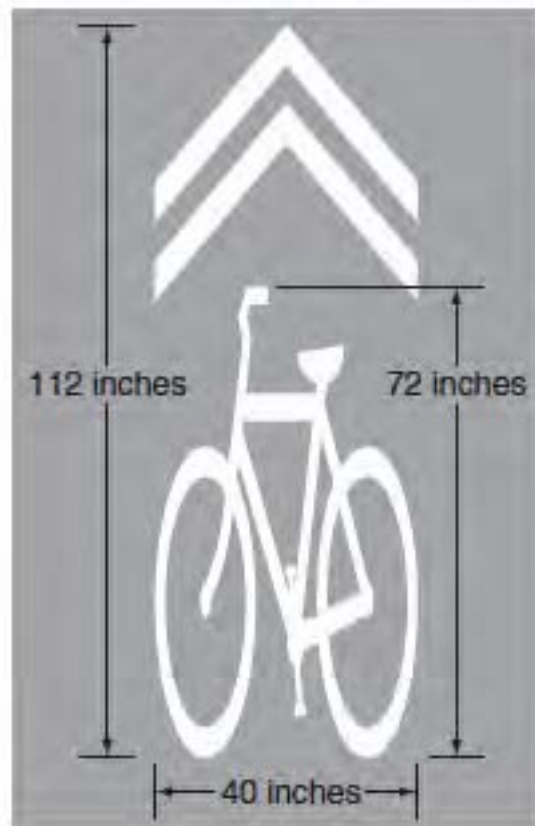


"Sharrow" on Main Street, Breckenridge, CO

The manual on Uniform Traffic Control Devices 2009 Edition Section 9C.07 (MUTCD) states that:

The Shared Lane Marking shown in the figure below may be used to:

- A. Assist bicyclists with lateral positioning in a shared lane with on-street parallel parking in order to reduce the chance of a bicyclist impacting the open door of a parked vehicle,*
- B. Assist bicyclists with lateral positioning in lanes that are too narrow for a motor vehicle and a bicycle to travel side by side within the same traffic lane,*
- C. Alert road users of the lateral location bicyclists are likely to occupy within the traveled way,*
- D. Encourage safe passing of bicyclists by motorists, and*
- E. Reduce the incidence of wrong-way bicycling.*



"Sharrow" Dimensions. Source MUTCD Figure 9C-9

MUTCD further states that:

The Shared Lane Marking should not be placed on roadways with a speed limit greater than 35 mph, on shoulders, or in designated bicycle lanes. If used in a shared lane with on-street parallel parking, Shared Lane Markings should be placed so that the centers of the markings are at least 11 feet from the face of the curb, or from the edge of the pavement where there is no curb. If used on a street without on-street parking that has an outside travel lane that is less than 14 feet wide, the centers of the Shared Lane Markings should be at least 4 feet from the face of the curb, or from the edge of the pavement where there is no curb. If used, the Shared Lane Marking should be placed immediately after an intersection and spaced at intervals not greater than 250 feet thereafter.

Bicycle Lane

Bicycle lanes are a common sight in the Metro Denver area, and Littleton currently has 16.8 miles of bicycle lanes installed in the City. They are spaces set aside for bicycle use that are generally five feet in width and created by a solid white line on the left side. Bicycle lanes are intended to be used with the direction of street traffic. They usually have a bicycle symbol to emphasize their intended use for bicycles and to limit driver confusion as to whether they are parking lanes.



Bicycle Lane with Symbol, Mineral Ave., Littleton, CO



Bicycle Lane without Symbol, Prince Street, Littleton, CO

Bicycle Route

A bicycle route is a facility that is a continuous collection of infrastructure to take bicyclists from one place to another. Bicycle routes can consist of many facility types but at the minimum have bicycle route signs along them. In this Plan's maps a bicycle route is defined as a facility that has signs and either bike lanes or "sharrows." Bicycle routes also connect to adjacent cities.



Bicycle Detector at Traffic Signal

One of the challenges bicyclists face when traveling around a city is navigating traffic signals. Traffic signals are usually configured to recognize two types of users, motor vehicles and pedestrians. Pedestrians usually are required to push a button to let the traffic signal controller know that they wish to cross the street. Motor vehicle traffic is automatically detected through either in pavement loop detectors or through video camera detectors. Bicyclists don't fit neatly in either condition. Having to dismount your bicycle and use the pedestrian push button is onerous. Most automatic detection systems aren't configured to easily recognize bicycles, and riders do not know how to properly position themselves to ensure the traffic signal will recognize them.

The purpose of the bicycle detector symbol is to aid bicyclists in positioning their bicycle so the traffic signal will recognize them. Automatic loop detectors and video detection can then be adjusted to more easily recognize bicycles and accommodate them. The symbol is most effective at:

- Bicycle trail intersections with streets
- Street intersections with bicycle lanes
- On lower volume side streets that intersect with major streets where there is not frequent motor vehicle traffic to activate the green phase for the side street (Bannock Street/Littleton Boulevard is a good example)



Bicycle Detector Symbol, Boulder, CO

Road "Diet"

Occasionally a roadway is in place that has excess capacity. Traffic patterns may have changed since the road was constructed or the anticipated land uses on the roadway may not have been developed. In this case, it is possible to do a road "diet" program and remove motor vehicle travel lanes, which makes space for bicycle lanes or bicycle lanes with parking. This can be a successful strategy if the road "diet" has local support, and the benefits of the program, such as improved mobility for bicyclists and enhanced safety for pedestrians while still accommodating motor vehicle traffic, is communicated effectively. A roadway in Littleton that is a potential candidate for a road "diet" program is Prentice Way/ Centennial Drive east of Federal Boulevard and south of Belleview Avenue. This roadway is a mixture of wide two-lane roadway and four-lane roadway with turn lanes. The outside through lanes could be removed, and bike lanes with or without on-street parking could be added.



Centennial Drive just west of Prince Street

Bicycle Parking

Having available, secure, and easy to find bicycle parking is vitally important to encouraging people to use their bicycles for purposes other than recreation. Bicycle parking at high demand locations, such as at the Littleton Downtown LRT Station, is already at capacity on many days.



Bicycle Parking at Littleton Downtown LRT Station

Adding capacity to the bicycle parking system in downtown Littleton is a high priority, and there are several interesting options available. One is to work with the Littleton Fine Arts Committee to develop and locate interesting and functional bicycle parking throughout downtown that is appealing as well as functional. Bicycle parking with an artistic flair has been used successfully in the Denver area as long as the parking is available, secure, and easy to find.

"Artistic" Bicycle Parking, Golden, CO



Another interesting option being tried in some metro areas, is to turn one on-

street motor vehicle parking space into 15-20 bicycle spaces. This option has worked well in other cities where there is business support and a high enough volume of bicycle traffic to utilize the spaces consistently.

On-Street Parking Conversion, Golden, CO



Route and Destination Signage

An important element of any pedestrian and bicycle system is informative and well placed signage that identifies routes and directions to important destinations. Many cities are showing distances and assumed travel times for bicyclists on bicycle oriented destination signage. Pedestrian oriented signage is also important to guide users to nearby destinations. Littleton is currently engaged in updating destination signage throughout the City, and bicycle- and pedestrian-oriented destination signage should be included in this effort.

Proposed Route Signage, Littleton, CO



Proposed Destination Signage, Littleton, CO

Mapping

In addition to informative and well placed signs, well-designed and accessible mapping of bicycle and pedestrian facilities is important in encouraging people to bike and walk to destinations in Littleton. At this time the most user friendly mapping of bicycle and pedestrian facilities in and around Littleton is maintained by the South Suburban Park and Recreation District (SSPR). However, this mapping shows only off-street facilities. A goal of the Plan is to develop an integrated map system for Littleton that leverages the excellent mapping provided by SSPR, while showing on-street Littleton facilities as well as important destinations in Littleton. In the near term, all mapping developed as part of this project will be made available to the public through the City of Littleton’s website.



SSPR Online Mapping System Screen Capture

Education

This is an important but often neglected Plan element. Educating young people on how to walk or bike to school safely, motorists and bicyclists on how to accommodate each other respectfully on the roads, and explaining any new infrastructure elements that may be unfamiliar to travelers in Littleton, such as “sharrows,” are all important pieces of bringing multi-modal mobility together in a safe and effective way. This Plan proposes the creation of an educational video to be hosted on the City’s website, as well as increased coordination with Littleton Public Schools’s Wellness Coordinator to facilitate education and awareness of bicycle and pedestrian issues in the City. Several schools in Littleton Public Schools received SafeRoutes to School grants and educational programming will begin in Spring 2012.



Bicycle Colorado’s Safe Routes to School Program is One of the School Education Programs Available

Proposed Pedestrian Facilities

Goal:

The City should work towards constructing 5 feet or greater sidewalk on both sides of all collector streets and above in Littleton.

Some specific areas identified were:

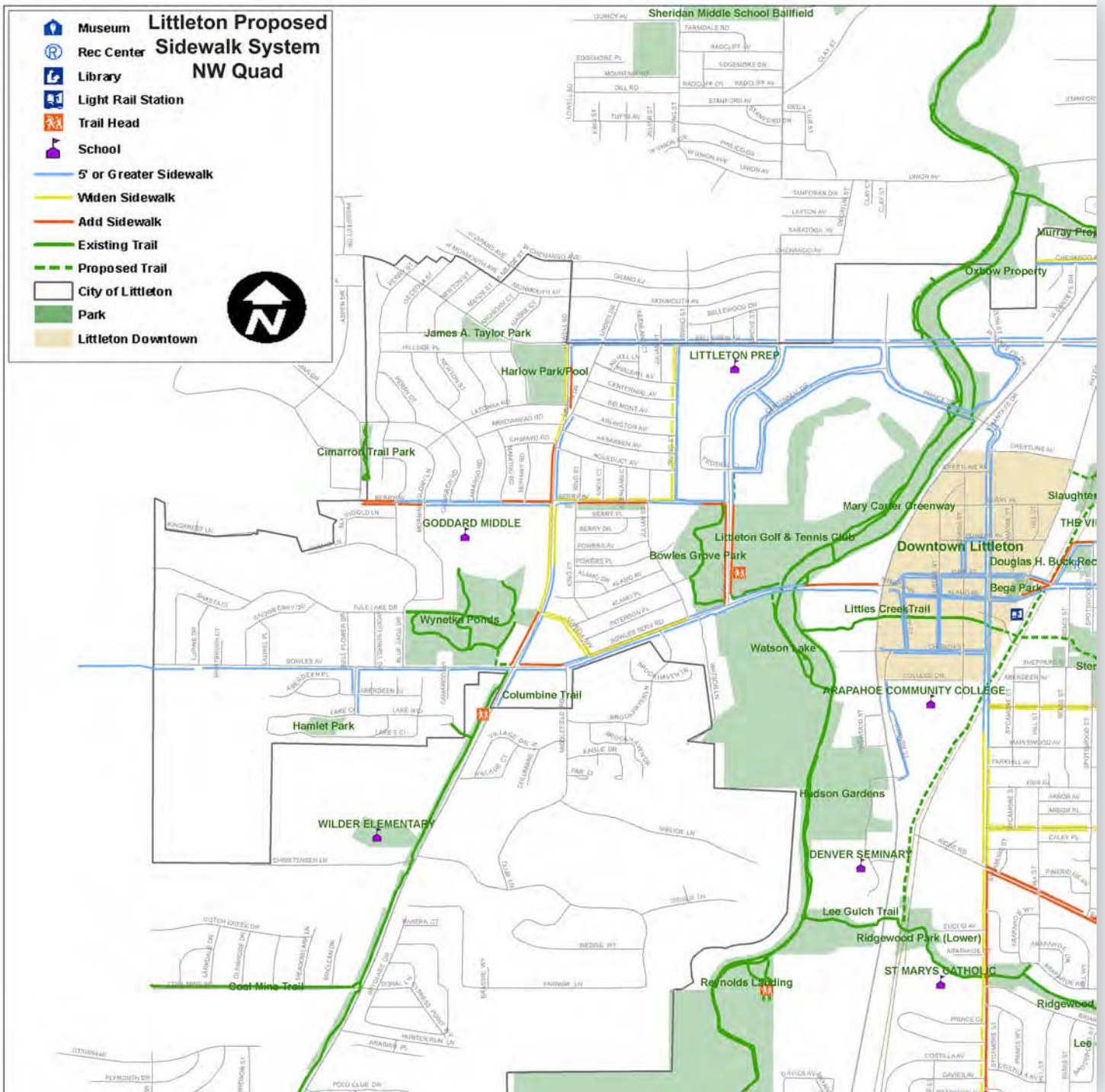
- Belleview east of Windermere (south side)
- County Line east of the Highline Canal (north side dead-ends and doesn’t connect to HC trail)
- Platte Canyon southeast of Mineral (east side)
- Prince Street south of Ridge Road (east side)
- Berry Street just west and east of Prince Street (south side)
- Peakview west of Gallup (south side)
- Lowell Boulevard north of West Berry Avenue (west side)

The draft maps on the following pages show collector streets and above where sidewalks need to be added or widened. The priority for these improvements should be:

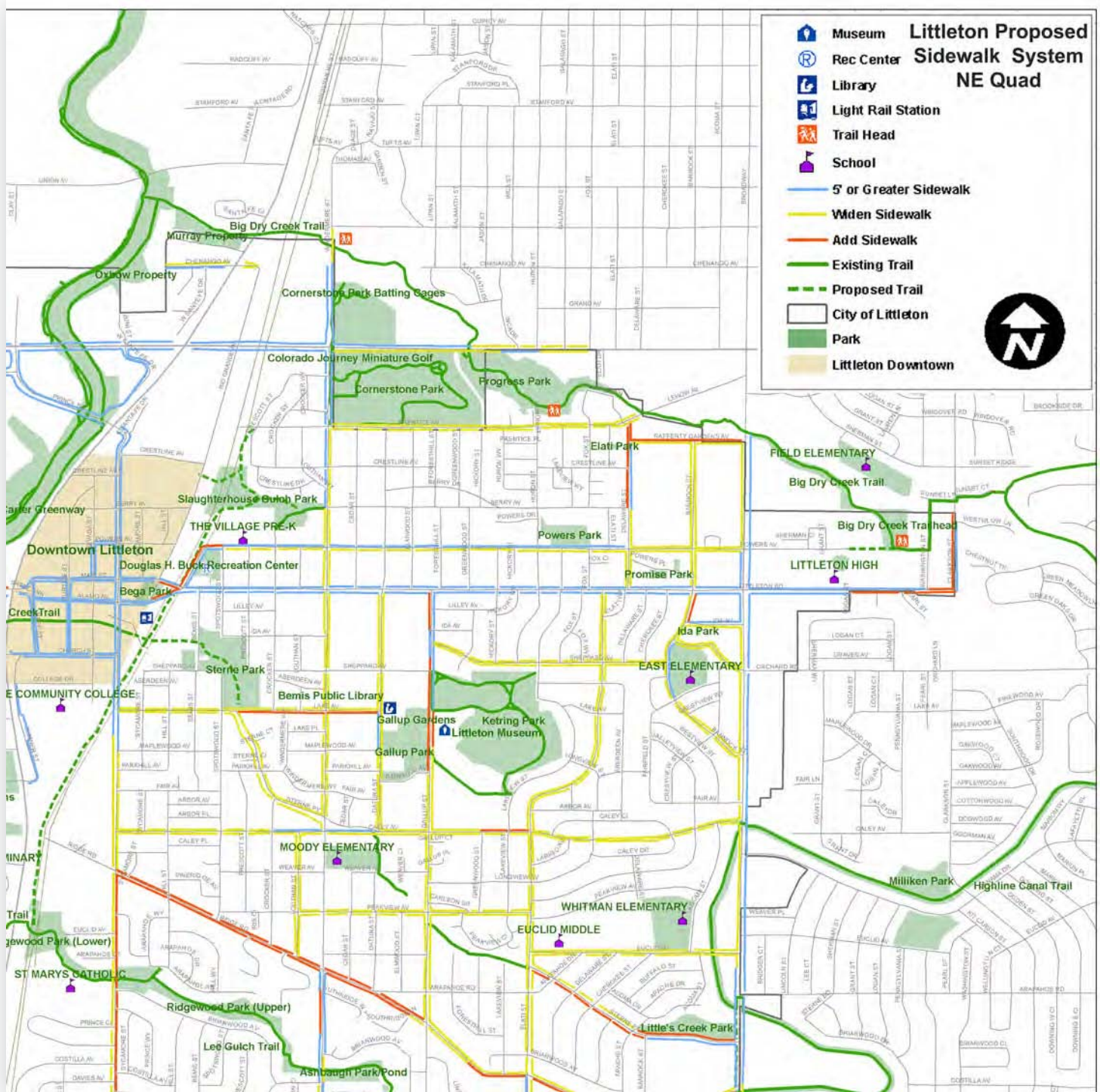
1. Add sidewalks where there is no sidewalk on either side of the street.
2. Add sidewalks where there is sidewalk on only one side of the street.
3. Widen sidewalks where it is narrower than five feet.

Areas near schools and other public facilities should be addressed first.

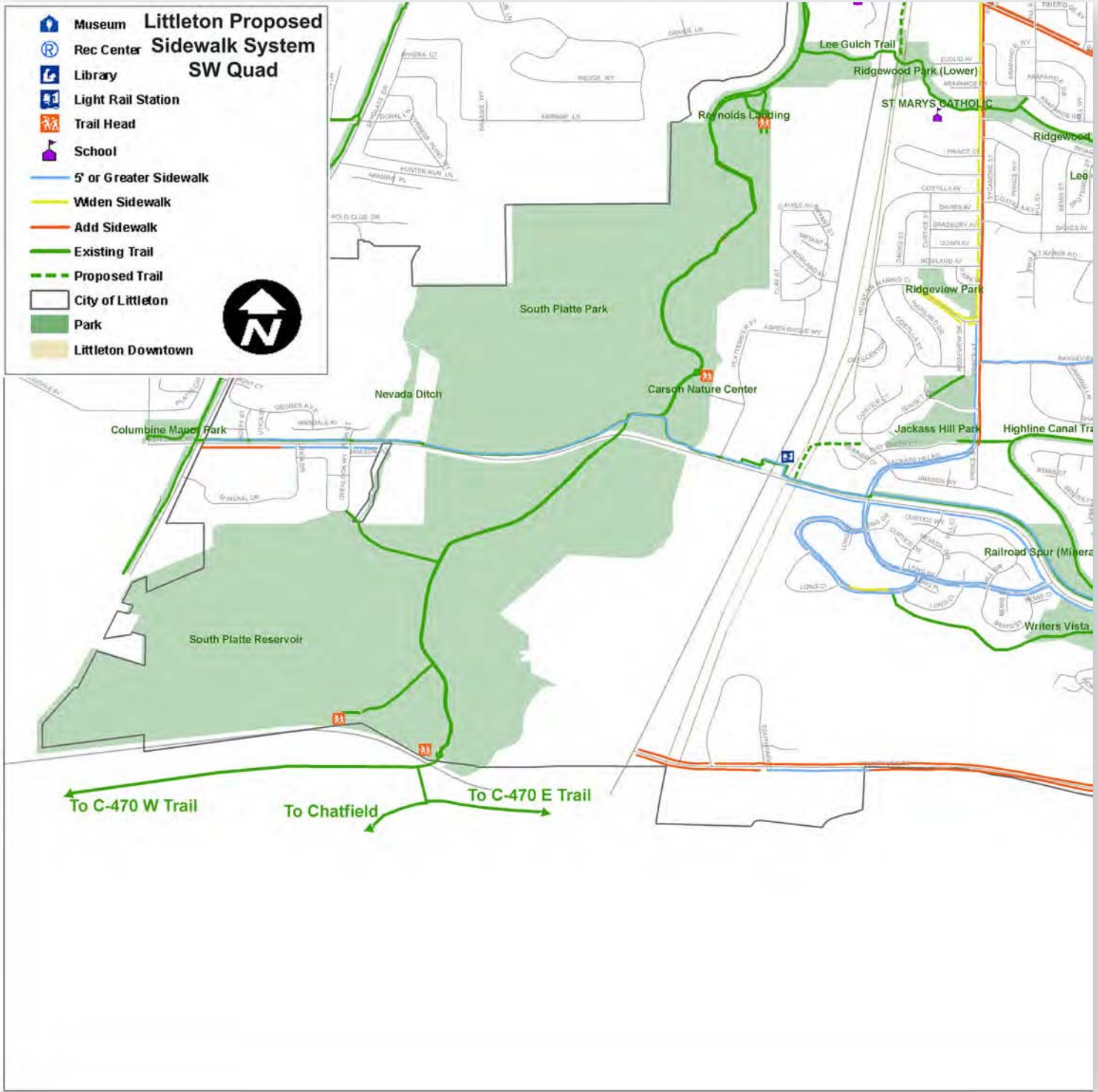
Draft Proposed Pedestrian System Improvements: To be Reviewed by Staff



Draft Proposed Pedestrian System Improvements: To be Reviewed by Staff



Draft Proposed Pedestrian System Improvements: To be Reviewed by Staff



Draft Proposed Pedestrian System Improvements: To be Reviewed by Staff



Trail Crossings

There are numerous trail crossings of Littleton city streets and the project team received comments about safety concerns at these locations. As a result, trail crossings in the City were identified and evaluated for safety issues. Two locations were identified as having potential safety issues:

- Trail Crossing top of Jackass Hill
- Lee Gulch at Prince Street

The trail crossing at the top of Jackass Hill has poor sight distance to the south and pedestrians crossing Jackass Hill Road here must trust that motor vehicles traveling north towards the crossing will stop after they see the pedestrian in the crosswalk. This is because pedestrians crossing here cannot make eye contact with approaching vehicle drivers from the south to make sure it will be safe to enter the roadway due to the hill and curves south of the pedestrian crossing. Although there is adequate stopping sight distance for vehicles traveling north toward the pedestrian crossing to stop if a pedestrian is in the crossing, the recommended method of crossing at these types of locations is for the pedestrian to make eye contact with the driver and make a determination as to whether the vehicle will stop, then proceed into the crosswalk. Once the pedestrian is in the crosswalk the motor vehicle is legally obligated to stop, but oftentimes motor vehicles do not yield the right-of-way to pedestrians in crosswalks, especially if they are surprised to see them.



Trail crossing at top of Jackass Hill, looking south

The other location is Lee Gulch at Prince Street just north of St. Mary's School. At least one near-miss and one rear-end accident have been documented at this crossing. From an engineering perspective there is nothing wrong with the crossing as it exists. Sight distance for both motorists and pedestrians is adequate with plenty of visibility, and the crossing has enhanced signage to catch motorist's attention. Yet, for some reason this crossing has proven to be a challenging location for pedestrians and motorists to utilize. We suspect that although the sight distance is adequate, the sag vertical curve at the crossing causes motorists to not identify pedestrians crossing or about to cross and yield to them.



Lee Gulch Trail crossing at Prince St, looking north. Notice the sag vertical curve.



Students using the Lee Gulch Trail crossing at Prince Street

Based on Federal Highway Administration research and safety improvement data, we recommend installing Activated Pedestrian Crossings with RRFB at both locations as soon as budgetary conditions allow. Because of the pedestrian sight distance challenge at the Jackass Hill crossing, we feel that this should be the first trail crossing location that is enhanced with an Activated Pedestrian Crossing. The Lee Gulch at Prince Street crossing should be the second location enhanced with an Activated Pedestrian Crossing.



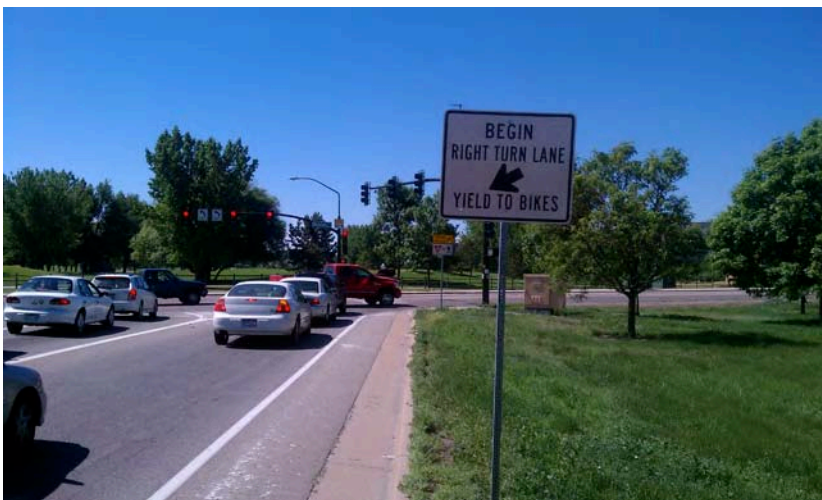
Activated Pedestrian Crossing with RRFB, Boulder, CO

Federal Boulevard/Bowles Avenue Intersection

Also, during our investigations of bicycle and pedestrian facilities in Littleton we discovered one particularly difficult pedestrian crossing at a signalized intersection with safety concerns. The intersection of Federal Boulevard/Bowles Avenue is a T-intersection with Bowles Avenue being the continuous street. The Mary Carter Greenway trail, golf course, and Littleton tennis facility are all nearby the intersection in the northeast quadrant.



Aerial view of the Federal Boulevard/Bowles Avenue Intersection



Intersection of Federal Boulevard/Bowles Avenue looking south

The predominant vehicular turning movements at the intersection are a southbound right turn from Federal Boulevard to Bowles Avenue and an eastbound left turn from Bowles Avenue to Federal Boulevard. Both of these movements cross a marked pedestrian crosswalk on the north side of the

intersection. The project team received many comments about near-misses between pedestrians and motor vehicles at this intersection. Of particular concern is a pedestrian crossing eastbound on the north side of the intersection.



North side crosswalk across Federal Boulevard, looking east

Southbound right-turning vehicles are often looking left to view approaching traffic so they can safely enter Bowles Avenue. In doing so they often do not see pedestrians crossing in front of their vehicle from the right. The same is true of eastbound left-turning traffic. They have a protected/permissive phase that means that at the beginning of their turn to go they have a green arrow and oncoming traffic is stopped. At the end of the green arrow protected phase both eastbound and westbound traffic see a green "ball" indication that means that vehicles heading eastbound can turn left when it is safe to do so. Drivers turning left are often focused on the most immediate conflict, which is oncoming vehicular traffic, and sometimes do not notice pedestrians in the crosswalk that they are about to cross. They then start turning left and either have to yield to the pedestrian, causing their vehicle to remain in oncoming traffic's path, or not yield to the pedestrian and hope that they don't hit them.

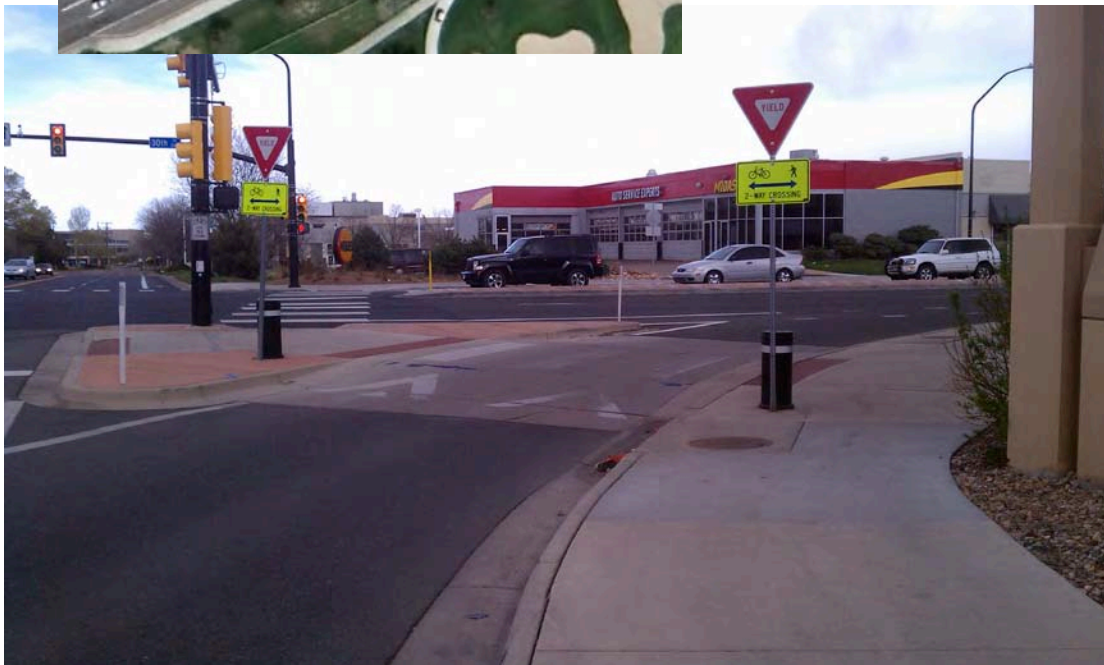
The main issue at this intersection is that there is too much information for drivers to focus on when making decisions, which sometimes leads to poor decision making, or missing a conflict or yielding obligation.

In order to address these situations two things should be done:

- The first is to construct a separated southbound right turn lane with a pedestrian refuge between the right turning and left turning traffic. This sets southbound vehicles up to more easily notice pedestrians about to cross and allows pedestrians to make eye contact with drivers to make sure the motor vehicle is going to yield to them. A pedestrian crossing table may also be installed to slow vehicular speeds down and to add visibility to pedestrians crossing the southbound right turn lane.
- The second thing is to institute a protected-only eastbound left-turn phase so that eastbound left turning vehicles do not conflict with the pedestrian crossing phase.



Conceptual diagram of proposed improvements.



Example of separated right turn lane with raised pedestrian table, Boulder, CO

Bicycle Facilities

The goal of providing additional on-street facilities in Littleton to complement the excellent trail system, and to link destinations within Littleton and to surrounding communities was arrived at during the Plan development process. The existing conditions information was reviewed along with land use/key nodes and travel patterns to arrive at a comprehensive system of on-street facilities that incorporate several facility types as appropriate to the location. These included bike lanes, "sharrows," bike routes, and short trail connectors where needed. Maps showing the proposed bicycle system are shown in the implementation section of this report (pages 52 - 55).

The resulting proposed system includes the following:

- Total Miles Existing Bike Lanes 16.9 miles
- New Bike Routes
 - New Bike Lanes 2.9 miles
 - New Sharrows 12.6 miles
 - Total 15.5 miles
- % Increase in Bike Routes 92%



Implementation

This implementation plan details which facilities should be implemented immediately with the implementation grant money provided through the Communities Putting Prevention to Work (CPPW) Grant by Tri-County Health. It also lists other high priority items based on providing connectivity to major destinations, improving safety, and enhancing pedestrian and bicycle mobility.

Immediate Implementation

The following improvements should be implemented with the CPPW Grant and need to be complete by March of 2012. The cost of each item will vary greatly depending on whether the City uses its staff to implement, or if it becomes necessary to have a contractor do the implementation. For that reason the improvements are listed in general priority order and the City should implement as many as possible with the CPPW Grant funding available. Items that are not implemented through the CPPW Grant should be placed in the high priority item list and be implemented as soon as fiscally feasible.

General Plan Elements: Immediate Implementation

Improved Mapping: Improved mapping is being provided as part of the planning portion of the CPPW Grant funding. This mapping will be available through the City's website. Additional enhancements such as integrating Littleton's on-street facility mapping with South Suburban Park and Recreation District's online and GIS based mapping would be undertaken at a later date.

Back-to-School packets: Back-to-School information on walking and biking to school was provided to Littleton Public Schools's Wellness Coordinator for the 2011-2012 school year. A similar effort should be made at the beginning of each school year. There are many free resources available especially from the Bicycle Colorado Safe Routes to School Program and the Colorado Department of Transportation's Safe Routes to School Program.

Educational Video: An educational and promotional video should be developed by the City to explain what new facilities such as "sharrows" are and how they are supposed to function as well as to promote walking and bicycling in Littleton. This video would be placed on the City's website as well as on sites such as YouTube and Vimeo to reach as wide an audience as possible.

Route and Destination Signage: When bicycle routes are implemented and mapping is developed it will be important to provide route signage to let bicyclists know what route they are on and where it goes. This signage also provides a visual indication to motor vehicles that they should expect bicycles on that roadway. Destination signage for pedestrians and bicycles will be installed by the City in the implementation phase of this project.

Add Bike Parking Downtown: Adding a small but visible amount of bicycle parking in downtown Littleton would greatly enhance the ability of people to use their bicycles to get to Downtown Littleton. It will also remind other downtown patrons that they can ride their bicycle to Downtown Littleton and have a great place to leave their bicycle. The Littleton Fine Arts Committee is investigating bicycle parking that serves both an artistic and functional purpose. The City is supporting this effort.

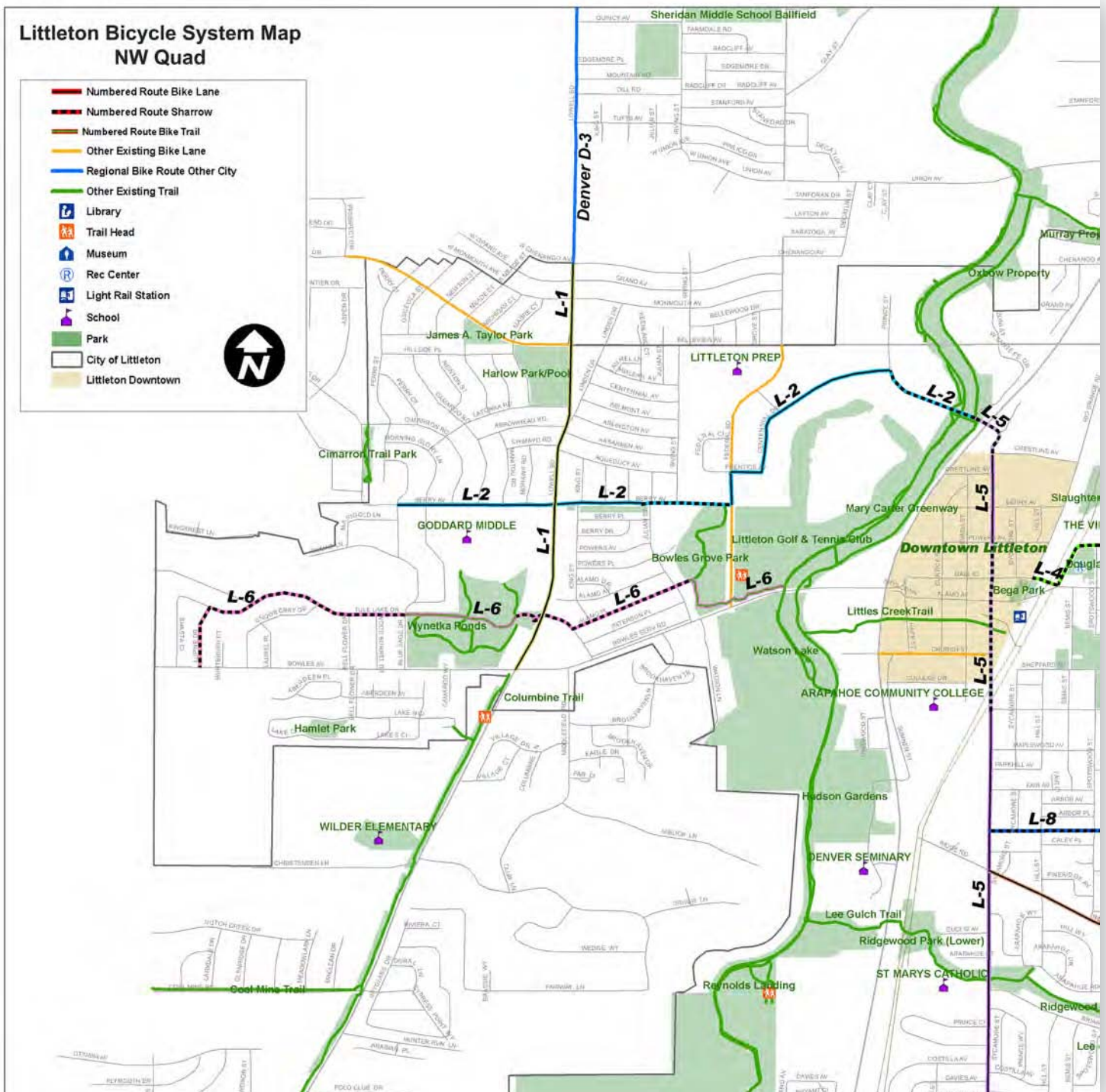
Jackass Hill Activated Pedestrian Crossing: This improvement will improve the safety of pedestrians crossing this roadway and also improves the connection between the Highline Canal Trail and the Mineral Light Rail Station.

Bicycle Plan Elements: Immediate Implementation

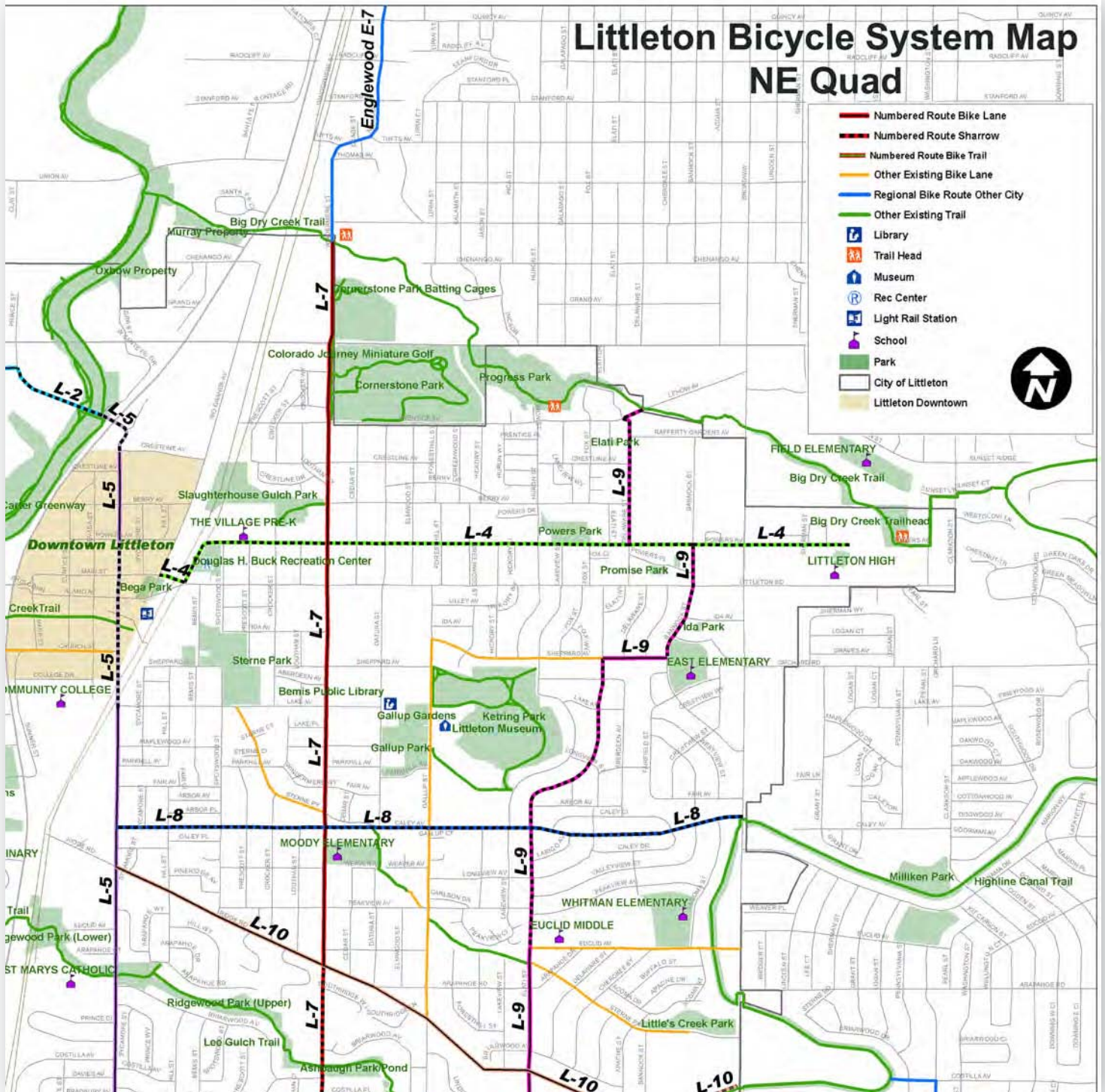
The maps on the following pages show the bicycle route system that the City of Littleton will implement by March of 2012. Following the maps are short descriptions of each route.



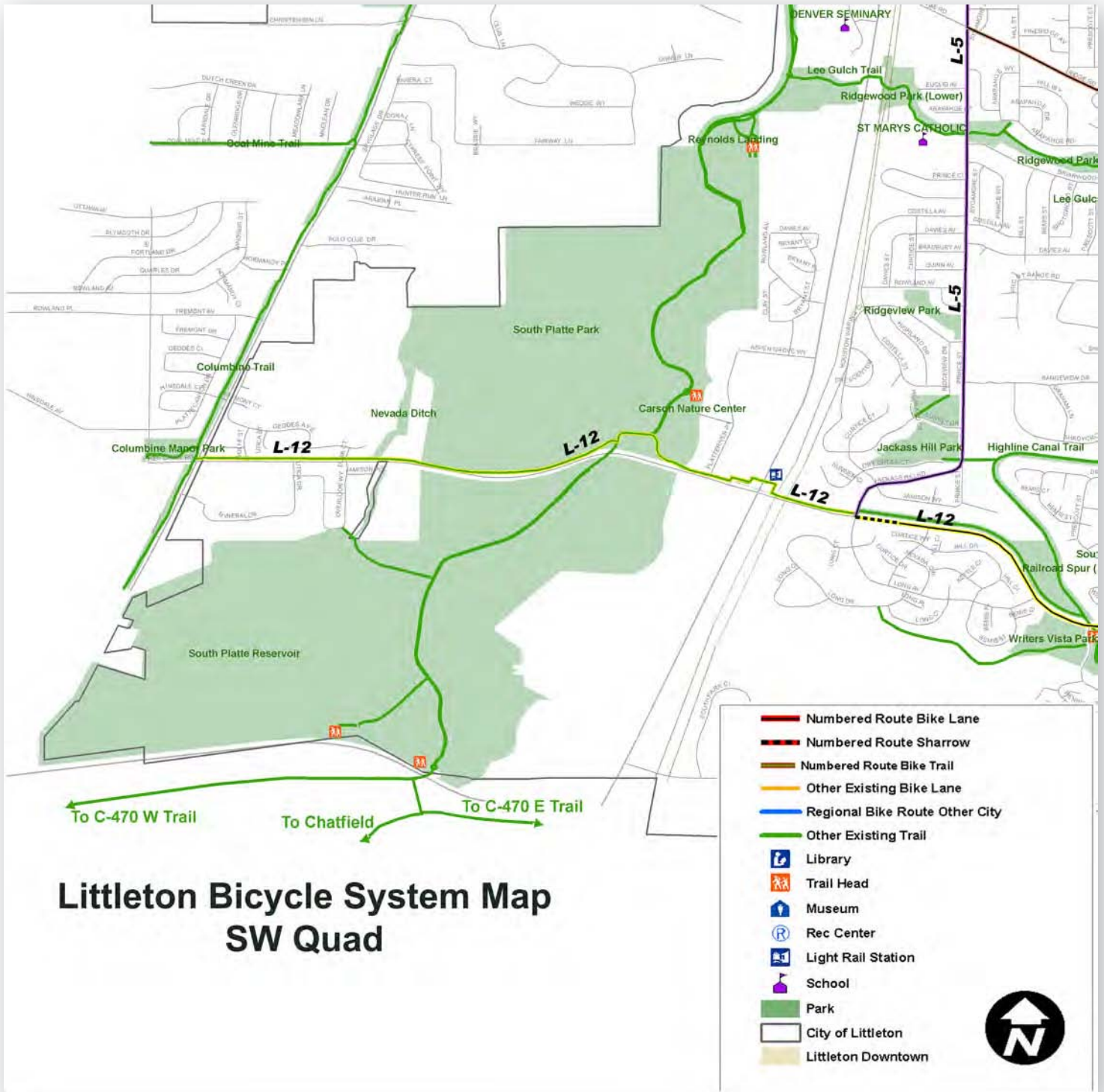
Bicycle System: Immediate Route Implementation



Bicycle System: Immediate Route Implementation



Bicycle System: Immediate Route Implementation



Bicycle System: Immediate Route Implementation



North/South Routes

L-1 Lowell Boulevard: Lowell Boulevard is an important bike route in Denver and connects to the Columbine Trail on the west side of Platte Canyon Road and ultimately to the C-470 trail. This route connects to Denver on the north and the Columbine Trail on the south.

L-5 Prince Street: This route starts at the Mary Carter Greenway and ends at the Mineral Trail bike route L-12. "Sharrows" should be installed here instead of bike lanes to maintain facility type consistency with the "sharrows" being installed through downtown and south to Lake Street

L-7 Windermere Street: This route is an important north/south route that connects to the Englewood E-7 route and then to the Denver D-7 route further north. It starts at the Big Dry Creek Trail and ends at the County Line Road Highline Canal Trail Head. "Sharrows" should be installed on Windermere Street from Ridge Rd. down to the cul-de-sac just south of the Highline Canal Trail crossing. The route then utilizes the existing bicycle lanes on Windermere Street/Jamison Avenue to connect to Southpark Lane and ultimately to the Highline Canal Trailhead just south of County Line Road.

L-9 Bannock/Delaware: The north/south Bannock/Delaware route connects people living south of Littleton Boulevard with destinations to the north such as the Big Dry Creek Trail and the City of Englewood. This route starts at the Big Dry Creek Trail and ends at the Highline Canal Trail. The L-9 route utilizes the signalized intersection at Bannock Street to allow safe crossings of Littleton Boulevard.



Short section of bike path connecting Windermere Street with W. Dry Creek Road, looking north

East/West Routes

L-2 Berry Avenue/Prince Street: This route begins at the Town of Bow Mar and ends at the Mary Carter Greenway, connecting the west side of Littleton to the Downtown core area and also provides improved connectivity to schools along Berry Avenue "Sharrows" are being added to Berry Avenue between Julian and Federal Boulevard Bicycle lanes should be added to Prentice Ave and Centennial Drive "Sharrows" should be installed on Prince Street to access the Mary Carter Greenway and to guide bicyclists in crossing Santa Fe Drive

A few improvements should be made along the L-2 Route to allow for better bicycle connectivity. These are listed below:

- The existing sidewalk on the east side of Federal Boulevard is currently 5 feet wide. It is recommended that at some point in the future this sidewalk be widened to 10 feet between Berry Avenue and Prentice Ave to meet AASHTO standards for a two-way bicycle path.
- A "road diet" should be investigated in the four lane section of Centennial Drive to create room for a bicycle lane. The resulting cross section would be a parking lane and a bicycle lane on each side of the street and a single traffic lane in each direction.
- The existing pedestrian crossing of Federal Boulevard at Berry Avenue should be enhanced in the future with either with an Activated Pedestrian Crossing, HAWK Pedestrian Signal, or other device pending the outcome of a detailed engineering study. A conceptual sketch of this improvement is shown below.



Potential Activated Pedestrian Crossing at Federal/Berry.

L-4 Powers Avenue: This route begins at Littleton High School and ends at the east end of Main Street. The Powers Avenue bike route provides important east-west connectivity on the east side of Littleton as well as to the Buck Recreation Center and the new City Ditch Trail (Phase 1). It also connects people to the important Windermere Street bicycle route and the Big Dry Creek Trail that both integrate with Englewood's bicycle system, providing regional mobility.

L-6 Bowles Alternate Route: This route begins at Bowles Avenue and Lupine Drive and ends at the Mary Carter Greenway. One of the major gaps identified in the plan development process was the lack of alternatives to walking or bicycling along Bowles Avenue to travel between the west side of the Platte River to the Mary Carter Greenway or Downtown Littleton. This route allows bicyclists to travel east/west without traveling on Bowles Avenue. A future link to the Grant Ranch Trail System via Tule Lake Road is being investigated. A critical improvement required to complete this route is the Federal Boulevard/Bowles Avenue intersection improvement project.

L-8 Caley Avenue: This route begins at Prince Street Bike Route L-5 and ends at Broadway. Caley Avenue is a continuous east-west street between Prince Street and Broadway that has relatively low volumes and a wide two-lane cross-section, generally with on-street parking. Bicycle lanes were determined to not be desirable on Caley due to varying available width as a result of on-street parking. In order to have continuous bicycle lanes from Prince Street to Broadway, the City would have to remove on-street parking from one side of the street in many locations. This was determined to not be necessary as "sharrows" will work well in this situation. Caley Avenue ties to the Highline Canal Trail on the east end and crosses several streets with bicycle lanes between Prince Street and Broadway including Prince Street, Windermere Street, and Gallup Street, as well as proposed "sharrows" on Elati Street.

L-10 Ridge Road: This route begins at the Highline Canal Trail and ends at Prince Street Bike Route L-5. Ridge Road currently has bike lanes and connects Littleton between Prince Street and the Highline Canal Trail. It provides good access to the L-9, L-7, and L-5 bike routes.

L-12 Mineral Avenue: This route begins at the Columbine Trail/Platte Canyon Road, continues east across Santa Fe and Broadway and ends at the eastern Lee Gulch Trail Crossing of Mineral Avenue. The Mineral Avenue bike route will be extended to the east across Broadway to the Lee Gulch Trail with "sharrows." The west end of this route provides access to the Mineral Avenue LRT station, the Mineral Avenue Trail and Mary Carter Greenway.

Pedestrian System: Immediate Improvements

The immediate improvements to be made to the pedestrian system is improving the safety of the trail crossing top of Jackass Hill.

The trail crossing at the top of Jackass Hill has poor sight distance to the south. See page 44 for the details of this crossing.



Trail crossing at top of Jackass Hill, looking south



An activated pedestrian crossing similar to the device shown will be installed to improve safety.

Other Recommended Improvements

This category of improvements includes those that are very important to the overall system but do not fit within the CPPW Grant funding available for immediate implementation. These projects should be completed as soon as is fiscally feasible, as they will increase pedestrian and bicycle safety and mobility in Littleton.

Federal Avenue/Bowles Boulevard Intersection Improvements: As discussed earlier in this plan, this intersection is in need of reconfiguration to improve pedestrian safety. Details about the proposed improvements are included earlier in this Plan.

Lee Gulch Crossings: The Lee Gulch Crossing of Prince Street is the highest priority of all the Lee Gulch at-grade trail crossings. This improvement was described earlier in this Plan. Other Lee Gulch Trail at-grade crossings should be evaluated and prioritized for enhancement by looking at accident data, traffic volumes and speeds, engineering factors such as sight distance, and trail user volume.

Pedestrian connection to Mineral Avenue LRT station from Jackass Hill: There is currently an informal connection between the top of Jackass Hill and the Mineral Avenue LRT Station just east of the railroad tracks and north of Mineral Avenue. This is a dirt trail on a steep hillside that becomes very slippery when wet and is not very user friendly. Because of the steep grades it is difficult to construct an ADA compliant pathway in this area so it is recommended that a series of stairs be built to accommodate able-bodied users. The ADA route would be along Jackass Hill Road and along Mineral Avenue.

Missing sidewalk in Downtown area: There are a few blocks of streets in Downtown that do not have complete sidewalk due to tree locations or Right-of-way issues. Solutions to providing continuous sidewalk on all Downtown area streets should be developed and implemented as financially feasible.

Appendix

Public Comments

First Public Open House April 13, 2011

Flip Chart/Notes and Comments

- School for the Blind: bus stops on Prince – students have to take dirt path to get from school to stops. Northbound: or they walk along Sycamore & Lake.
- Good Regional – Recreational
- Increase connections
- Gallup & Elati – Traffic Circle difficult for bikes. Look at different treatment. No designated space for bikes.
- Prince Street Bridge narrow over railroad tracks. Not comfortable for bikes so I avoid Prince.
- Northbound: possible to widen south walk while keeping traffic lanes same width as west-bound.
- Consider adding splash shields.
- Don't usually bike into downtown.
- St. Mary's – Lee Gulch is preferred crossing/ location – other is dangerous with combined entry-exit-pickup-drop-off
- Need better light for nighttime for Lee Gulch crossing.
- Better bike access to and through Downtown.
- Broadway could benefit from major bike/ped improvements, as could Littleton Boulevard (especially east of old courthouse).
- Look at access (or lack of) Downtown to Alexan apts. west of tracks.
- Bike Racks are needed throughout downtown Littleton and at downtown LRT station
- Traffic calming is good.
- Priorities:
 - Reduce Littleton Boulevard from 4 to 2 lanes with bike lane.
 - Look at Windermere from Littleton Boulevard to Belleview.
 - Look at Lowell Boulevard from Platte Canyon to Belleview.
- Wider, better maintained and continuous sidewalks.
- Windermere Littleton to Belleview – bike lane, reduce parking?
- Consider strollers/young children in planning sidewalk width.
- Consider surrounding conditions & likely users (number, type, frequency) rather than insisting on uniform sidewalk widths, placement relative to street, and bicycle-only lanes everywhere.
- Desperately need a flashing light from the south side or a speed bump at the pedestrian crossing on Jackass Hill Road/Prince Street to get onto the easement to access High Line Canal – is an accident waiting to happen. (Just north of Mineral Avenue)

- Look at a connection to Littleton High School, then north on Clarkson to connect to Englewood, Swedish Hospital, etc.

Sidewalk Map Comments

- Powers and Berry are good alternatives to Littleton Boulevard
- Crosswalk on Littleton Boulevard before split and RR tracks needs signage
- Sidewalk on bridge over RR tracks on Prince Street is narrow on east side
- Crosswalk on Prince at the bus/train stop next to art shop is dangerous when busses are present. Needs improvement
- The area around Lake Avenue, Sterne Parkway, and Sterne Park has inconsistent sidewalks and bad curb ramps
- Peakview needs sidewalks to connect to Ridge Road
- Windermere needs sidewalks between Caley and Ridge Road and south of Rangeview into neighborhood
- Crosswalk at Prince and Jackass Hill needs lights and signs
- Mineral and Sante Fe needs a better crossing
- Intersection of Jamison and Broadway needs ped improvements, sidewalk to bus stop and hospital
- Intersection of Euclid and Elati needs improvement/reconfiguration and sidewalks for school.
- Euclid in front of school needs bulb-out and crosswalk to funnel children across Euclid
- Caley Avenue needs sharrows or bike lane from Prince to Broadway
- Caley and Broadway needs improvement for access to trail
- Berry Avenue and Bowles needs sidewalk to connect to Platte River Trail

Bike Map Comments

- Connect Littleton Cycle to Platte River Trail
- Belleview and Windermere is a problematic intersection
- Improve sidewalks on Windermere
- Bridge over city ditch near S. Prescott Street needed
- Downtown needs maps and signage for branding
- Downtown needs bicycle parking
- Alamo Avenue to Littleton Boulevard needs access improvement for bicycles
- Trail through downtown from Platte River needs better access improvements to light rail
- Powers Avenue is good alternative to Littleton Boulevard
- Bike lanes striped on Littleton Boulevard
- Improve intersection of Littleton Boulevard and Broadway.
- Intersection of Bowles and Federal is very difficult for peds and bikes
- Bowles very difficult for peds and bikes
- Signage needed at Sterne Parkway and Broadway
- Bike lane on Broadway from City Line to E-470
- Bike lane on Broadway from Littleton Boulevard to E-470

- Make connection from Elati to Jamison
- Rangeview and Fremont need bike lanes
- Elati bike lane between Easter and Davies changed to a school drop off zone forcing bikes into traffic
- Connect Lee Gulch Trail to E-470 Trail
- Prince and Jackass Hill crossing needs flashing lights or speed bumps at crossing to easement to High Line Canal
- Connect Jamison to W. Mineral Ct.
- Southpark Terrace needs bike lane to E-470
- Mineral crossing and light rail area needs better signage
- Berry needs connection from Julian Street to Federal
- Connection off of Berry/Federal across golf course to Platte River Trail for school

Throughout the process, these meetings were supplemented by email communication and calls with local residents.

Open House #2 June 27th

Map Comments:

- Pedestrian Needs
 1. Social path to Mineral needs steps.
 2. Prince as a main connection should be pedestrian friendly also, not just bikes.
 3. Signage at Jackass Hill Road – “sidewalk is continuation of the path.”
 4. Sunset Drive – connection needs stairs.
 5. Denver Water – Needs to keep water running through Highline Canal.
 6. Underpass/Overpass
 7. Ped/bike traffic crossing signage/lights?
 8. Powers, west of Prince – wide sidewalks on both sides.
 9. Speed bumps on Jackass approaching the ped crossing.
- SS Bridge at Caley and Broadway – should be underpass.
- Need to note long-term underpasses at Highline:
 1. Mineral
 2. Ridge
 3. Caley
 4. Arapahoe

Comment: I am on the South Suburban Park Foundation's Board of Directors. We build trails!

A request from residents on the far west side of Littleton between Bowles and Belleview and also from residents of the Town of Bow Mar – somehow to get to the Mary Carter Greenway Trail along the South Platte River. – Perhaps a bike path along Belleview.

Comment: Fairly extensive plan. Good effort to connect schools, shopping areas, etc. Signage is good, but painting roadway – stripes for lanes is best. Also, painting bicycle emblem on roadways makes everyone aware of bicycles sharing the road with other vehicle traffic.

Educating children to use the lanes and routes is vital. Teaching them bicycle safety: i.e., helmets, signaling, etc.

"SHARE THE ROAD" signs are good tools.

Having a bicycle council could be useful also.

Comment: Would it be possible to create a curb cut at the north end of the bike path @ Caley? Before the greenbelt improvement the sidewalk was graded enough to allow a bicycle to enter the path from the street. Now it is necessary (coming from the north) to go against traffic to enter the church parking lot to get onto the path.

I have stopped using the path because the access is so awkward.

Thanks for giving this some thought and consideration.

Comment: Runners, walkers and bicyclists need an overpass over Broadway at the Highline Canal at:

- Ridge Road
- Arapahoe Road
- Caley Avenue

(an underpass or overpass works)

Now there is a safety hazard of people crossing a busy Broadway.

A new bridge/underpass would allow a citizen to continue to use the canal trail without the danger of attempting to keep moving access Broadway.

Comment: It looks as though there are some good initial plans. What I am most concerned about, however, is safety at street crossings. I would like to see a study committee formed to plan safe underpasses for pedestrians and cyclists. Since the cost is a major issue, there would need to be a committee to investigate how future funds could be allocated for the project. I would like to see an underpass that connects the Highline Canal trail under Mineral Avenue near Peninsula Drive. This is a heavily used area.

Tips for Walking and Biking

Walking is an energizing and fun way to get to school. Follow these tips to make sure that your walk is safe and fun.

- **WALK TOGETHER:** Walk with a friend, neighbor or parent. Pick a safe route and stick with it, and never take rides from strangers.
- **BE SEEN:** Wear bright clothing to help drivers see you. If it is dark, carry flashlights or wear reflective gear.
- **LOOK FOR TRAFFIC:** Watch out for cars and trucks at every driveway and intersection.
- **CROSS THE STREET SAFELY:** Look both ways and always walk (don't run) across the street.
- **OBEY TRAFFIC SIGNS, SIGNALS AND SCHOOL CROSSING GUARDS:** They are there to keep you safe!

Can you think of a more exciting way to get to school than by bike? Riding to school leaves you arriving refreshed and revitalized. Just make sure you get there safely by following these tips:

- **ALWAYS WEAR YOUR HELMET!** Wearing a helmet is the number one essential component to riding your bike. It keeps your brain and skull protected in case of a crash. Make sure it fits properly (level on your head and fits snugly).
- **DRESS APPROPRIATELY:**
 - Wear bright, reflective colors so motorists can easily see you.
 - Make sure shoe laces are tied and pant legs are rolled up so they don't get caught in the chain or other bike parts.
 - Wear a HELMET!
 - Bring a sharp and alert mind so you can react quickly to any situation.

LETTER TO THE PARENTS

We are pleased to present ideas to help alleviate safety hazards and traffic congestion associated with the drop-off and pick-up of students at your school.

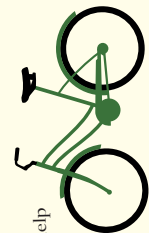
The Walking School Bus program helps parents to identify other parents who want to share in the duties of getting children to and from school. This can include walking, biking or carpooling.

You can help form and/or join up with your neighbors to either:
Join a Walking School Bus
 A Walking School Bus has at least one adult leader who walks along an agreed route to and/or from school. The routes can pick children up at their homes, or meet at designated "bus stops" along the way.

Join a Bike Train
 A Bike Train is the same as a Walking School Bus only on bicycles. It is largely for older students and requires more skills and adult supervision.

Join a Car Pool
 For those who live too far away to walk or bike to school, we encourage you to form a carpool with at least one or more of your neighbors.

Thank you for working with us to help improve safety by decreasing traffic congestion around your school.



Colorado Rules of the Road

- Bicyclists must ride on the right, going the same direction as traffic.** This is important as a high number of crashes are from bicyclists riding the wrong way.
- Bicyclists must use hand signals.** Like a car, it is important to let traffic and pedestrians know which way you are going.
- Bicyclists must obey traffic signs and signals.** Stop at stop signs. Stop at lights. Riders who are predictable (who follow the same laws as the cars) are much less likely to be involved in a crash.
- Bicyclists must yield to pedestrians (people walking).** When riding on a path, a sidewalk or through an intersection, bicycle riders must yield to or let walker go first.

Bicyclists are required to obey the same laws as cars. This means that bicyclists can get tickets just like motorists! Please follow the following rules when driving a car and when riding your bicycle.

Note to parents and educators: for lessons, plans, curriculum and additional bicycle/pedestrian education materials, please visit www.SafeRoutesColorado.org.

Proper Helmet Fit

Does Your Helmet Fit Correctly?

Use the Two-Finger Test to make sure you have your helmet on right.



1. Place two fingers between your eyebrows and the bottom of the helmet. Only two fingers should fit in this space.
2. Place two fingers underneath each ear in a "V" shape (this is where the straps should go).
3. Place two fingers under the chin strap to make sure that only two fingers fit snugly. (If you can fit more than two fingers, you need to tighten the strap).

Helmet Fun Facts

- All helmets are intended to protect your brain in a crash only once. If a helmet has a crack or any damage after a fall, replace it immediately.
- All helmets must meet the same safety standards - whether a helmet costs \$20 or \$150 dollars - it will still protect your brain.
- All helmets should be replaced (no matter what) after five years.



CARTA A LOS PADRES

Nos complace bastante el presentar ideas para ayudar a mitigar los peligros y las aglomeraciones de tráfico que ocurren cuando los padres dejan y recogen a los alumnos en su escuela.

El programa "Autobús Caminante" ayuda a los padres a conocer a otros padres que quieren compartir la responsabilidad de llevar y recoger a los niños de la escuela. Esto puede incluir caminar juntos, andar en bicicleta, o irse en el mismo coche.

Puede juntarse con sus vecinos y/o formar parte del grupo en alguna de las siguientes maneras:

Participar en un Autobús Caminante

El "autobús caminante" cuenta por lo menos con un líder mayor de edad que camina por una ruta sugerida de ida y vuelta a la escuela. En estos rutas, se puede pasar a recoger a los niños en sus casas, o se les puede recoger por el camino en "paradas de autobuses" que han sido establecidas de antemano.

Participar en un "Tren de Bicicletas"

El "tren de bicicletas" es lo mismo que un Autobús Caminante, solamente que con bicicletas. Principalmente es para alumnos de más edad y requiere de mayores habilidades y supervisión de adultos.

Participar en un "Turno" (Cooperación e intercambio entre vecinos para tomar turnos llevando y recogiendo a los niños en un coche)

Para aquellos que viven demasiado lejos para venir a pie o en bicicleta, les animamos a que se coordinen con una o más familias para que compartan la responsabilidad de llevar a sus hijos a la escuela.

Gracias por su cooperación en este asunto que sirve para ayudar a mejorar la seguridad y disminuir la congestión del tráfico cerca de su escuela.

Las Reglas de la Carretera en Colorado

A los ciclistas se les exige que obtengan de acuerdo con los mismos leyes que los automovilistas. Esto significa que a los ciclistas también se les puede dar una infracción del mismo modo que a los automovilistas. Sigue los reglas y continúa a conducir un coche y también al andar en tu bicicleta.

1. Los ciclistas deben ir por el lado derecho de la carretera, yendo en la misma dirección en que circula el tránsito. Esto es importante ya que un gran número de accidentes se deben a que los ciclistas van en sentido contrario.
2. Los ciclistas deben emplear sus brazos para señalar hacia donde se dirigen. Al igual que un coche, es importante indicar a otros vehículos y peatones hacia donde te diriges.
3. Los ciclistas deben obedecer los señalamientos de tránsito. Para en los letreros de otros. Para en los señuelos. Los ciclistas que son predictores (que siguen los mismos reglas que los vehículos) son mucho menos propensos a sufrir un accidente.
4. Los ciclistas deben cederle el paso a los peatones (los peatones que van a pie). Al andar en bicicleta en una vereda, lo correcto o un cruceo, los ciclistas deben cederle el paso a los peatones.

Aviso a los padres y profesores: para planes de estudio, planes de instrucción y material adicional de educación para los ciclistas/peatones, visite la página de internet www.colorado.gov.

Translated by Jorge M Espinosa

Consejos para irse a pie y en bicicleta

El llegar a pie a la escuela te da energía y es divertido a la vez. Asegúrate de seguir estos consejos para que el camino sea seguro y divertido.

- **CAMINAR JUNTOS:** Camina con un amigo, uno de tus padres o uno de tus vecinos de ser posible. Escoge una ruta segura y asegúrate de no desviarte, y nunca aceptes que te lleve un desconocido.
- **SÉ VISIBLE:** Siempre usa ropa con colores llamativos para que los automovilistas te puedan ver. Si está oscuro o fuera, lleva una linterna o ropa que refleje la luz.
- **CUIDATE DEL TRÁFICO:** Ten cuidado y fíjate en los coches y camiones en todos los cruces y entradas para coches.
- **CRUZAR LA CALLE DE MANERA SEGURA:** Mira en ambas direcciones de la calle y camina (no corras) al cruzar la calle.
- **OBEDECE LOS SEÑALAMIENTOS DE TRÁNSITO Y LOS GUARDIAS DE CRUCE**

¿Se te puede ocurrir alguna manera más divertida y emocionante que llegar a la escuela en bicicleta? Andar en bicicleta te deja revitalizado y renovado. Simplemente asegúrate de llegar bien siguiendo estos consejos:

- **SIEMPRE USA EL CASCO:** Utilizar el casco que es el componente vital número uno para andar en bicicleta. Mantiene tu cerebro y cabeza resguardados en caso de un choque. Asegúrate que el casco te quede bien (a un nivel plano en la cabeza, y que te quede ajustado).
- **¡MISTETE DE MANERA APROPIADA:**
 - Usa colores llamativos para que los automovilistas te puedan ver.
 - Hazte un dobles o do bastillo de tus panticones, y sujeta bien los cordones de los zapatos para que no se te enganchen en la cadena o en cualquier otra parte de la bicicleta.
 - ¡Ponte el CASCO!
 - También mantente alerta en todo momento para que puedas reaccionar con rapidez ante cualquier situación.

5. Los ciclistas deben rebasar vehículos más lentos o peatones (los peatones que van a pie) por el costado izquierdo. Pueden gritar "¡o tu izquierda!" o tocar un campana de bicicleta al rebasar vehículos más lentos o peatones. Al rebasarlos que vas a rebasarlos, no se parran ni parran ni dejadn que su perro se te atornese.
6. Los ciclistas deben tener faros por las noches. Al andar cuando este oscuro, debes tener reflectores delanteros y traseros en la bicicleta. Más del 50% de los accidentes en bicicleta ocurren por la noche. No sólo es la ley sino que también es la manera inteligente y segura de andar en bicicleta.
7. Deben andar en una sola fila de ser necesario. Debes andar en una sola fila al encontrarte con la circulación (vehículos y personas o pie) para que no causes aglomeraciones de tránsito.

El Casco Correcto ¿Te queda el casco a tu medida? Utiliza la Prueba de los Dos Dedos para asegurarte que traes puesto el casco de manera correcta.

1. Coloca dos dedos en el espacio que se encuentra al nivel de tus ojos y la parte inferior de tu casco. Este espacio no debe exceder de dos dedos.
2. Coloca dos dedos en forma de "V" bajo tus ojos (ahí van los correas).

3. Coloca dos dedos en el espacio de la correa y tu barbilla para asegurarte que este espacio no excede de dos dedos. (Si puedes poner más de dos dedos en ese espacio entonces necesitas ajustar la correa).

Datos curiosos de los cascos de seguridad

- Todos los cascos están diseñados para proteger tu cabeza en caso de un choque solamente en una ocasión. Si tu casco está rojido o se daña después de una caída, cámbialo de inmediato.
- Todos los cascos deben cumplir con los mismos requisitos de seguridad - aunque cueste \$20 ó \$150 dólares - no importa cuánto cueste, aún así te va a proteger la cabeza.
- Todos los cascos deben ser reemplazados después de 5 años (sin importar que no hayas tenido un accidente).

