

CONNECTING CROSSROADS

LONG RANGE TRANSPORTATION PLAN

Complete Streets Visioning

3/12/2019

What are Complete Streets?

- **Complete Streets are streets for everyone.**
 - ✓ They are designed and operated to enable safe access for all users, regardless of mode, age, or ability.
 - ✓ Complete Streets make it easy to cross the street, walk to shops and transit, and bicycle to work.
 - ✓ Supports the vision of the Casper Area Trails, Path and Bikeway Plan



WE BELIEVE

**Whether you're
8 or 80 years old,
cities should
work for
everyone.**

OUR VISION

We exist to create safe and happy cities that prioritize people's well-being. We believe that if everything we do in our public spaces is great for an 8 year old and an 80 year old, then it will be great for all people.

OUR MISSION

8 80 Cities improves the quality of life for people in cities by bringing citizens together to enhance mobility and public space so that together we can create more vibrant, healthy, and equitable communities.

What does a Complete Street look like?

- ✓ Unique and responsive to community context.
- ✓ May include: sidewalks, bike lanes, transit amenities, frequent and safe crossing opportunities, median islands, bike/pedestrian signals, curb extensions, narrower travel lanes, roundabouts, and more.
- ✓ Complete streets in a rural area will look different from a complete street in an urban area, but both are designed to balance safety and convenience for everyone using the road.



Why Complete Streets?

- ✓ Complete Streets help create more livable communities for all users
- ✓ Complete Streets improve equity, safety, and public health, while reducing transportation costs and traffic congestion.
- ✓ Complete Streets can support the vitality of downtown retail



With lower densities and greater distances, many small towns and rural areas have developed in a more auto-oriented fashion than urban areas.



A singular focus on automobile mobility results in a lack of facilities for people walking and bicycling, making travel by these modes difficult and less safe.



Mobility



Accessibility & Quality of Life



Environment



Economy



Public Health



Placemaking



Safety/Security



Equity

Methods of Evaluation

THE FOUR TYPES OF BICYCLISTS



LEVEL OF TRAFFIC STRESS

Level of traffic stress (LTS) is a way to evaluate the stress a bike rider will experience while riding on the road. It is used to categorize roads by the types of riders above who will be willing to use them based on:



- LTS 1** Most children can feel safe riding on these streets.
- LTS 2** The mainstream "interested but concerned" adult population will feel safe riding on these streets.
- LTS 3** Streets that are acceptable to "enthused and confident" riders who still prefer having their own dedicated space.
- LTS 4** High-stress streets with high speed limits, multiple travel lanes, limited or non-existent bikeways, and long intersection crossing distances.

COHESION

How connected is the network in terms of its concentration of destinations and routes?

DIRECTNESS

Does the network provide direct and convenient access to destinations?

ACCESSIBILITY

How well does the network accommodate travel for all users, regardless of age, income level, or ability?

ALTERNATIVES

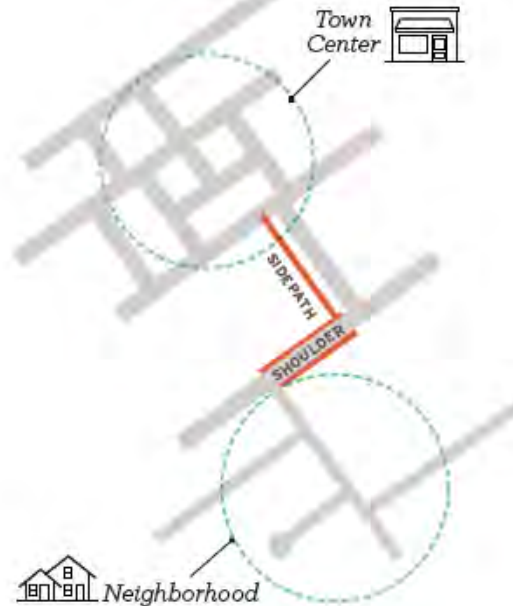
Are there a number of different route choices available within the network?

SAFETY AND SECURITY

Does the network provide routes that minimize risk of injury, danger, and crime?

COMFORT

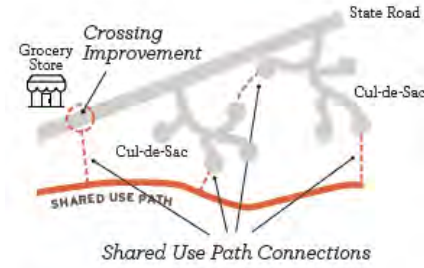
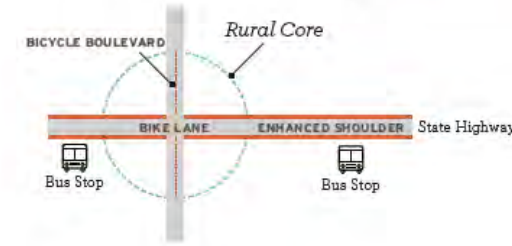
Does the network appeal to a broad range of age and ability levels and is consideration given to user amenities?



Connections near schools should provide increased separation of walking and biking facilities that are more appropriate for younger users.



Rural cores should support walking and biking on main commercial corridors and main streets. As the street transitions out of the core area, the facility design that accommodates people walking and biking should change.



Adjacent roadways or shared use paths may complement the transportation function of a primary roadway.



Some facilities may only span short distances to provide connections and fill gaps along a greater network or facility corridor. Transitions between facility types are important and should not be overlooked.

Connecting Cross Roads Community Survey

MOST DESIRED PEDESTRIAN IMPROVEMENTS

- 1 More sidewalks and trails
- 2 More lighting and landscaping
- 3 Well-marked crossing at intersections



MOST DESIRED BICYCLE IMPROVEMENTS

- 1 Bike lanes and facilities that provide physical separation from cars
- 2 Trails and greenways
- 3 Bicycle parking



Community Comments

- “More sidewalk space on bridges”
- “Better snow removal on sidewalks”
- “Driver education of crossings and bicyclists”

Previous LRTP

Pedestrian Safety: Nearly half of all pedestrian accidents occurred at or involved intersections.

Contributing Factors

- Missing crosswalk signals, or insufficient time to cross the street
- Long crossing distances on wide streets with multiple lanes
- Uneven curbs or missing curb ramps
- Ineffective or missing pavement markings
- Heavy turning volume (especially heavy right-turn movements that can occur on red lights)
- Discontinuous walking route through intersection (curb cuts that occur at different locations within an intersection)



Previous LRTP

Bicycle Safety: It is recommended that the following strategies identified in the Casper Area Trails, Path, and Bikeway Plan be implemented in order to promote safe conditions for bicyclists:

- Improve walking and biking infrastructure for safety and comfort.
- Educate the population about how to be safe while walking and biking.
- Review the City's signal timing policy and revise as necessary to accommodate bicyclists at all intersections located on the bicycle network.
- Develop a protocol for assessing concerns from bicyclists regarding detection or additional time to cross at other locations.
- Make infrastructure safety improvements near schools.
- Educate students on the rules of the road and safe walking and biking practices.
- Promote Safety through additional Local Ordinances such as helmet requirements, establishing a minimum passing distance between motor vehicles and bicycles (i.e. a "3-foot law"), opening a vehicle door in front of ("dooring") a cyclist, and driving or parking in bicycle lanes.
- Educate police officers on the laws pertaining to bicyclists and bicycle facilities.
- Continue to collect data and analyze bicycle and pedestrian crashes.





SHARROWS

Sharrows, or shared lane markings, are pavement markings that indicate a shared lane for motor vehicles and significant numbers of cyclists. Sharrows are not a dedicated bicycle facility. Sharrows alert motorists to expect cyclists, remind motorists to share the use of the roadway with cyclists, and orient bicycles to the preferred line of travel outside the dooring zone. Sharrows are most appropriate for streets with modest traffic volumes and slower travel speeds that may not have the space to accommodate dedicated bicycle facilities.



STANDARD BIKE LANES

Bicycle lanes are dedicated bicycle facilities delineated by striping, signage, and pavement markings. A standard bicycle lane is typically located between the right-most travel lane and the curb, running in the same direction as all other vehicle traffic, though alternative configurations are possible. On-street bicycle lanes provide people on bicycles with designated space and establish a space where motorists can expect bicyclists. The target width recommended for bicycle lanes is 5 feet. If the target width cannot be met within a constrained cross-section, the minimum allowable width is 4 feet. However, if the lane is adjacent to on-street parking, the minimum width is 5 feet.



BUFFERED BIKE LANES

Buffered bicycle lanes are dedicated bicycle facilities with separation between the bicycle lane and other roadway uses. Separation is provided by a flush, painted zone between the bicycle facility and adjacent vehicle lanes. This buffer increases the distance between vehicles and bicyclists, increasing the comfort level for bicyclists. For this reason, buffered bicycle lanes are preferred over standard bicycle lanes on streets with higher traffic speeds and volumes. Buffers should be at least 2 feet wide, and can be used between both parked and moving vehicles. If the target width for buffers cannot be met, a standard bicycle lane may be used. However, a 2-foot (parking-side) buffer is preferred if the lane is adjacent to on-street parking.



PROTECTED BIKE LANES

Protected bicycle lanes (also known as cycle tracks or separated bike lanes), are on-street bicycle facilities that are physically separated from general traffic. Physical barriers can include curbs, parked vehicles, planted medians, or flexible posts. The physical protection increases both safety and comfort for cyclists, encouraging more timid and less experienced cyclists to ride. These facilities can be one-way or bi-directional, depending on the street and space available. Protected bicycle lanes are appropriate where there are high levels of bicycle activity or where there is an expressed need. As with all bike facilities, careful design at intersections should be used to prevent potential conflicts.



BIKE BOULEVARDS

Bicycle boulevards are designed to encourage slow vehicular traffic and ensure low volume streets are comfortable for people walking and bicycling. These streets should feature traffic calming design elements to help maintain slower traffic and limit volumes. Bicycle boulevards are a critical piece of the bicycle network, and should be designated with both signage and the applicable pavement markings.



TWO-STAGE TURN QUEUE BOX

A two-stage turn queue provides a protected area for cyclists to move out of the through lane or bicycle lane and wait for the green cycle of the intersecting road before proceeding across to complete a turn. Two-stage turn queues reduce bicycle/vehicle conflicts and provide a less stressful left-turn option. The two separate stages for a cyclist to complete a left turn increases travel time for cyclists, although the benefit of comfort may outweigh the time penalty. Even where two-stage turn queues are provided, cyclists may still lawfully complete a left turn from the left-most travel lane where vehicular left turns are also permitted.



BIKE BOXES

A bike box is a dedicated area for cyclists at the front of a traffic lane at a signalized intersection. Bike boxes make cyclists more visible to motorists by positioning them at the head of a queue during a stop cycle. They provide a space for cyclists to queue outside of crosswalk areas. Bike boxes enable cyclists to safely position for a left turn during a stop cycle at an intersection. On corridors of high bicycle activity, bike boxes cluster multiple cyclists and enable them to progress forward at the onset of the green signal cycle, reducing conflicts with right turning vehicles.



BICYCLE SIGNALS

Bike signals have the same signal heads as vehicle signals (green, yellow, and red) with the image of a bicycle stenciled on the lens. Bike signals can be used to provide leading bicycle intervals at intersections and separate bicyclists from conflicts with drivers, pedestrians, or transit vehicles. Bike signals can also raise awareness of bicyclists and make bicycling more comfortable. Bike signals are generally required to support the operation of bicycle facilities that separate bicyclists from motor vehicle traffic with potential turning conflicts. Protected bike lanes, contraflow bike lanes, and two-way cycle tracks are examples of facilities where bike signals may be needed.