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RECOMMENDATIONS

RECOMMENDATIONS OVERVIEW

This chapter discusses the physical improvements recommended to enhance bicycling and walking in Goleta, beginning with a discussion of the route types in use throughout California and the United States, followed by how the City developed and assessed projects for feasibility and priority. The recommended improvements list includes both short-term and long-term improvements, and is meant to serve as a guide to help the City in allocating funds as they become available through various sources. The chapter contains maps and tables that communicate details such as location, extent, and type.

It is important to note that the success of recommended projects is closely tied to programs and adopted standards, codes, and policies. Though beyond the scope of this plan, Education, Encouragement, Enforcement, and Evaluation programs can be used to leverage investments in these projects. Similarly, the effectiveness of bicycle and pedestrian programs is maximized by actual project implementation. Likewise, changes to City standards, codes, and policies may be needed to implement bicycle and pedestrian improvements. Project implementation may, in turn, facilitate changes to City standards, codes, and policies.

BICYCLE AND PEDESTRIAN TREATMENTS

While not universally applied, in general, pedestrian travel in urban areas has long tended to be accommodated with features like sidewalks, crosswalks, dedicated signals, and curb extensions. The proposed pedestrian treatments in the BPMP address a wide variety of issues identified in the analysis and community engagement process. The recommendations include enhanced connectivity to transit, school zones, senior zones, activity centers, parks, and other community destinations. The pedestrian recommendations are critical to ensuring equitable multi-modal transportation because it serves the populations that may not be able to bike, and instead rely on transit and walking. Newer innovations like pedestrian scrambles, modified signal timing, flashing beacons, and other pedestrian improvements are explained in this chapter in addition to standard pedestrian treatments.

A focus on providing safer, less stressful bicycle travel has occurred more recently across the United States, with significant transformation in the state of practice for bicycle travel over the last five years. Much of this may be attributed to bicycling's changing role in the overall transportation system. No longer viewed as an "alternative" mode, it is increasingly considered as legitimate transportation that should be actively promoted as a means of achieving community environmental, social, and economic goals. While connectivity and convenience remain essential bicycle travel quality indicators, recent research indicates the increased acceptance and practice of daily bicycling will require "low-stress" bicycle routes, which are typically understood to be those that provide bicyclists with separation from high volume and high speed vehicular traffic. The route types the Public Works Department recommends in this plan, and described in the following section, are consistent with this evolving state of practice.

SIX KEY PERFORMANCE MEASURES

Also included in this chapter are six key performance measure goals that will guide the City in meeting their mode share goals. The icons associated with these performance measure goals are found throughout the chapter to help communicate which proposed walking and bicycling improvements will help the City reach their goals.



Complete the current list of Capital Improvement Program (CIP) bicycle and pedestrian projects by 2035



Increase walking and bicycling mode share to **15%** by 2025 and **20%** by 2030



Reduce driving alone commute by **10%** (to 60%) by 2030



Reach an "Overall Score" of "**3**" in the PlacesForBikes City Ranking by 2025



Ensure a variety of infrastructure improvements are implemented by 2025



Percentage of School-aged Children Walking & Bicycling to Schools – **13%** combined; **15%** increase by 2030

CONVENTIONAL BICYCLE TREATMENTS

There are four conventional bicycle route types recognized by the CA Department of Transportation. Details of their design, associated wayfinding, and pavement markings can be found in the CA MUTCD and CA Highway Design Manual.

Class I: Multi-Use Paths

Class I multi-use paths (frequently referred to as “bicycle paths”) are physically separated from motor vehicle travel routes, with exclusive rights-of-way for non-motorized users like bicyclists and pedestrians.

Class II: Bicycle Lanes

Bicycle lanes are one-way route types that carry bicycle traffic in the same direction as the adjacent motor vehicle traffic. They are typically located along the right side of the street, between the adjacent travel lane and curb, road edge, or parking lane.



Multi-Use Path



Bicycle Lane

Class III: Bicycle Routes

A bicycle route is a suggested bicycle path of travel marked by signs designating a preferred path between destinations. They are recommended where traffic volumes and roadway speeds are fairly low (35 mph or less).

Class IV: Separated Bikeways (Cycle Tracks)

Separated bikeways are bicycle-specific routes that combine the user experience of a multi-use path with the on-street infrastructure of a conventional bicycle lane. Separated bikeways are physically separated from motor vehicle traffic and designed to be distinct from any adjoining sidewalk. The variety of physical protection measures can include raised curbs, parkway strips, reflective bollards, or parked vehicles. Separated bikeways can be either one-way or two-way, depending on the street network, available right-of-way and adjacent land use, but the safety of two-way separated bikeways must be carefully evaluated, especially if they cross motor vehicle routes. This is because few motor vehicle drivers are accustomed to two-way Separated bikeways and they may tend to look to the left only when deciding whether it is safe to proceed across the separated bikeways.

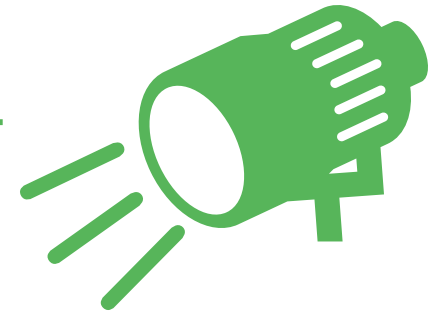


Bicycle Route



Separated Bikeway

PROJECT SPOTLIGHT : HOLLISTER AVENUE CLASS I MULTI-USE PATH - SAFE ROUTES TO SCHOOLS PROJECT



The Hollister Avenue Class I Multi-Use Path Safe Routes to Schools project was completed in late 2017 along the south side of Hollister Avenue between Pacific Oaks Road and Ellwood Elementary School. The project included reconfiguring Hollister Avenue to accommodate the new path within existing City right-of-way and includes a 14-foot-wide concrete path with a five foot landscape buffer adjacent to Hollister Avenue. The existing five foot Class II bicycle lanes were retained along both sides of Hollister Avenue.

The path is located in a residential area where school children and families want to bicycle to school safely. Previously, of the 481 kids who attend the school, only 25 rode their bicycles while over 300 walked. With the completion of this project, the City and Ellwood Elementary School hope to see many more students and families walking and bicycling to school. The path will also serve commuters, UCSB students, recreational riders, and tourists.



ENHANCED BICYCLE TREATMENTS

While the conventional bicycle route types can be found throughout the United States, there has been a distinct shift towards further enhancement. For example, the CA MUTCD has approved the installation of buffered bicycle lanes, while Shared Lane Markings or “Sharrows” have been in use since 2008 throughout the State.

These enhancements are low cost, easy to install, and provide additional awareness about the likely presence of bicyclists. In many instances, installation of these bicycle route enhancements can be coordinated as part of street resurfacing projects. The use of green paint has also become a simple and effective way to communicate the likely presence of bicyclists. It is also used to denote potential conflict zones between bicyclists and vehicles.

Buffered Bicycle Lanes

Buffered bicycle lanes provide additional space between the bicycle lane and traffic lane, parking lane, or both, to provide a more protected and comfortable space for bicyclists than a conventional bicycle lane. The buffering also encourages bicyclists to avoid riding too close to parked vehicles, keeping them out of the “door zone” where there is the potential danger of drivers or passengers suddenly opening doors into the bicyclists’ path.

Shared Lane Markings (“Sharrows”)

The shared lane marking is commonly used where parking is allowed adjacent to the travel lane. It is now common practice to center them within the typical vehicular travel route in the rightmost travel lane to ensure adequate separation between bicyclists and parked vehicles. Many cities install sharrows over a green background to enhance visibility.

Bike Boxes

A bike box is a designated area at the head of a traffic lane at a signalized intersection that provides bicyclists a safe and visible way to wait ahead of queuing traffic during the red signal phase. This positioning helps encourage bicyclists traveling straight through not to wait against the curb for the signal change.



Buffered Bicycle Lane



Shared Lane Marking (“Sharrows”)



Bike Box



LOW STRESS BICYCLE TREATMENTS

There are a number of other non-conventional route types that the City may find useful in specific situations. In many cases, the conventional bicycle route types previously mentioned may not meet the community's perceptions of safe and comfortable bikeways. Protected, low-stress streets, and bicycle-prioritized routes are constantly revised and improving to meet the communities needs.

The improvements described in this section have been implemented in other states in the United States as well as other countries with great success and are quickly becoming standard recommendations.

Details of these route types and other treatments can be found in the NACTO Urban Bikeway Design Guide or AASHTO Guide of the Development of Bicycle Facilities.

Bicycle Boulevards

Bicycle boulevards provide a convenient, low-stress cycling environment for people of all ages and abilities. They are installed on streets with low vehicular volumes and speeds and often parallel higher volume, higher speed arterials. Bicycle boulevard treatments use a combination of signs, pavement markings and traffic calming measures that help to discourage through trips by motor vehicle drivers and create safe, convenient bicycle crossings of busy arterial streets.

Signage and Wayfinding

Signage and wayfinding on all streets and bicycle routes are intended to identify routes to both bicyclists and drivers, provide destination information and branding, and to inform all users of changes in roadway conditions.



Bicycle Boulevard



Signage and Wayfinding



Colored Bicycle Facilities

Colored Bicycle Lanes

Colored pavement increases the visibility of bicycle routes, identifying potential areas of conflict, and reinforces bicyclists' priority in these areas. Colored pavement can be used as a corridor treatment, along the length of a bicycle lane or within a protected bikeway. Additionally, it can be used as a spot treatment, such as crossing markings at particularly complex intersections where the bicycle path may be unclear. Consistent application of color across a bikeway corridor is important to promote clear understanding for all roadway users. Examples within the City include Calle Real near the Fairview Avenue intersection.

Green Intersection Conflict Striping

Intersection crossing markings indicate the intended path of bicyclists. Colored striping can be used to highlight conflict areas between bicyclists and vehicles, such as where bicycle lanes merge across motor vehicle turn lanes.

Protected Intersections

Protected intersections maintain integrity (low-stress experience) of their adjoining separated bicycle lanes by fully separating bicyclists from motor vehicles. Hallmark features of these protected intersections include a two-stage crossing supported by an advance queuing space, protective concrete islands, special bike-cross markings (parallel with crosswalks), and special signal phasing.

Two-Stage Turn Queue Box

Two-stage turn queue boxes can provide a more comfortable left-turn crossing for many bicyclists because they entail two simple crossings, rather than one complex one. They also provide a degree of separation from vehicular traffic, because they do not require merging with vehicle traffic to make left turns. Bicyclists wanting to make a left turn can continue into the intersection when they have a green light and pull into the green bike box. Bicyclists then turn 90 degrees to face their intended direction and wait for a green light to continue through.



Green Transition Striping at Intersections



Protected Intersection



Two-Stage Turn Queue Box

Bicycle Signals

This category includes all types of traffic signals directed at bicyclists. These can include typical green/yellow/red signals with signage explaining the signal controls, or special bikeway icons displayed within the signage lights themselves. Near-side bicycle signals may incorporate a “countdown to green” display, as well as a “countdown to red.”

Bicycle Detection

Bicycle detection is used at intersections with traffic signals to alert the signal controller that a bicycle crossing event has been requested. Bicycle detection occurs either through the use of push buttons or by automated means.

TRAFFIC CALMING

Traffic calming involves changes in street alignment, installation of barriers, and other physical measures to reduce traffic speeds and/or cut-through motor vehicle traffic volumes. The intent of traffic calming is to alter driver behavior and to improve street safety, livability, and other public purposes. Other techniques consist of operational measures such as police enforcement and speed displays. The following examples are traffic calming measures that may apply to Goleta.

Roundabouts / Traffic Circles

A roundabout is a circular intersection with yield control at its entry that allows a driver to proceed at controlled speeds in a counter-clockwise direction around a central island. Roundabouts are designed to maximize motorized and non-motorized traffic through their innovative design that includes reconfigured sidewalks, bikeway bypasses, high-visibility crosswalks, pedestrian flashing beacons, and other traffic measures. Roundabouts can be implemented on most streets, but may require additional right-of-way.

A traffic circle is a traffic calming measure commonly applied at uncontrolled intersections throughout low volume, local residential streets. They lower traffic speeds on each approach and typically avoid or reduce right-of-way conflicts because the overall footprint is smaller compared to roundabouts. Traffic circles may be installed using simple markings or raised islands, but are best accompanied with drought-tolerant landscaping or other attractive vertical elements.



Bike Signal



Bicycle Detection, LED Blank Out Sign



Traffic Circle

Signals and Warning Devices

Pedestrian Hybrid Beacons (PHBs) and Rectangular Rapid Flashing Beacons (RRFBs) are special signals used to warn and control traffic at unsignalized locations to assist pedestrians in crossing a street via a marked crosswalk. Either of these devices should be installed at locations that experience high pedestrian volumes and that connect people to popular destinations such as schools, parks, and retail.

Signals and warning devices should be paired with additional pedestrian improvements, where appropriate, such as curb extensions, enhanced crosswalk marking, lighting, median refuge islands, and corresponding signage.



Pedestrian Hybrid Beacon



Rectangular Rapid Flashing Beacon

Speed Tables/Raised Crosswalk

Speed tables are flat-topped road humps, often constructed with textured surfacing on the flat section. Speed tables and raised crosswalks help to reduce vehicle speeds and enhance pedestrian safety.

Speed Displays

Speed displays measure the speed of approaching vehicles by radar and inform drivers of their speeds using an LED display. Speed displays contribute to increased traffic safety because they are particularly effective in reducing the speed of vehicles traveling ten or more miles per hour over the speed limit.

Chicanes

Chicanes are a series of narrowings or curb extensions that alternate from one side of the street to the other forming an S-shaped path. Chicanes reduce drivers' speeds by causing them to shift their horizontal path of travel.

Traffic Diverters

A traffic diverter is a roadway design feature placed in a roadway to prohibit vehicular traffic from entering into or exiting from the street, or both.

On-Street Edge Friction

Edge friction is a combination of vertical elements such as on-street parking, bicycle routes, chicanes, site furnishings, street trees, and shrubs that reduce the perceived street width, which has been shown to reduce motor vehicle speeds.



Speed Table



Speed Display



Chicanes



Traffic Diverter