City of Carson
Report to Mayor and City Council

August 6, 2013
Special Orders of the Day

SUBJECT: CONTINUED PUBLIC HEARING TO CONSIDER RESOLUTION NO. 13-084, FOR GENERAL PLAN AMENDMENT 92-13 TO AMEND THE GENERAL PLAN TRANSPORTATION AND INFRASTRUCTURE ELEMENT AND ADOPT THE CITY OF CARSON MASTER PLAN OF BIKEWAYS

Submitted by Clifford W. Graves
Director of Community Development

Approved by Jacquelyn Acosta
Acting City Manager

I. SUMMARY

This item was continued from the July 16, 2013 meeting. On June 11, 2013, the Planning Commission recommended to the City Council approval of General Plan Amendment No. 92-13 to amend Section 3.3 of the General Plan Transportation and Infrastructure Element and adoption of the City of Carson Master Plan of Bikeways (Exhibit Nos. 1 and 2). In the recommendation, the Planning Commission included several modifications to proposed bikeway locations and requested further outreach to the business community prior to the City Council's consideration (Exhibit No. 3). Staff has completed additional outreach, including notification to the top 10 employers and other businesses.

II. RECOMMENDATION

TAKE the following actions:

1. OPEN the continued Public Hearing, TAKE public testimony, and CLOSE the continued Public Hearing.
2. APPROVE the Master Plan of Bikeways and MODIFY the recommendation of the Planning Commission by eliminating only the proposed bike lane on Watson Center Road.
3. WAIVE further reading and ADOPT Resolution No. 13-084, "A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARSON, CALIFORNIA, APPROVING GENERAL PLAN AMENDMENT NO. 92-13 TO AMEND SECTION 3.3 OF THE GENERAL PLAN TRANSPORTATION AND INFRASTRUCTURE ELEMENT AND ADOPTING THE CITY OF CARSON MASTER PLAN OF BIKEWAYS."

III. ALTERNATIVES

1. ACCEPT the recommendations of the Planning Commission by eliminating 1) the proposed bike lanes on Watson Center Road; 2) the colored bike lanes on Wilmington Ave. (between 223rd St. and Sepulveda Blvd.); and 3) the cycletrack on Albertoni Street (between Avalon Blvd. and Lysander Dr.).

2. MODIFY the recommendation of the Planning Commission by selecting which sections of bike route to be removed or amended.
3. REJECT the recommendation of the Planning Commission and approve the Master Plan of Bikeways as recommended by Ryan Snyder Associates.
4. TAKE another action the City Council deems appropriate.

IV. BACKGROUND

On July 25, 2011, Caltrans awarded the City of Carson $90,000.00 for the Community Based Transportation Planning (CBTP) grant for preparation of the Master Plan of Bikeways. On September 6, 2011, the City Council accepted the 2011 CBTP grant. In June 2012, the Master Plan of Bikeways project officially commenced. Several community meetings and events were conducted to garner public participation and comments. Events included a City bicycle tour, a bicycle safety/education event, and community meetings. Throughout the process, public involvement and participation was encouraged.

The Master Plan of Bikeways identifies bicycle routes/networks, policies for community involvement/integration, utilization of existing resources, facility design, implementation, maintenance, funding, and special programs (Exhibit No. 4). The plan will serve as a planning document to guide future improvements, development and maintenance of the City's bicycle network for local and regional commuters and recreational riders. This plan seeks to improve bicycle safety, mobility, and connectivity within the City and South Bay region. The plan will result in improved mobility and safety, and support reduction of vehicle miles traveled and greenhouse-gas emissions.

On June 11, 2013, the Planning Commission recommended approval of an amendment to the General Plan Transportation and Infrastructure Element and adoption of the Carson Master Plan of Bikeways. The Planning Commission recommended three changes to the Master Plan which includes: (1) removal of the proposed bike lanes on Watson Center Road; (2) removal of the proposed bike lanes on Wilmington Avenue between 223rd Street and Sepulveda Blvd.; and (3) removal of the proposed cycletrack on Albertoni Street between Avalon Blvd. and Lysander Dr.

The first two changes were made at the request of Watson Land Company due to concerns about the incompatibility between trucks and bicycles. Staff concurs with the Planning Commission that Watson Center Road can be removed as a bike route since this street is not anticipated to have significant bicycle use. However, Wilmington Avenue is a key corridor connecting south Carson with the Los Angeles River bike trail and the City of Long Beach. Wilmington Avenue has adequate width to accommodate existing traffic lanes and new bike lanes. Parking is not allowed along the eastern curb because of the adjacent Tesoro (formerly BP) refinery, which makes the street ideal for a new bike lane. The City's Traffic

Engineer and Ryan Snyder Associates recommend that this section of colored bicycle lane be retained in the plan. There have also been many comments received from the community suggesting that this is an important route for bicyclists.

The Planning Commission recommendation to remove the proposed cycletrack on Albertoni Street came at the request of the StubHub Center. They are concerned that elimination of one eastbound lane on Albertoni Street would impact traffic leaving the StubHub Center and entering the eastbound 91 Freeway. However, inclusion of the cycletrack will not impact the two onramp lanes to the 91 Freeway. The only lane that would be eliminated is a through lane that leads to Stevenson Park still leaving one through lane. The reasoning for a cycletrack, which provides two-way direction for bicyclists, is to provide a safe connection between Stevenson Park and adjoining residential area with the businesses along Avalon Boulevard and Albertoni Street as requested by the public during the community workshops. The City's Traffic Engineer, Recreation Superintendent and Ryan Snyder Associates recommend that the cycletrack be retained.

Based on the discussions above, staff recommends that the Master Plan of Bikeways be unchanged with the exception of removing Watson Center Road. As shown in the Alternatives Section of this report, the City Council may accept the Planning Commission's recommendations or identify other sections of bike route to be removed or amended.

Over the past few weeks, staff has spoken to a number of business representatives in the community. A courtesy flyer has been sent to the top 10 employers in the City as well as other key businesses to advise of the Master Plan of Bikeways and this City Council hearing. Additionally, staff has met with businesses and residents on an as-needed basis to discuss the Master Plan of Bikeways. Staff has done an extensive amount of community outreach as summarized below:

Public workshops: September 8, 2012, January 26, 2013, and May 16, 2013

Planning Commission workshops: September 25, 2012, January 26, 2013, March 26, 2013

Public Safety Commission: March 21, 2013

Outside agencies and business stakeholders: March 27, 2013

Carson-Dominguez Employers Alliance (CDEA): April 9, 2013

Tour de Carson Bike Tour and Festival: April 13, 2013

Economic Development Commission: May 2, 2013

Planning Commission public hearing: June 11, 2013

Facebook: ongoing posts to update the progress

The City's consultant, Ryan Snyder Associates, has prepared and submitted two

grant applications to Caltrans for the Highway Safety Improvement Program. Recipients are expected to be announced in October. The City's proposal is expected to be very competitive and would bring up to $2.9 million in grant funds for implementation of the Master Plan of Bikeways.

V. FISCAL IMPACT

Funds required for the matching portion of this grant have been budgeted in the proposed FY 2013/14 Bicycle Pathway Fund budget under Project No. 1321 – Bicycle Master Plan – Citywide Bicycle Project.

VI. EXHIBITS

1. Resolution No. 13-084. (pgs. 5-7)
2. Planning Commission Staff Report and Disposition dated June 11, 2013. (pgs. 8-21)
3. Illustrative Map showing the Planning Commission Recommended Deletions to the Master Plan of Bikeways (pg. 22)
4. Master Plan of Bikeways. (pgs. 23-236)

Prepared by: John F. Signo, AICP, Senior Planner
TO:Rev06-19-2013

Reviewed by:

City Clerk	City Treasurer
Administrative Services	Public Works
Community Development	Community Services

Action taken by City Council

Date_____ Action_____

_____

RESOLUTION NO. 13-084

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF CARSON, CALIFORNIA, APPROVING GENERAL PLAN AMENDMENT NO. 92-13 TO AMEND SECTION 3.3 OF THE GENERAL PLAN TRANSPORTATION AND INFRASTUCTURE ELEMENT AND ADOPTING THE CITY OF CARSON MASTER PLAN OF BIKEWAYS

THE CITY COUNCIL OF THE CITY OF CARSON DOES HEREBY RESOLVE AS FOLLOWS:

Section 1. On July 25, 2011, Caltrans awarded the City of Carson $90,000.00 for the Community Based Transportation Planning (CBTP) grant for preparation of the Master Plan of Bikeways. On September 6, 2011, the City Council accepted the 2011 CBTP grant.

Section 2. On June 19, 2012, the City Council selected Ryan Snyder Associates (RSA) as the consultant to prepare the Master Plan of Bikeways.

Section 3. The vision for the Master Plan of Bikeways is to enhance bicycle transportation in the City. The Master Plan is a guiding document for all bicycle infrastructure, policies, and programs in the City. It is a blueprint that will enable citizens to feel safe and comfortable when bicycling throughout the City, and will encourage more citizens to partake in this healthy, environmentally-conscious transportation choice.

Section 4. Workshops were held on September 8, 2012, January 26, 2013, and May 16, 2013, with residents and community groups to determine key connections and important routes throughout the City. On April 13, 2013, the Tour de Carson Bike Tour and Festival was held in the Carson Civic Center. On March 21, 2013, a meeting was held with the Public Safety Commission; on March 27, 2013, a meeting was conducted with outside agencies and businesses stakeholders; on April 9, 2013, a meeting was held with the Carson-Dominguez Employers Alliance (CDEA); and on May 2, 2013, a meeting was held with the Economic Development Commission to explain the Master Plan of Bikeways. Additional meetings with residents and the business community were held on an as-needed basis.

Section 5. The Planning Commission held a workshop on September 25, 2012, January 26, 2013, and March 26, 2013, and a duly noticed public hearing on June 11, 2013 at 6:30 P.M. at the City Hall Council Chambers, 701 East Carson Street, Carson, California to obtain public comments on the proposed Master Plan of Bikeways. After consideration of the evidence and testimony, the Planning Commission voted to recommend that the Master Plan of Bikeways be adopted.

Section 6. The City Council held a public hearing on the proposed Master Plan of Bikeways on August 6, 2013, at 6:00 P.M. at the City Council Chambers, 701 East Carson Street, Carson, California. A notice of time, place and purpose of the aforesaid meeting was duly given.

[MORE]

EXHIBIT NO 1

Section 7. Evidence, both written and oral, was presented to and considered by the City Council at the aforesaid meeting, including but not limited to staff reports, along with testimony received by the applicant and other members of the public.

Section 8. The City Council finds:

a) The Master Plan of Bikeways is a plan for developing a system of bike routes and lanes throughout the City for the safe transportation of bicyclists. It includes development standards and guidelines for the safe implementation of bike circulation throughout the City.

b) The Master Plan of Bikeways was last adopted in 1979 and is in need of an update.

c) The Master Plan of Bikeways proposes street improvements which will enhance the quality of life for residents and promote a healthy form of transportation.

d) The General Plan Transportation and Infrastructure Element sets policies for development of the City's transportation system. Recent daily traffic volumes were collected between 2009 and 2012, which were used for planning purposes in the Master Plan of Bikeways. Amending the General Plan would bring the Transportation and Infrastructure Element up-to-date with recent daily traffic volumes and consistency with the Master Plan of Bikeways.

e) The project involves no potential for any adverse effect, either individually or cumulatively, on wildlife resources and therefore a De Minimis Impact Finding is made relative to AB 3158, Chapter 1706, Statutes of 1990.

Section 9. The City Council has determined that the project is not subject to the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) since the project has no potential to cause a significant effect on the environment. The General Plan Amendment and adoption of the Master Plan of Bikeways is a guiding document and is not considered to be a project that has a potential to cause a significant effect on the environment. No environmental impacts will result.

Section 10. Based on the aforementioned findings, the City Council approves General Plan Amendment No. 92-13 by adopting the Carson Master Plan of Bikeways and incorporating the necessary references in the Transportation and Infrastructure Element.

Section 11. The City Clerk shall certify to the adoption of this resolution and shall transmit copies of the same to the applicant.

PASSED, APPROVED and **ADOPTED** this 6th day of August, 2013.

[Signatures on following page]

Mayor Jim Dear

ATTEST:

City Clerk Donesia L. Gause, CMC

APPROVED AS TO FORM

City Attorney

CITY OF CARSON

PLANNING COMMISSION STAFF REPORT

PUBLIC HEARING:	June 11, 2013
SUBJECT:	Master Plan of Bikeways
APPLICANT:	City of Carson
REQUEST:	To consider General Plan Amendment 92-13 to amend the General Plan Circulation Element and adopt the City of Carson Master Plan of Bikeways
PROPERTY INVOLVED:	City-wide

COMMISSION ACTION

____ Concurred with staff

____ Did not concur with staff

____ Other

ATTACHED

COMMISSIONERS' VOTE

AYE	NO		AYE	NO	
✓		**Chairman Faletogo**		✓	**Gordon**
✓		**Vice-Chair Verrett**	✓		**Piñon**
✓		**Brimmer**	✓		**Saenz**
	✓	**Diaz**	✓		**Schaefer**
✓		**Goolsby**			

Item No. 11A

EXHIBIT NO 02

8

Planning Commission Decision:

Chairman Faletogo moved, seconded by Commissioner Brimmer, to continue this public hearing to the next Planning Commission meeting, asking that more community and business outreach be undertaken. (This motion was ultimately rescinded.)

By way of a substitute motion, Commissioner Diaz moved, seconded by Commissioner Gordon, to concur with staff recommendation. (This motion was ultimately rescinded.)

By way of a friendly amendment, Commissioner Gordon suggested eliminating the cycle track on Albertoni Street.

Commissioner Diaz rejected the friendly amendment.

Commissioner Gordon withdrew his second on the motion.

By way of a substitute motion, Commissioner Schaefer moved, seconded by Chairman Faletogo, to concur with staff recommendation; to eliminate the bike route on Wilmington Avenue between 223rd Street and Sepulveda Boulevard; to eliminate the bike lanes along Watson Center Road; to eliminate the cycle track along Albertoni Street; that further outreach be done to the businesses; and moved to adopt Resolution No. 13-2476. Motion carried as follows:

AYES:	Brimmer, Faletogo, Goolsby, Piñon, Saenz, Schaefer, Verrett
NOES:	Diaz, Gordon
ABSTAIN:	None
ABSENT:	None

I. Introduction/Background

The last update to the Planning Commission for the Master Plan of Bikeways project was on March 26, 2013 (Exhibit No. 1). A comprehensive background is provided in the March 26, 2013 staff report, therefore only events after that time and/or not included in that report will be discussed below.

Since March 26, 2013, staff released the complete draft Master Plan of Bikeways on May 9, 2013 for a 30-day public review and comment period, held a community meeting, and met with several stakeholder groups.

Staff organized a community meeting on May 16, 2013 to present the full draft of the Master Plan of Bikeways to attendees, answer questions, and gather comments. The majority of attendees were in support of the plan, however the StubHub Center (formerly known as the Home Depot Center) expressed concerns with the proposed cycle tracks surrounding their property and California State University, Dominguez Hills (CSUDH). Staff held separate meetings with representatives from the StubHub Center and the University to further discuss their concerns. The results of the meetings are discussed in this report.

Staff also attended the Public Safety Commission meeting on March 21, 2013, conducted an outside agency/businesses stakeholders meeting on March 27, 2013, Carson-Dominguez Employers Alliance (CDEA) on April 9, 2013, and the Economic Development Commission meeting on May 2, 2013. The Public Safety Commission was in overwhelming support of the draft plan and recommended approval of the plan to the Planning Commission.

Staff had several other meetings with stakeholders throughout this time, including representatives from CSUDH, Watson Land Company, and StubHub Center

Issues of Concern

StubHub Center/California State University, Dominguez Hills
During the review period for the draft Master Plan of Bikeways, staff met with representatives of StubHub Center and CSUDH to discuss concerns for the proposed cycle tracks along Victoria Street and University Avenue. Following the meeting, StubHub Center submitted a comment letter to the City (Exhibit No. 2) including, (1) a request to remove the preferred option of cycle tracks along Victoria Street and University Avenue to standard bike lanes, (2) opposition to the lane reduction on Albertoni Street for a cycle track connecting to Stevenson Park, and (3) opposition to the reduction of traffic lanes on Avalon Boulevard between Victoria Street and University Avenue. Based on their concerns for safety and circulation, staff proposes removing the cycle tracks surrounding StubHub Center and CSUDH as the preferred option. Staff requests the option for a cycle track be placed as a "secondary option or option 2", in case circumstances in the future allow for the addition of a cycle track within these streets.

The proposed cycle track along Albertoni Street will result in the removal of one eastbound travel lane. Currently, this portion of Albertoni has two westbound travel lanes and three eastbound travel lanes with parking on both sides. The cycle track will remove parking and an excess eastbound travel lane and will not affect the on-ramp capacity to the 91 freeway. There is currently only one dedicated on-ramp for the 91 freeway and this will remain. The cycle track will provide a safe connection from neighborhood and businesses to Stevenson Park. The City's Traffic Engineer has reviewed the proposed plan and is in support of the removal of the excess eastbound travel lane for the cycle track.

In reference to comment number three, the plan does not propose a lane reduction for Avalon Boulevard between Victoria Street and University Avenue.

Watson Land Company/Economic Development Commission
Staff attended the Economic Development Commission (EDC) on May 2, 2013. During that time, the EDC made a motion to recommend the removal of the proposed bike lanes along Wilmington Avenue between 223rd Street and Sepulveda Boulevard, otherwise they were in support of the plan.

In addition, staff met several times with representatives from Watson Land Company and they also requested the removal of Wilmington Avenue between 223rd and Sepulveda Boulevard and the bike lanes proposed along Watson Center Road.

Staff does not recommend the removal of the proposed bike lanes along Wilmington Avenue, between 223rd Street and Sepulveda Boulevard. Based on traffic data, field surveys, and the existing/proposed conditions, bike lanes on Wilmington Avenue or Watson Center Road will not have an impact on the number of travel lanes.

Bike lanes on Wilmington Avenue will provide access for people that work in the industrial facilities along Wilmington Avenue and in the eastern part of Carson. The removal of the Wilmington Avenue connection results in an underserved population to the residents and businesses within east Carson since no other north-south bikeway is provided that serves that area. This section of Wilmington Avenue is one of the few through streets provided in east Carson, therefore no acceptable alternative routes are available. The Wilmington Avenue connection will also connect Sepulveda Boulevard to the Dominguez Channel bike path.

During field surveys, several cyclists were observed riding along this stretch of Wilmington Avenue even though it is identified as a truck route. Placing bike lanes provide for a safer ride for cyclists and allow for a safe separation from cyclists and trucks. Bike lanes provide additional visibility for truck drivers and other motorists. The installation of bike lanes along Wilmington Ave and Watson Center Road will not result in the removal of a travel lane and will not impede traffic. With the proposed buffered bike lanes (5' bike lane with 3' buffer), the travel lanes will remain 13'-14' wide, which exceed average lane widths of 11'-12' lanes. The minimum lane width within the State of California is 10 feet. The installation of bike lanes along Wilmington Avenue and Watson Center Road will not compromise

safety, the number of lanes, or compromise lane widths. The bike lanes will provide safer routes for cyclists and improve safety for trucks, cyclists, and motorists. Staff's recommendation is to maintain the bike lanes along Wilmington Avenue and Watson Center Road since no adverse impacts will result from the proposal, rather safety will improve.

II. Environmental Review

The proposed project is not subject to the California Environmental Quality Act (CEQA) pursuant to Section 15061(b)(3) since the project has no potential to cause a significant effect on the environment. The General Plan Amendment and adoption of the Master Plan of Bikeways is a guiding document and is not considered to be a project that has a potential to cause a significant effect on the environment. No environmental impacts will result.

III. Recommendation

That the Planning Commission:

- WAIVE further reading and ADOPT Resolution No. 13- entitled, "A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CARSON RECOMMENDING APPROVAL TO THE CITY COUNCIL OF GENERAL PLAN AMENDMENT NO. 92-13 TO AMEND SECTION 3.3 OF THE GENERAL PLAN CIRCULATION ELEMENT AND ADOPT THE CITY OF CARSON MASTER PLAN OF BIKEWAYS"; and

- Amend the draft Master Plan of Bikeways to remove the proposed cycle tracks along University Drive and Central Avenue surrounding the California State University, Dominguez Hills campus and StubHub Center as a preferred priority and replace with standard bike lanes.

IV. Exhibits

1. Planning Commission Staff Report without exhibits, dated March 26, 2013
2. Letter from StubHub Center, dated June 5, 2013
3. Draft Resolution
4. Draft Master Plan of Bikeways

Approved by:
Sharon Song, AICP, Associate Planner

Reviewed by:
John F. Signo, AICP, Senior Planner

Approved by:
Sheri Repp Loadsman, Planning Officer

CITY OF CARSON

PLANNING COMMISSION STAFF REPORT

NEW BUSINESS DISCUSSION:	March 26, 2013
SUBJECT:	Workshop and update on the Master Plan of Bikeways
APPLICANT:	City of Carson
REQUEST:	Receive and File
PROPERTY INVOLVED:	City-wide

COMMISSION ACTION

____ Concurred with staff

____ Did not concur with staff

____ Other

COMMISSIONERS' VOTE

AYE	NO		AYE	NO	
		Chairman Faletogo			Goolsby
		Vice-Chair Verrett			Gordon
		Brimmer			Saenz
		Diaz			Schaefer

Exhibit 1

I. Introduction/Background

The last update to the Planning Commission in regards to the Master Plan of Bikeways project was on September 25, 2012. Since then, staff organized bicycle counts at 8 locations in the city, held a second workshop on Saturday, January 26, 2013, distributed a survey to learn about the bicycling community and environment in Carson, provided an "interactive online map" to gather feedback and knowledge, and prepared a draft map and networks for public to review and comments (Exhibit No. 1).

In addition, staff is organizing the "Tour de Carson Bike Tour and Festival" scheduled for April 13, 2013 at City Hall to gather comments on the draft networks and for the public to participate in an organized bike ride along the proposed routes. The complete draft Master Plan of Bikeways will be made available for public review and comments mid-April 2013 and will be before the Planning Commission for consideration mid-May 2013.

Second Workshop – Saturday, January 26, 2013
At this workshop, the Master Plan of Bikeways consultant, Ryan Snyder and Associates introduced the draft bikeway network to the public. The goal of the workshop was to invite community members to provide feedback on the draft network and to prioritize draft routes. A brief explanation of the types of bikeways and design treatments were discussed and attendees were asked to participate in two feedback exercises where they could mark their preferences for which projects to prioritize. The projects that received the most dots were: Victoria Street, University Drive, Figueroa Street south of Del Amo Boulevard, and 223rd Street.

Another roadway treatment dot exercise was conducted where attendees were asked if they supported the use of road diets and narrow travel lanes to implement bikeways (road diets would only be recommended when traffic impacts are negligible). All attendees supported the use of road diets and narrower travel lanes to implement bikeways. In order to receive additional feedback from the public, staff provided the two surveys/exercises and a copy of the draft networks and map on the City's bikeways website (http://ci.carson.ca.us/bikeways) and have made them available until April 13, 2013 (Exhibit No. 2). The results of the surveys will be included in the draft Master Plan of Bikeways.

Survey – Bicycling Community and Environment in Carson and Interactive Map
The City distributed a survey to learn about the bicycling community and environment in Carson. The survey was available online from July 9, 2012 to October 2, 2012 and paper copies were also available at City Hall and the Community Center. The survey asked (1) information on the surveyor, (2) reasons for bicycling in Carson, (3) barriers to bicycling in Carson, and (4) suggestions for bikeways and bicycle parking location. 102 people responded to the survey and ages ranged from 13 to 78 years old. The vast majority of respondents (92%) stated one of the major barriers to riding bicycles in Carson is the lack of safe streets to ride on. Complete survey results will be included in the draft Master Plan of Bikeways.

Tour de Carson Bike Tour and Festival

A large component of the project and requirements for the grant funding for the Master Plan of Bikeways includes garnering public participation, educating the public, and encouraging active public involvement throughout the planning process. Therefore, as part of the Master Plan of Bikeways project, staff and the Los Angeles County Bicycle Coalition (LACBC) are organizing a community bicycle event, Tour de Carson Bike Tour and Festival on Saturday, April 13, 2013 at the City Hall parking lot. The event will focus on gathering comments for the draft networks and map currently released for public comments and a guided bike ride of the proposed routes. The event will also include bicycle education sessions to promote bicycle safety and awareness. Local bicycle and health vendors have also been invited to provide additional information for participants. The event is fully funded by the Master Plan of Bikeways grant, therefore is free to the public. Up to 200 people who participate in the event will be offered a free lunch and opportunities to win prizes such as bicycle safety wear, lights, helmets and a bicycle (Exhibit No. 3 and 4).

Safety banners will also be displayed in the medians of the major intersections of the bike ride to provide awareness and educate drivers to "Be Safe and Share the Road".

Complete Draft Master Plan of Bikeways

The results and feedback from the workshops, surveys, and the Tour de Carson bike ride will be fully implemented in the complete draft Master Plan of Bikeways. The Master Plan of Bikeways will identify bicycle routes/networks, policies for community involvement/integration, utilization of existing resources, facility design, implementation, maintenance, funding, and special programs. The plan will serve as a planning document to guide future city improvements, development and maintenance of the city's bicycle network for local and regional commuters and recreational riders. The survey results will identify projects for capital improvements and provide a priority list of projects depending on public opinion, public safety, and feasibility. The goals of the Master Plan of Bikeways will reflect the public's needs and comments gathered during this process, which include improving bicycle safety, mobility, and connectivity within the city and South Bay region.

The draft networks and map are currently available and under review, however the full draft will be released for public comments after the Tour de Carson event and scheduled for Planning Commission consideration and recommendation in mid-May. Staff anticipates the final Master Plan of Bikeways to be adopted by City Council by June 2013.

II. Recommendation

That the Planning Commission:

- RECEIVE and FILE.

III. Exhibits

1. Planning Commission Staff Report, dated September 25, 2012
2. Draft networks and map
3. Flyer for Tour de Carson and Mock-up of Safety Banners
4. Draft routes for the Tour de Carson guided Bike Ride

Approved by: _____
Sharon Song, AICP, Associate Planner

Reviewed by: _____
John F. Signo, AICP, Senior Planner

Approved by: _____
Sheri Repp Loadsman, Planning Officer

June 5, 2013

Sharon Song
Associate Planner
City of Carson
701 E. Carson Street
Carson, CA 90745

Dear Ms. Song,

The Home Depot Center has reviewed the Draft Carson Master Plan of Bikeways. The Home Depot Center supports bicycles as an alternate mode of transportation and is generally supportive of the Plan.

However, we do have some concerns regarding some of the proposed improvements in the vicinity of the Home Depot Center.

As you know, the Home Depot Center is a world class sports stadium and event center. It is home to two professional MLS soccer teams, the Los Angeles Galaxy and C.D. Chivas USA, numerous community sporting events, and regularly stages concerts and other community events. As such, it is a key economic generator for the City of Carson and the surrounding region.

Convenient and efficient access and egress to the facility is essential to its operation. In obtaining environmental clearance and approvals, the Home Depot Center was required to adopt and implement certain roadway mitigations to eliminate traffic impacts and improve traffic flow.

As such, we are very concerned that any of the proposed bikeway improvements and associated facilities may negatively impact the access and egress to the facility and its parking.

We note that the draft Bike Plan does not contain any specific roadway cross sections that enable the reviewer to accurately determine if roadway capacity will be reduced to install bike facilities.

We are in support of bike lanes where the existing street capacity is maintained. We are not in support of cycletracks if roadway capacity will be reduced on roadways that are adjacent to or approaching the facility from nearby freeways. We are specifically concerned over the following segments:

- University Avenue between Avalon Boulevard and Central Avenue

  The Plan proposes to remove one westbound traffic lane and add a 15-ft cycletrack on the north side. This would negatively impact ingress/egress operation for events.

EXHIBIT NO. 2

- Central Avenue between Victoria Street and University Avenue

  The plan is proposing to install a cycletrack on the west side of the street. Since there is an already existing bike path, this cycletrack is redundant and would not be consistent with the bike facilities in the adjacent area, which are mostly bike lanes and paths.

- Albertoni/SR-91 FWY between Avalon Boulevard and on/off ramps

  We are opposed to any lane reduction around the SR-91 on/off ramps as this would negatively impact our ability to move cars to and from the facility.

- Avalon Boulevard between Victoria and University and near I-405

  The Plan is also proposing lane reductions on a segment of Avalon between I-405 and the Dominguez Channel. Reducing auto capacity on one of the main approaches to the Home Depot Center will negatively impact the ability for cars to move to and from the facility.

Based on these concerns, we suggest the following alternatives:

1. University Avenue

   Do not remove westbound traffic lane. Do not add cycletrack if it means removing traffic lane. Consider a bike lane with buffers as long as it does not reduce roadway capacity.

2. Central Avenue

   Install bike lane instead of cycletrack as long as it does not reduce roadway capacity.

3. Albertoni/SR-91 FWY

   Do not reduce number of traffic lanes.

4. Avalon Boulevard

   Do not reduce number of traffic lanes.

The Home Depot Center supports bicycles as an alternate mode of transportation and we are supportive of the Plan. However, we are concerned over some specific improvements and how they would affect the facility. We hope the City makes the proper adjustments to have the Plan not negatively impact traffic operations near the Home Depot Center.

Sincerely,

Katie Pandolfo
General Manager
Home Depot Center

CITY OF CARSON

PLANNING COMMISSION

RESOLUTION NO. 13-2476

A RESOLUTION OF THE PLANNING COMMISSION OF THE CITY OF CARSON RECOMMENDING APPROVAL TO THE CITY COUNCIL OF GENERAL PLAN AMENDMENT NO. 92-13 TO AMEND SECTION 3.3 OF THE GENERAL PLAN CIRCULATION ELEMENT AND ADOPT THE CITY OF CARSON MASTER PLAN OF BIKEWAYS

THE PLANNING COMMISSION OF THE CITY OF CARSON, CALIFORNIA, HEREBY FINDS, RESOLVES AND ORDERS AS FOLLOWS:

Section 1. The City Council approved the filing of a grant application on March 16, 2011, identifying the Los Angeles County Bicycle Coalition (LACBC) as a sub-recipient with the California Department of Transportation for a Community-Based Transportation Planning grant to create a city-wide Master Plan of Bikeways.

Section 2. The City Council authorized to accept the planning grant from Caltrans and appropriated a local match fund of $15,000.00 from the Transportation Development Act (TDA) Article 3 Fund for FY 2010/11 on September 6, 2011.

Section 3. The project officially commenced on March 1, 2012 with the consultant team led by Ryan Snyder and Associates. The goals of the project included developing a Master Plan of Bikeways that is Caltrans Bicycle Transportation Account (BTA) compliant and a result of widespread public outreach and involvement.

After over a year of extensive outreach, public meetings, data analysis, and a 30-day public review period for the draft Master Plan of Bikeways, a public hearing was duly held on June 11, 2013, at 6:30 P.M. at City Hall, Council Chambers, 701 East Carson Street, Carson, California. A notice of time, place and purpose of the aforesaid meeting was duly given.

Section 4. Evidence, both written and oral, was duly presented to and considered by the Planning Commission at the aforesaid meeting.

Section 5. The Planning Commission finds that:

a) The Master Plan of Bikeways is a product of an interactive public participation and input process. The plan is also BTA compliant.

b) The proposed General Plan Amendment and adoption of the City of Carson Master Plan of Bikeways is consistent with other elements of the City's General Plan pursuant to section 65300.5 of the State Government Code.

c) The notification procedures for the proposed General Plan Amendment and Master Plan of Bikeways are consistent with Section 65091 of the State Government Code.

d) The proposed General Plan Amendment and Master Plan of Bikeways will not be detrimental to the public health, safety and welfare of the community.

e) The proposed General Plan Amendment and Master Plan of Bikeways will allow for the implementation of safer bicycle networks, improved facilities, and improve quality of life for residents, businesses, and patrons of the City of Carson.

Section. The Planning Commission further finds that the adoption of the Master Plan of Bikeways and General Plan Amendment is not subject to the California Environmental Quality Act pursuant to Section 15061 (b)(3), General Rule Exemption of the California Environmental Quality Act Guidelines(CEQA). The General Plan Amendment and adoption of the Master Plan of Bikeways is a guiding document and is not considered to be a project that has a potential to cause a significant effect on the environment. No impacts will result.

Section. Based on the aforementioned findings, the Commission hereby recommends approval of the Master Plan of Bikeways and recommends approval of General Plan Amendment No. 92-13 to amend Section 3.3 of the Circulation Element.

Section. The Secretary shall certify the adoption of this Resolution and shall transmit copies of the same to the applicant (City).

Section. This action shall become final and effective fifteen days after the adoption of this Resolution unless within such time an appeal is filed with the City Clerk in accordance with the provisions of the Carson Zoning Ordinance.

PASSED, APPROVED AND ADOPTED THIS 11th DAY OF June, 2013.

CHAIRMAN

ATTEST:

SECRETARY

FIGURE 6.1 *Proposed Carson network of bikeways.*

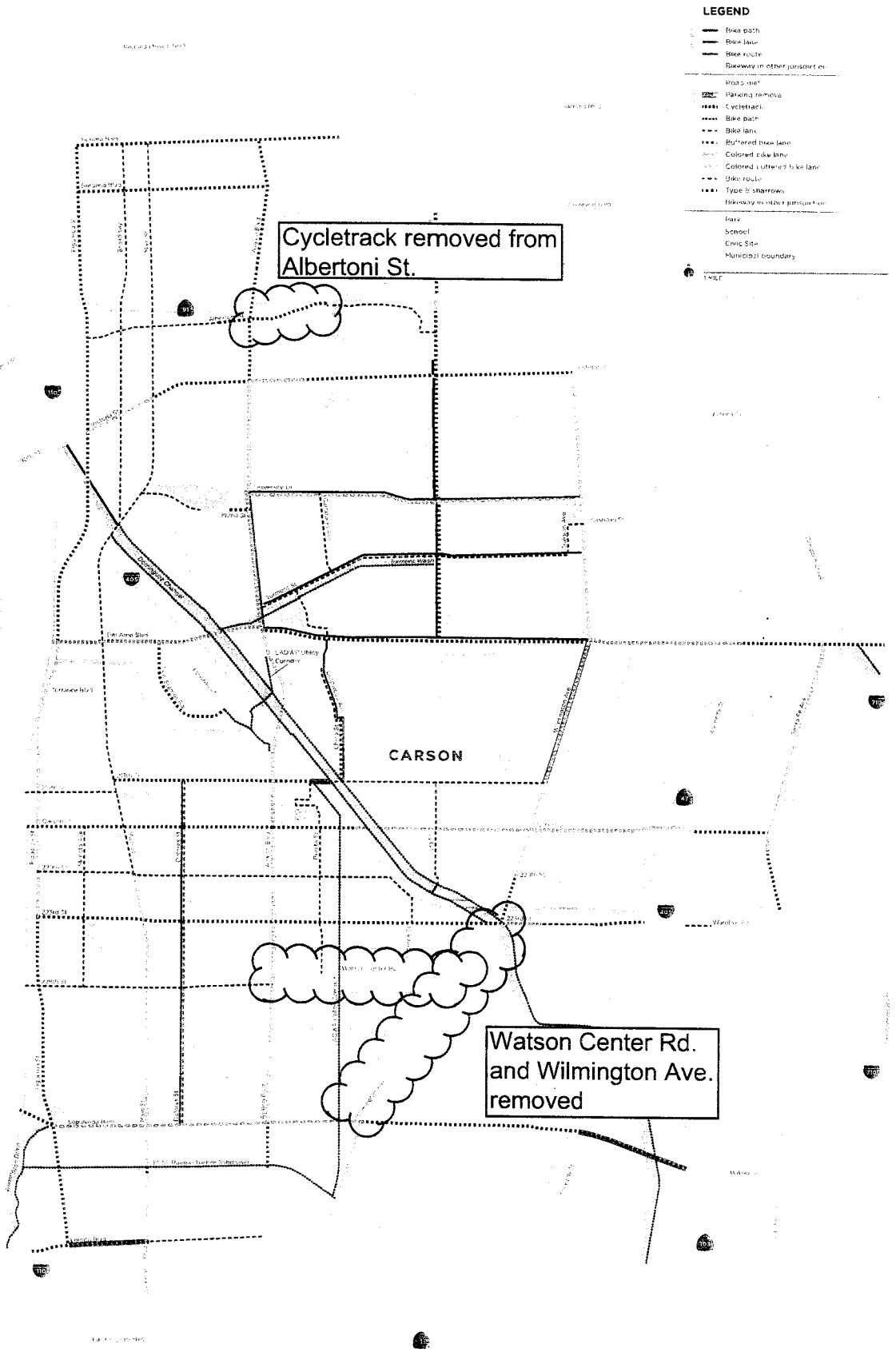
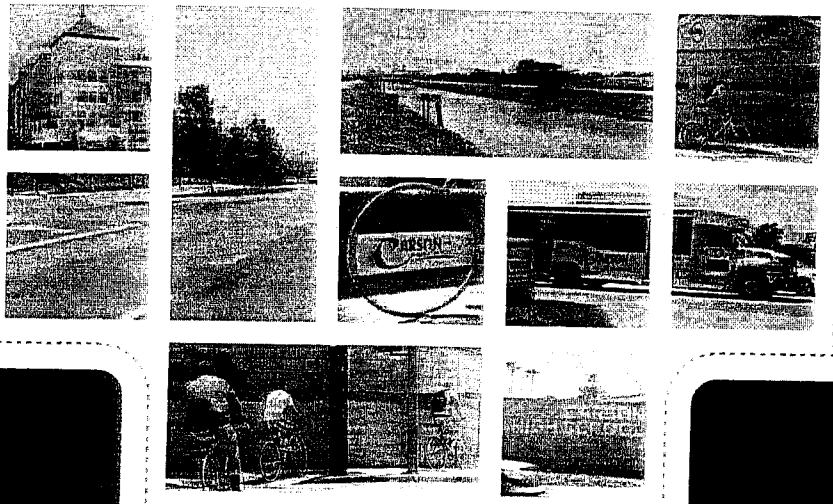


EXHIBIT NO 6 5

CARSON

MASTER PLAN OF BIKEWAYS



PREPARED BY:
THE CITY OF CARSON
RYAN SNYDER ASSOCIATES

MAY 2013

EXHIBIT NO. 4

CARSON

CARSON

MASTER PLAN OF BIKEWAYS

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ACKNOWLEDGMENTS

COMMUNITY

Thank you to all our volunteers, members of the public, and organizations that contributed to the plan.

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CALTRANS STREETS & HIGHWAYS CODE 891.2 CHECKLIST

AP-PROVAL	STREETS AND HIGHWAYS CODE 891.2 BICYCLE TRANSPORTATION ACCOUNT REQUIREMENT	PAGE
	a) The estimated number of existing bicycle commuters in the plan area and the estimated increase in the number of bicycle commuters resulting from implementation of the plan.	5-11, 6-45
	(b) A map and description of existing and proposed land use and settlement patterns which shall include, but not be limited to, locations of residential neighborhoods, schools, shopping centers, public buildings, and major employment centers.	3-2, 3-3
	(c) A map and description of existing and proposed bikeways.	5-3, 5-5, 6-7 to 6-41
	(d) A map and description of existing and proposed end-of-trip bicycle parking facilities. These shall include, but not be limited to, parking at schools, shopping centers, public buildings, and major employment centers.	5-5 to 5-6, 6-41 to 6-44
	(e) A map and description of existing and proposed bicycle transport and parking facilities for connections with and use of other transportation modes. These shall include, but not be limited to, parking facilities at transit stops, rail and transit terminals, ferry docks and landings, park and ride lots, and provisions for transporting bicyclists and bicycles on transit or rail vehicles or ferry vessels.	5-7 to 5-9, 5-11, 6-43
	(f) A map and description of existing and proposed facilities for changing and storing clothes and equipment. These shall include, but not be limited to, locker, restroom, and shower facilities near bicycle parking facilities.	5-4, 5-6, 5-7, 6-44, 6-45
	(g) A description of bicycle safety and education programs conducted in the area included within the plan, efforts by the law enforcement agency having primary traffic law enforcement responsibility in the area to enforce provisions of the Vehicle Code pertaining to bicycle operation, and the resulting effect on accidents involving bicyclists.	5-21, Ch. 7
	(h) A description of the extent of citizen and community involvement in development of the plan, including, but not limited to, letters of support.	Ch. 2
	(i) A description of how the bicycle transportation plan has been coordinated and is consistent with other local or regional transportation, air quality, or energy conservation plans, including, but not limited to, programs that provide incentives for bicycle commuting.	Ch. 3
	(j) A description of the projects proposed in the plan and a listing of their priorities for implementation.	6-7 to 6-45, Ch. 9
	(k) A description of past expenditures for bicycle facilities and future financial needs for projects that improve safety and convenience for bicycle commuters in the plan area.	To be added

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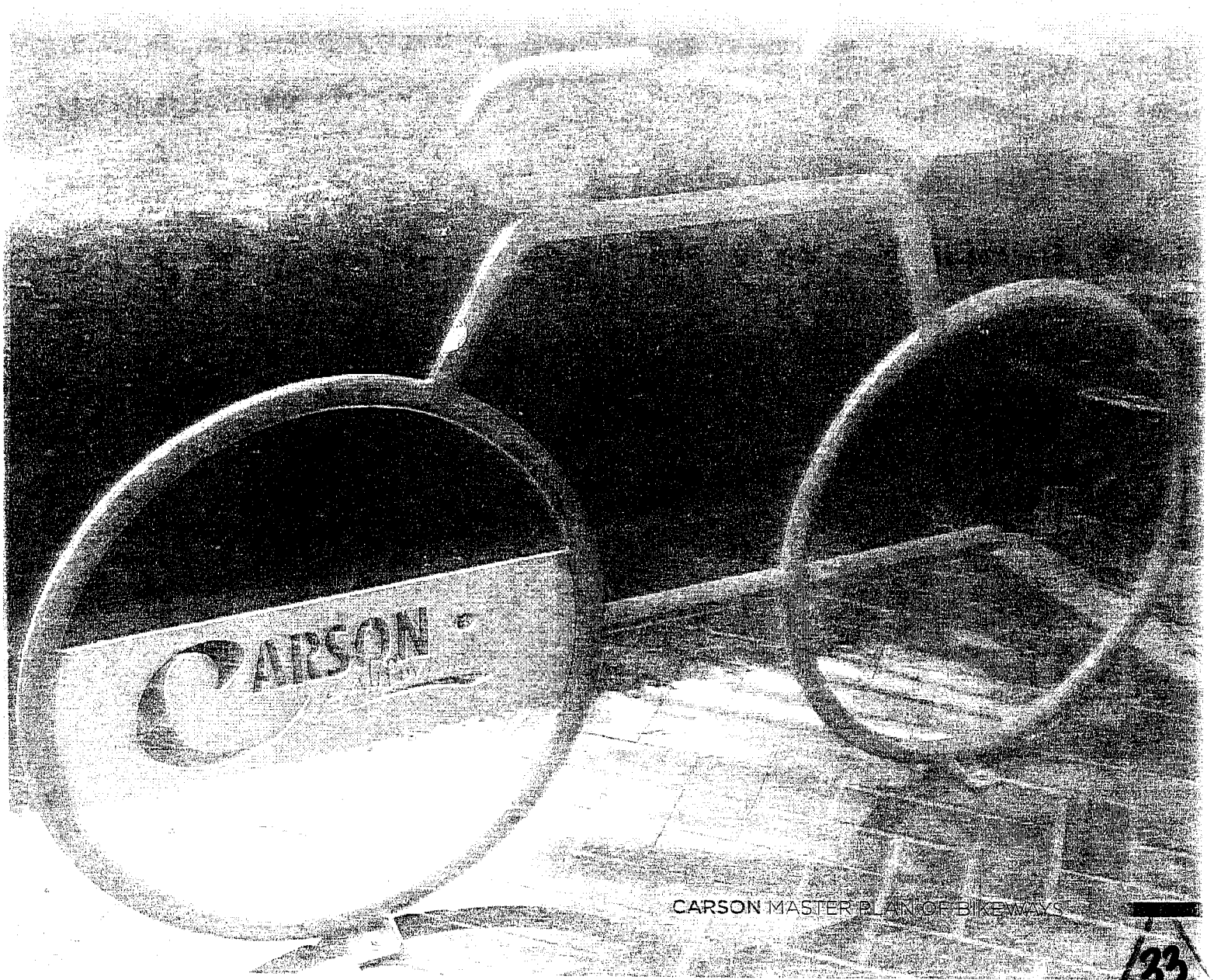
CHAPTER 1 INTRODUCTION



A VISION FOR BICYCLING IN CARSON

The Carson Master Plan of Bikeways lays out a strategic vision for enhancing bicycle transportation in the city. This plan is the guiding document for all bicycle infrastructure, policies, and programs in Carson. It is a blueprint that will enable citizens to feel safe and comfortable when bicycling throughout the city, and it will encourage more citizens to partake in this healthy, environmentally conscious transportation choice.

This plan will improve bicycling for people who already ride in Carson. It will also help attract new people to cycling.

This document represents a significant milestone for the City of Carson. Not only is it the City's first new bicycle plan in nearly 35 years, it is also the City's first bicycle plan compliant with Caltrans' Bicycle Transportation Account (BTA) standards. Crafting a BTA-compliant plan makes the City eligible to receive BTA funding from Caltrans.

By increasing bicycling, the City advances a number of policy goals. First, bicycling contributes to a healthy and active community, where residents can build incidental exercise into their daily lives. Further, bicycling enables people to travel without polluting the city's air, creating carbon emissions, or contributing to traffic congestion.

Second, the City seeks to invest in its urban form, enhancing quality of life and bringing livability to the forefront. The backbone of this vision is a multimodal transportation system that welcomes travel by foot, bicycle, and public transit, in addition to driving. Creating linkages between bicycling and public transit, establishing bikeways that connect destinations throughout the city, and providing bicycle parking are therefore integral components of the City's multimodal vision.

PLANNING PROCESS OVERVIEW

Momentum for the Carson Master Plan of Bikeways began when the City received a Caltrans Community Based Transportation Planning Grant to prepare a bicycle master plan. The City selected the Los Angeles County Bicycle Coalition to conduct widespread public outreach and a consultant team led by Ryan Snyder Associates (RSA) to prepare the plan. Work commenced in June 2012.

Members of the Carson community assist with the planning process at a public workshop

This final plan is the product of an iterative process emphasizing stakeholder participation and public input. The Carson Community Development Department's Planning Division worked closely with RSA to set a framework of goals, policies, and actions for the plan. Based on the results of community outreach, RSA developed a draft bikeway network and vetted this network with City staff. The consultant team then presented the draft network to the public and received feedback in a community workshop. Additionally, members of the public were able to ride sections of the proposed bikeway network and provide comments at a community bike ride. After revising the proposed bikeways in accordance with community recommendations, the consultant team produced a complete draft of the Master Plan of Bikeways for City staff and the public to review. The RSA Team then made necessary changes based on City and community feedback. The result of this yeariong planning process is this finalized Carson Master Plan of Bikeways.

ABOUT THE MASTER PLAN OF BIKEWAYS

This plan proposes an extensive network of streets designed to be safe and comfortable for bicyclists, with the goal of enhancing the practical use of bicycles as a transportation choice. Using the planned network, people in Carson can reach schools, shopping, jobs, recreational activities, and other important destinations—all without the need to drive.

The Carson Master Plan of Bikeways will enhance the comfort and safety of bicycling throughout the city.

The City of Carson and its community have been deliberate in selecting innovative bicycle facility designs—such as buffered, colored, and protected bike lanes—that provide comfort and safety for a wide variety of users. These treatments are particularly warranted around Carson, where dense concentrations of industry and the ports of Los Angeles and Long Beach generate substantial truck traffic. By implementing the network of bikeways envisioned in this plan, Carson can become a place where people of all ages and abilities can travel comfortably by bicycle.

In addition to the proposed bikeway network, the Master Plan of Bikeways also contains bikeway design guidelines, recommended programs and policies to encourage bicycle travel and increase cyclist safety, potential funding sources for implementing the plan, and an implementation framework that prioritizes the most important bikeway projects.

COMMON TERMS

Bikeway, bicycle facility — Catchall terms that describe any and all types of bicycle infrastructure

Bike path — Off-street, paved corridors for the exclusive use of bicyclists and, in some cases, pedestrians or other non-motorized travelers

Bike lane — On-street lanes reserved for the exclusive use of bicyclists, which may include a high-visibility green coloring or an additional buffer space to enhance safety

Bike route — On-street preferred travel routes for bicyclists where bicyclists and motorists share lanes; may include wayfinding signs for bicyclists, "sharrows" (see below), or green color

Cycletrack, protected bike lane — On-street bikeway, either one- or two-directional, that is physically separated from auto traffic, usually by parked cars, curbs, or planters

Road diet — Removal of at least one travel lane or on-street parking to accommodate bikeways; only recommended in conditions where removing a travel lane or parking will not adversely affect driving conditions

Sharrow, shared lane marking — Pavement markings that a) alert motorists that a particular travel lane is to be shared with bicyclists, b) indicate to cyclists the preferred riding position within the lane, and c) assist bicyclists with wayfinding; may include a green-colored background, known as a **type B sharrow**

This plan solidifies bicycling as a legitimate transportation choice within the city. Moreover, it positions Carson to become a frontrunner in providing safe, healthy streets for all users. By enacting this plan, the City is illustrating not just a commitment to cycling, but to the holistic wellness of the community as a whole.

CALTRANS BTA ELEMENTS

In order to be eligible for Bicycle Transportation Account funds, this Master Plan of Bikeways contains the following elements as specified by California Streets and Highways Code 891.2:

1. Estimated number of existing bike commuters and estimated increase
2. Map and description of existing and proposed land uses
3. Map and description of existing and proposed bicycle routes
4. Map and description of existing and proposed bicycle parking
5. Map and description of existing and proposed links to other transportation modes
6. Map and description of existing and proposed facilities for changing and storing clothes and equipment
7. Description of safety education programs, efforts by law enforcement, and effect on accident rates
8. Description of public input
9. Description of coordination with other local and regional transportation, air quality, and energy conservation plans
10. Description of projects and their priorities
11. Description of past expenditures and future financial needs

The Caltrans Table of Contents on page v identifies the pages where each of these items can be found.

PLAN OVERVIEW

The remainder of the Carson Master Plan of Bikeways is organized into the following chapters:

- **Chapter 2, Public Outreach,** describes the community involvement process that helped develop this plan
- **Chapter 3, Planning Context,** discusses how this plan relates to and is consistent with other plans and policies

- **Chapter 4, Goals, Policies, and Actions,** provides the guiding vision for this plan as well as the methods that will be used to implement the plan
- **Chapter 5, Existing Conditions,** summarizes current bicycling conditions in Carson
- **Chapter 6, Proposed Bicycle Projects,** describes Carson's proposed bikeway network
- **Chapter 7, Bicycle Programs,** lists activies and strategies to promote bicycle use and make bicycling safer
- **Chapter 8, Funding,** discusses federal, state, and local sources that can be used to fund the projects and programs in this plan
- **Chapter 9, Implementation,** provides cost estimates and other details pertinent for building the bikeways in this plan
- **Chapter 10, Design Guidelines,** describes standards and requirements to be followed when designing bicycle infrastructure
- **Appendix A, Public Outreach Detail,** provides additional information about the outreach process
- **Appendix B, Bicycle Count Methodology,** lists the procedures used to perform bicycle counts in Carson

CHAPTER 2

PUBLIC OUTREACH

OVERVIEW

In order to prepare a plan that meets the needs of local bicyclists, the City and consultant team conducted a robust public outreach effort that included community workshops, an interactive website, a bike ride and a questionnaire. The City worked with the consultant team to learn about the local bicycling environment in Carson, to understand cyclists' needs, and to set priorities for the Master Plan of Bikeways.

The Los Angeles County Bicycle Coalition (LACBC), in partnership with the City and the consultant team, also conducted extensive outreach for this Plan. LACBC used multiple media, including in-person visits, social media, phone calls, the City's parks and recreation newsletter, and the City's website.

Carson residents participated in the planning process by:

- Providing feedback at public workshops
- Sharing potential bike routes using online mapping tools
- Expressing opinions about cycling conditions in Carson via online surveys
- Posting comments on a project Facebook page
- Attending community events and bike tours
- Calling, emailing, or faxing comments to City staff

City of Carson staff and the consulting team also held two Planning and Parks and Recreation Commissions Workshop allowing public officials to offer input on the Master Plan's development.

This chapter presents the results of the outreach effort and describes the outreach efforts in more detail.

PUBLIC WORKSHOPS

The City invited the public to participate in the planning process through a series of community workshops. The City and consultant team notified the public about the meetings through multiple channels, including:

- E-mail
- Announcements, flyers, and mailings
- Visits to local bike stores and Cal State Dominguez Hills
- Social media

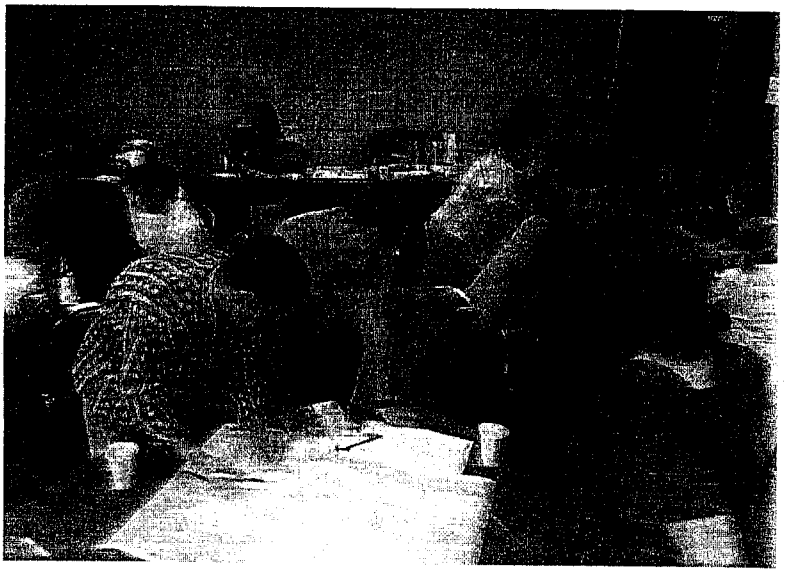
- Project website (http://ci.carson.ca.us/content/department/eco_dev_service/bikeways.asp)

Ryan Snyder Associates and RBF Consulting organized and facilitated the workshops. The purpose and timing of each workshop is explained further below.

WORKSHOP 1

The first workshop took place on Saturday, September 8, 2012 from 11 a.m. to 12:30 p.m. at the Juanita Millender-McDonald Community Center. Approximately 30 participants attended the workshop including local bicyclists, college students and faculty, representatives from homeowners associations, and the mayor of Carson, in addition to the general public.

The workshop began with a brief introductory presentation by City staff and Ryan Snyder Associates (RSA). The presentation included an overview of the project, process and schedule, information about existing conditions in Carson related to bicycling, and educational information about various potential bikeway facilities, treatments, and supportive amenities. Following the presentation, the workshop attendees asked questions and made comments, listed below.



Workshop attendees draw on maps and write on post-its to describe issues of importance to them relating to biking in Carson.

Implementation priorities

- Implement many low-cost projects around the City rather than a handful of expensive projects
- Emphasize cyclist and driver education programs
- Focus efforts on advancing the notion of bicycling as an everyday mode of travel in Carson, and then seek funding
- Open gates to paths along the Dominguez Channel to increase access to existing opportunities—an ideal low-cost improvement

Broadening stakeholder involvement

- Involve many levels of enforcement and driver education, including local, state, and Auto Club efforts
- Hold bike education events at LAUSD elementary schools, partnering with non-profits to provide education services
- Make use of online petitions to generate interest in increasing the availability of bike lanes; this may be more appropriate after the Plan is completed

Opportunities

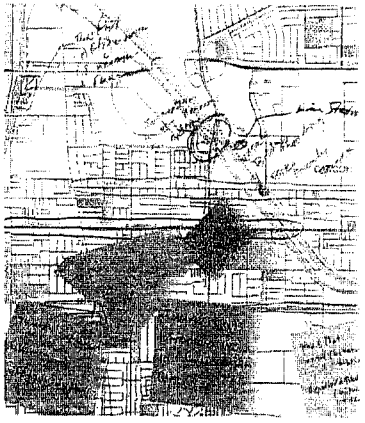
- Develop "share the road" banners to be used in Carson
- Implement a bike share program at transit hubs

Safety concerns

- Channel paths, both personal safety and security
- On-street bikeways, such as through the use of bikeways separated by physical barriers
- Bicycle/motorist conflicts at intersections
- Shared lanes with slow-speed cyclists
- Sidewalk bicycle riding and conflicts between bicyclists and pedestrians on sidewalks

The team addressed questions and took note of concerns and comments for use in the planning effort.

The next part of the workshop featured a mapping exercise. Attendees drew desired bikeways, bicycle parking, missing sidewalks, difficult locations for cyclists, and difficult roadway crossings on large-scale maps of Carson. The team used these maps when proceeding with fieldwork and the planning effort.



Excerpt from the results of the mapping exercise at Workshop 1.

Images of the maps and attendees' comments on them are shown in Appendix A. A portion of one of the maps is shown at left.

WORKSHOP 2

Carson held a second workshop, again at Juanita Millender-McDonald Community Center, on Saturday, January 26, 2013 from 10:00 a.m. to 11:30 a.m. At this workshop, the consultant team introduced the draft bikeway network to the public. The goal of the workshop was to invite community members to provide feedback on the draft bikeway network, and to prioritize the draft routes.

To open the workshop, the consultant team gave a presentation on the types of bikeways and design treatments that are included in the draft network. These include, for example, bike paths, bike lanes, colored bike lanes, road diets, and others. The consultant team then showed an image of the draft network and identified and described each proposed bikeway. After this presentation, there was a brief question-and-answer session. Some of the comments made by attendees included the following:

- Implement the plan as quickly as possible, focusing on cost-effective short-term projects
- More education for bike riders is needed
- Recreational riding is important, especially for kids. Add bike loops in City parks.

Attendees were then given sticker dots and asked to participate in two feedback exercises. In both of these, attendees marked their preference using sticker dots on large poster boards.

Bikeway Ranking Dot Exercise

With one set of dots, attendees indicated the bikeways they thought should have the highest priority. They were given six green dots to indicate their highest priority projects and six yellow dots to indicate their next-highest priority projects. They could distribute dots among the proposed projects however they liked, i.e. they could place multiple dots on a single project.

The projects that received the most dots from workshop attendees were:

- Victoria Street (9)
- University Drive (9)
- Figueroa Street south of Del Amo Boulevard (7)
- 223rd Street (6)

This bikeway ranking exercise was also available as an online survey posted immediately after Workshop 2. Participants in the Tour de Carson also had an opportunity to place dots on a map of proposed bikeways to indicate the projects they thought should take priority. Appendix A shows a full summary of the dot exercise results.

Roadway Treatments Dot Exercise

The second feedback exercise simply asked attendees if they supported the use of road diets and narrow travel lanes to implement bikeways. The consultant team explained that the City would only use road diets where they would be expected to have negligible traffic impacts, and that the use of ten foot lanes would be avoided in areas with heavy truck traffic. The poster board cited some examples of proposed bikeways in the draft network that depend upon the use of these treatments. Attendees were given two dots, one to use for the question regarding road diets, and another to use for the question regarding travel lane width. They placed the dot in a "Yes" column or a "No" column. All of the Workshop 2 attendees supported the use of road diets and narrower travel lanes to implement bikeways.

These dot exercises were also available as an online survey posted immediately after Workshop 2. Participants in the Tour de Carson also had the opportunity to place dots on boards identical to the ones used in Workshop 2. A full summary of the results is in Appendix A.

WORKSHOP 3

The third workshop took place on Thursday, May 16. The goal of this workshop was to present the full draft of the Master Plan of Bikeways. The consultant team gave an overview of the contents of the Plan. Attendees were invited to ask questions and offer comments after the presentation. The questions and comments focused on the proposed bikeways and the process. Attendees seemed pleased at the plan and progress.

INTERACTIVE MAP

At the beginning of the public process, Carson stakeholders were invited to share their feedback and knowledge in an online interactive map. This was hosted at www.communitywalk.com/bike-carson. Stakeholders could mark where bikeways are needed, difficult intersections, and where bike parking is needed.

Appendix A includes a screenshot of the final map. Stakeholders indicated their desire for bikeways on most of the major streets in Carson, including Del Amo Blvd., Avalon Blvd., Carson St., and many others. Difficult intersections included Del Amo Blvd. and Santa Fe Ave., 213th St. and Dominguez Channel, and Carson St. and Main St. Locations where stakeholders would like to see bicycle parking included the Community Center at Carson St. and Avalon Blvd, and in front of the businesses at Carson St. and Main St.

EVENTS

Several large bicycling events offered an opportunity to give input into the Plan. These were the Red Ribbon Week Unity Bike Ride on October 20, 2012, the TriCarson event on November 4, 2012, and the Tour de Carson on April 13, 2013.

BIKE PARKING INPUT

The Unity Bike Ride took place on October 20, 2012 at the beginning of Red Ribbon Week, a celebration of an anti-drug message with Carson's youth. TriCarson is a triathlon that takes place in the City of Carson and has been held since 2011. Since these events took place early in the process of develop-

TABLE 2.1 *Locations where TriCarson and Unity Bike Ride participants indicated they would like to see bike parking and end of trip amenities.*

LOCATION	NUMBER OF REQUESTS			
	BIKE RACKS	BIKE CORRALS	LONG TERM PARKING	END OF TRIP AMENITIES
Anderson Park			1	
Avalon/University Drive Shopping Center		1		
Carson Park		2		
Del Amo Park		1	2	2
Dolphin Park	1			
Dominguez Park		3		
Hemingway Park	1			
Stevenson Park	1			
Veterans Park		1	2	1
Victoria Park				1
Carson High School	1	2		1
Curtis Middle School	1		2	
CSUDH	2	5	2	3
White Middle School	1			
Carson/Avalon	1			
Carson/Wilminton	1	1		
Del Amo/Avalon		1		
Figueroa/223rd	1		1	1
Main/Carson	2			
University/Wilmington Ave	1			
Bonita/Dominguez Shopping Center	1			
Home Depot Shopping Center/ Sepulveda/Main	3			
South Bay Pavilion*	2	3	2	2
Carson Circuit Bus Stop Locations	2			
Community Center	1	1		1

Bicyclists offer feedback in the Master Plan Booth at the Tour de Carson.

ing this Plan, staff attended to introduce the effort and seek feedback on where people would like to see bike parking. Participants could place colored stickers to indicate where they would like to see the following things: (1) bike racks, (2) bike corrals, (3) long term bike parking, (4) end of trip amenities. Table 2.1 shows the combined results from the two events.

TOUR DE CARSON

On April 13, 2013, the City of Carson hosted its third community event to present the draft Master Plan of Bikeways and solicit input from the community. The event took place at the Carson City Hall main parking lot (at the corner of Avalon Blvd. and Carson St.) from 9:00 a.m. to 1:00 p.m. The event was the first Tour de Carson Festival which included two community bike tours guided by members of the Los Angeles County Bicycle Coalition (LACBC), educational bicycle safety and maintenance sessions, a community organization fair, and opportunities to view and comment on the City's Draft Comprehensive Master Plan of Bikeways. Approximately 200 people attended the event and approximately 60 people participated in the bike rides. The following is a summary of the event and the community input received.

Master Plan Booth

Community members had the opportunity to view and comment on the City's Draft Comprehensive Master Plan of Bikeways at the Master Plan Booth. At the booth, community members were invited to ask questions and provide comments. Two activity boards were presented. The first board provided a color map of the City of Carson and all proposed

bikeways. Participants were asked to place dot stickers on the bikeways that they would like to see constructed first in order to aid the City with implementation of the Master Plan of Bikeways. The second board provided descriptions and examples of "road diets" and "10-foot lanes". Participants were asked if they supported the use of these roadway treatments by placing a dot on the board in the appropriate box (yes or no). A list of the locations of proposed road diets and 10-foot lanes were provided under each example.

The results of these exercises are shown in Appendix A.

Comments

Participants were given the opportunity to comment on the Master Plan of Bikeways and what they would like to see in Carson. They offered the following comments (recorded verbatim):

- Lighted bike lanes would assist bikers on busy streets such as Avalon and Sepulveda to ensure drivers get used to lane changes
- Curb protected bike lanes
- How about placing those white line "bumps" to keep cars out of the bike lanes! So bikers won't get hit?

Participants in the Tour de Carson bike ride

- Carson street from I-110 to Wilmington Avenue with physical barriers
- Please install bike racks throughout the City to make it easier to ride bicycles around town.

Bike Tour

Community members were invited to participate in one of two bike rides; advanced and beginner/intermediate riders. Rides were led by the LACBC. The routes for the bike tours followed proposed bikeways from the Draft Master Plan of Bikeways. LACBC staff and volunteers pointed out the proposed bikeways along the rides.

SURVEY

The City and consultant team distributed a survey to learn about the bicycling community and environment in Carson. The survey was available online from July 9, 2012 to October 2, 2012. Paper copies of the survey were also available at City Hall during this period, and paper copies were distributed at the first community workshop.

This section summarizes the survey responses. The findings are organized into four subsections: (1) information about the survey respondents, (2) reasons for bicycling in Carson, (3) barriers to bicycling in Carson, and (4) suggestions for bikeways and bicycle parking locations.

RESPONDENTS

102 people responded to the survey. The respondents were demographically diverse.

Gender

As Figure 2.1 shows, nearly two-thirds of the respondents were male.

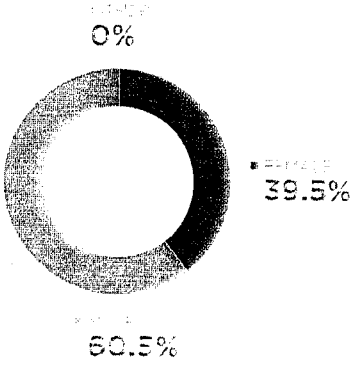


FIGURE 2.1 *Distribution of respondents' genders.*

Age

Table 2.2 reveals that respondents' ages ranged from 13 to 78, with a median and mean age of about 38.

TABLE 2.2 *Distribution of respondents' ages*

ITEM	VALUE
Minimum	13
Maximum	78
Median	37.5
Mean	38.4

How Did You Hear About the Survey?

Figure 2.2 displays how respondents heard about the survey. 63% of respondents heard about it over the internet and 23% via email. The vast majority of the survey responses were received on the internet.

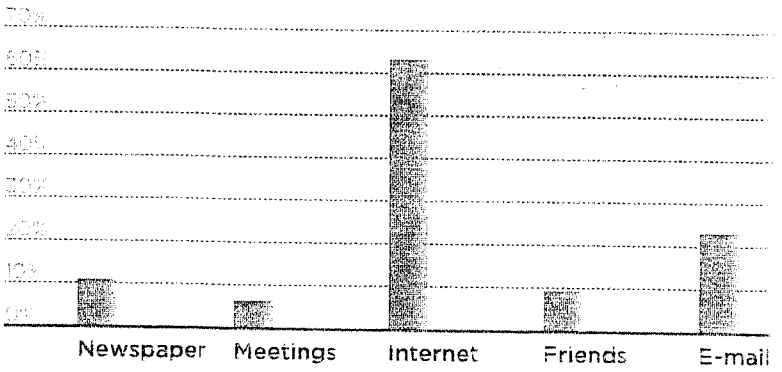


FIGURE 2.2 *How respondents heard about the survey*

Zip Code

The survey requested respondents' zip code to get a sense of where they live. All of the top responses were either in or near the City of Carson. As Table 2.3 shows, the majority of respondents lived in zip code 90745. The boundaries that define this zip code are nearly identical to the City of Carson's boundaries south of the I-405. The next most frequent zip code was 90746, which is also coterminous with the City, and north of the I-405. The third most frequent zip code, 90810, contains portions of the City of Carson between Wilmington Ave. and

Alameda Ave., and also contains portions of unincorporated Los Angeles County and the City of Long Beach. There were no respondents from the fourth zip code in Carson, 90248, which covers the northwest portion of the City.

TABLE 2.3 *Respondents' zip codes*

ZIP CODE	FREQUENCY
90745 (Carson)	44
90746 (Carson)	11
90810 (Carson and Long Beach)	4
90503 (Torrance)	3
90502 (Torrance)	2
90803 (Long Beach)	2
90808 (Long Beach)	2
90026 (Los Angeles—Echo Park)	1
90065 (Los Angeles—Atwater Village)	1
90066 (Los Angeles—Mar Vista)	1
90247 (Gardena)	1
90250 (Hawthorne)	1
90260 (Lawndale)	1
90277 (Redondo Beach)	1
90278 (Redondo Beach)	1
90501 (Torrance)	1
90802 (Long Beach)	1
90804 (Long Beach)	1
90805 (Long Beach)	1
90815 (Long Beach)	1
91105 (Pasadena)	1

As the table shows, all of the top zip codes were either completely in Carson or the areas adjacent to Carson. With 55 respondents coming from 90745 and 90746, we can be confident that the majority of survey respondents were Carson residents.

BICYCLING BEHAVIOR

The survey aimed to understand bicyclists' general level of skill and confidence as well as the purpose of their bicycle trips.

Bicyclist Type

In a now-famous 2006 survey, Roger Geller asked Portland residents about their attitudes toward bicycling, and to self-identify in one of four categories, shown below. The percentage of people in each category found by Geller and later in a similar survey by Dill is shown in parentheses.

1. Strong and Fearless (1%, 4%)
2. Enthused and Confident (7%, 9%)
3. Interested but Concerned (60%, 56%)
4. No Way No How (33%, 31%)

Geller found that a significant proportion of the population was interested in cycling, but concerned about traffic danger. To attract these people to ride bicycles, he argued, cities need to provide bicycle infrastructure that feels safe and comfortable.

These categories have stood the test of time and have been borne out by recent research. The desire to accommodate the "interested but concerned" group is at the heart of this Plan. Table 2.4 shows the distribution of respondents along Geller's scale.

TABLE 2.4 *Percentage and number of respondents in each category of Roger Geller's bicyclist type scale.*

OPTIONS	PERCENT	NUMBER
Strong and fearless	13.1%	13
Enthused and confident	53.5%	53
Interested but concerned	32.3%	32
No way no how	1.0%	1

As Table 2.4 shows, the distribution of survey respondents overrepresents the more confident and experienced cyclists relative to the distribution one would expect to find in the general population. There are many more strong and fearless cyclists among the respondents than there would be in a typical sample of the population, and there are far fewer "no way no how" cyclists than would be expected.

Trip Purpose

Figure 2.3 displays the purposes of bicyclists' trips in Carson. Please note that since respondents could check more than one answer, the sum of the percentages in Figure 2.3 exceeds 100%. The majority of respondents checked multiple trip purposes. The most common trip purpose was for exercise. Nearly every respondent (85%) listed this as one of their trip purposes. Just over a third of respondents ride to run errands, and about a third ride to commute to work, go to a recreational facility, or visit friends.

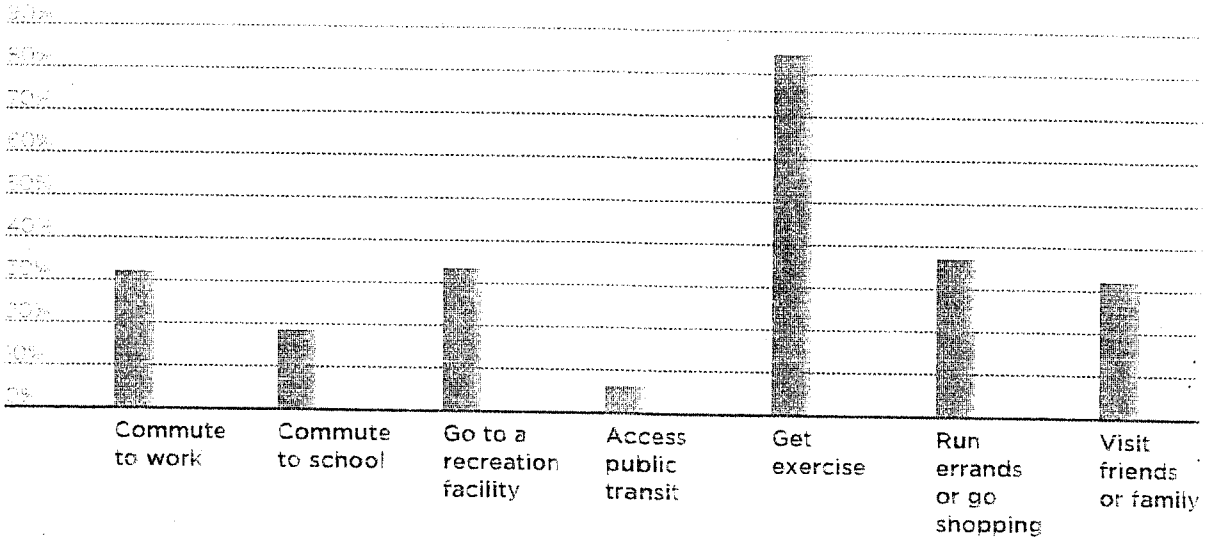


FIGURE 2.3 *Respondents' trip purposes when they bicycle*

BARRIERS TO BICYCLING

The survey also explored some of the barriers to bicycling in Carson.

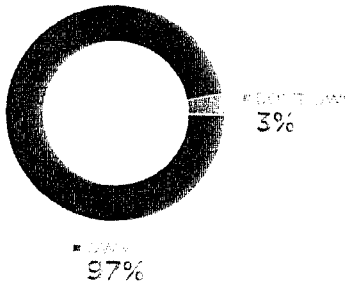


FIGURE 2.4 *Percentage of respondents who own a bicycle*

Bicycle Ownership

Figure 2.4 shows that although the vast majority of respondents owned a bicycle, even among this group there were some who did not own a bicycle. The proportion of people who own bicycles among the general population in Carson is probably lower than the 97% observed proportion among respondents.

Specific Barriers

Figure 2.5 indicates some of the specific barriers to bicycling in Carson. By far the most common barrier is a lack of safe streets to ride on. The vast majority of respondents (92%) stated that this was a barrier. The next most common barrier was a lack of bicycle parking; nearly half of all respondents (53%) said this was a barrier to bicycling. Respondents who marked 'Other' stated a free response describing the barrier. Most of the free responses concerned the lack of bikeways in the City.

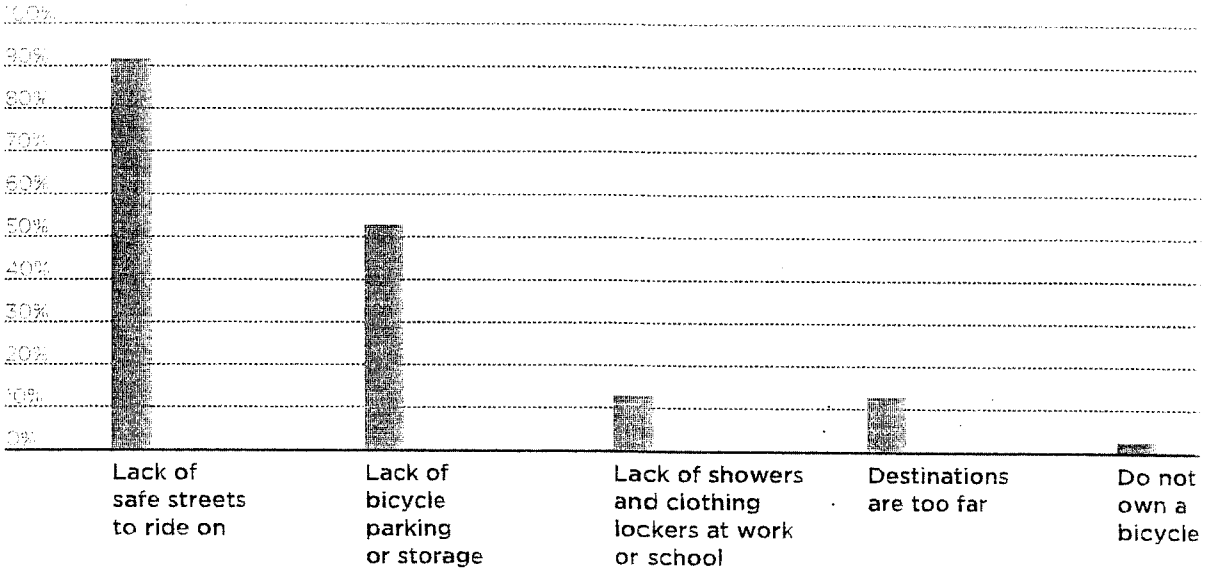


FIGURE 2.5 *Specific barriers to bicycling in Carson*

SUGGESTIONS FOR BIKEWAYS AND BICYCLE PARKING

The survey asked respondents to list up to three locations where they would like to see new or improved bikeways. It also asked for up to three locations where they would like to see new or improved bicycle parking. Because these questions allowed for free responses, people could write in a variety of types of locations, including streets (e.g. "Del Amo Blvd."), types of destinations (e.g. "retail areas"), or specific locations (e.g. "Cal State Dominguez Hills"). Figures 2.6 and 2.7 display the words respondents entered. The larger a word is, the more frequently it appeared in the responses.

FIGURE 2.6 *Where respondents would like to see bikeways.*

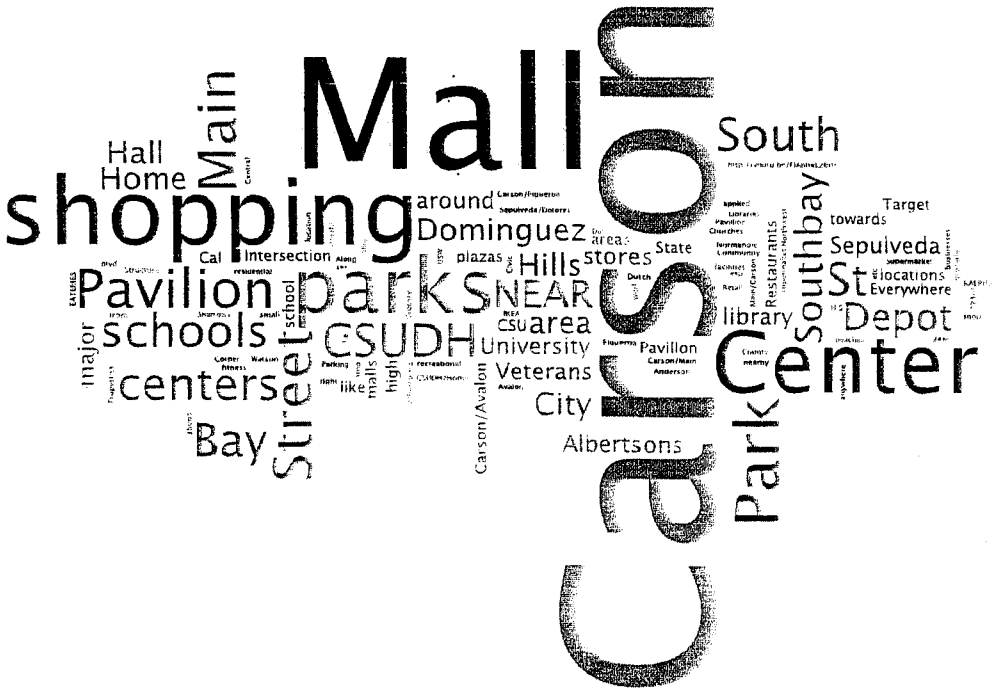


FIGURE 2.7 *Where respondents would like to see bicycle parking.*

ONLINE BIKEWAY PRIORITIES AND ROADWAY PREFERENCES SURVEY

After Workshop 2 and the release of the draft bikeway network, the City and consultant team released a brief survey to solicit the public's priorities among the draft bikeways. The survey was available online from February 19, 2012 April 13, 2013. There were 22 responses to the survey.

The survey replicated the dot exercises that were conducted in Workshop 2. First, it asked respondents to select the three projects they considered to be of highest priority, and the three projects they considered to be second highest priority. The projects receiving the most selections were:

- Carson Street (10 highest priority, 4 second-highest)
- Avalon Boulevard—South of Del Amo Boulevard (8 highest priority, 1 second-highest)
- University Drive (7 highest priority, 2 second-highest)

The survey also asked respondents if they supported the use of road diets and ten foot lanes. Eighteen responded that they do support road diets and two responded that they do not support road diets. Nineteen responded that they do support the use of 10-foot travel lanes and 1 responded that he or she does not.

Full survey results are shown in Appendix A.

CHAPTER 3

PLANNING CONTEXT

OVERVIEW

The Carson Master Plan of Bikeways must be consistent with multiple planning, policy, and regulatory documents. These include the City's own documents, such as the General Plan and Municipal Code. Carson must also design a bike network that transitions seamlessly with bikeways in other jurisdictions. Therefore, the planning context also includes bicycle master plans of neighboring jurisdictions. The following summarizes the relevant documents.

CITY OF CARSON GENERAL PLAN

The City's General Plan (adopted October 11, 2004) is a 30-year guide for local government decision-making on growth, capital investment, and physical development in the Carson. It guides future development plans and gives direction on how to bring the desired vision to fruition. The two chapters, or Elements, of the General Plan that most influence bikeway planning are the Land Use Element and the Circulation Element.

LAND USE ELEMENT

The General Plan Land Use Element establishes the development policies and Land Use Plan for the ultimate build-out of the City (see Figure 3.1). In general, most of the new mixed-use and regional commercial growth is planned to occur along Carson Street between Figueroa Street and I-405 over the next 20 years. Additionally, The Boulevards at South Bay Specific Plan is proposing a 168-acre mixed-use development located just southeast of I-405 freeway between Main Street and Avalon Boulevard. Section 5.0 of the Land Use Element identifies goals, policies, and implementation measures with the following being most applicable to the Bicycle Master Plan currently under preparation:

- **Goal LU-15:** As part of a nationwide effort to address urban sprawl, neighborhood safety, pedestrian access and environmental protection, the South Bay Cities Council of Governments, of which the City of Carson is a part, has developed a program which identifies planning concepts to be used creating Livable Communities
  - » **Policy & Implementation Measure LU-15.3:**

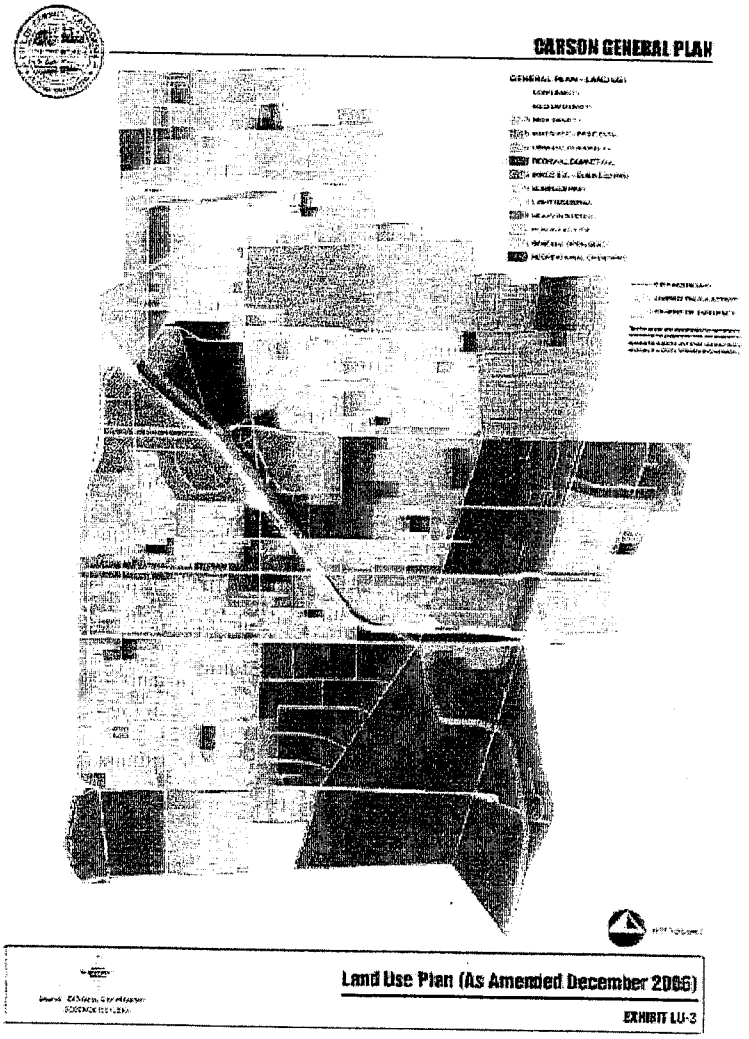


FIGURE 3.1 *City of Carson land use plan.*

- Policy - Ensure that community transportation facilities are connected to a larger transit network
- Implementation Measure - Continue to work with the appropriate regional agencies to develop the regional transportation network

- **Policy & Implementation Measure LU-15.8:**
  - Policy - Ensure that street orientation, placement of buildings and the use of shading in existing and new developments contribute to the energy efficiency of the community
  - Implementation Measure - Require streets design to include: promotion of pedestrian and bicycle use, creation of attractive and pedestri-

an friendly areas through the implementation of traffic calming techniques, human scale design of buildings, use of trees, landscaping and lighting, reduction of road widths, the use of diagonal parking, and similar measures. Encourage materials and methods of construction, which are specific to the region and show compatibility with the climate

CIRCULATION ELEMENT

The General Plan Circulation Element sets policies for development of the City's transportation system. The Circulation Element addresses multiple modes of travel in and around Carson, including automobile, transit, pedestrian, and bicycle. The Circulation Element defines roadway classifications and four uniform street cross-sections. Included in the cross-sections are standards for pedestrian and bicycle facilities. The four cross-sections provided in the General Plan Circulation Element include the following:

- Major Highway: Requires a minimum 100-feet wide right-of-way and 84-feet wide curb-to-curb width
- Secondary Highway: Requires a minimum 80-feet wide right-of-way and 64-feet wide curb-to-curb width
- Collector Highway: Requires a minimum 64-feet wide right-of-way and 40-feet wide curb-to-curb width
- Local Street: Right-of-Way varies between 48-feet to 60-feet wide and curb-to-curb width varies between 36-feet to 40-feet wide depending on the abutting land use

Bike lanes can be engineered to fit into the Major Highway and Secondary Highway cross-sections. The other cross-sections may be designated as bike routes.

Figure 3.2 identifies daily traffic volumes from 2001. The City of Carson provided more recent daily traffic volumes collected between 2009 and 2012, which were used for planning purposes in the Master Plan of Bikeways.

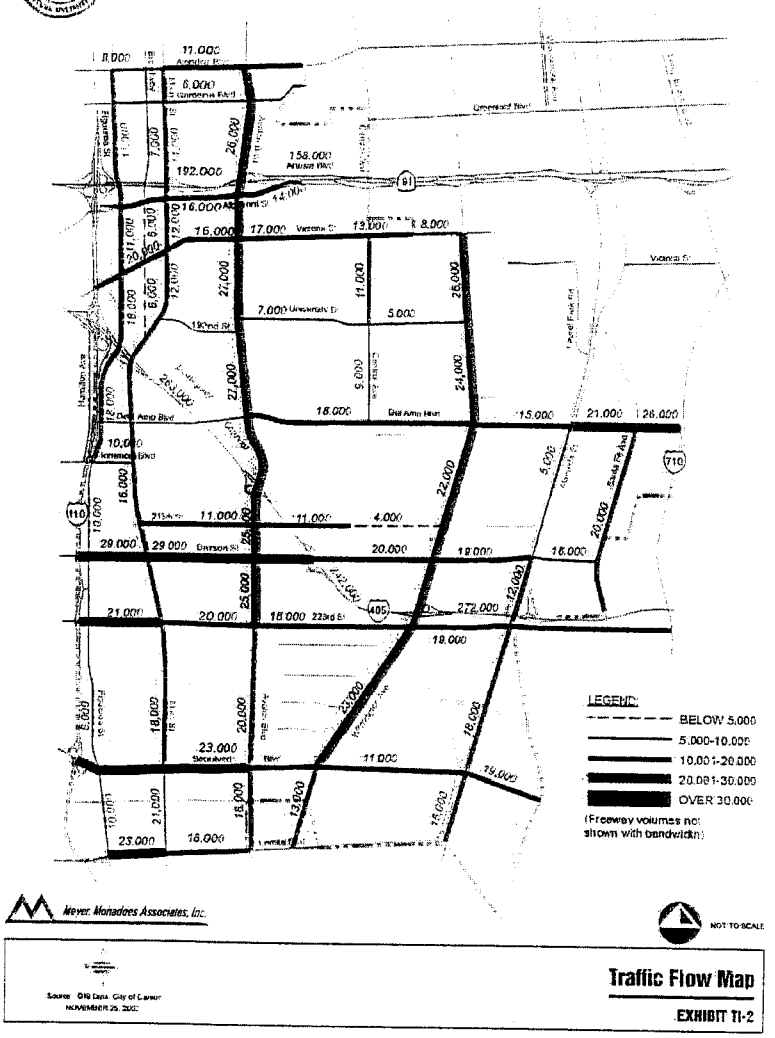


FIGURE 3.2 *City of Carson 2000 traffic volumes*

Figure 3.3 lists existing and proposed bikeways as envisioned in Carson's General Plan. This figure, along with other previous planning efforts, provides a starting point for evaluating future bikeway improvements.

The General Plan Circulation Element identifies the following existing and proposed bikeways. Existing bikeways are noted in parenthesis, and bikeways included in this Master Plan of Bikeways are noted with an asterisk (*).

- Bike paths
  - Los Angeles Department of Water and Power right-of-way between Sepulveda Boulevard and Carson

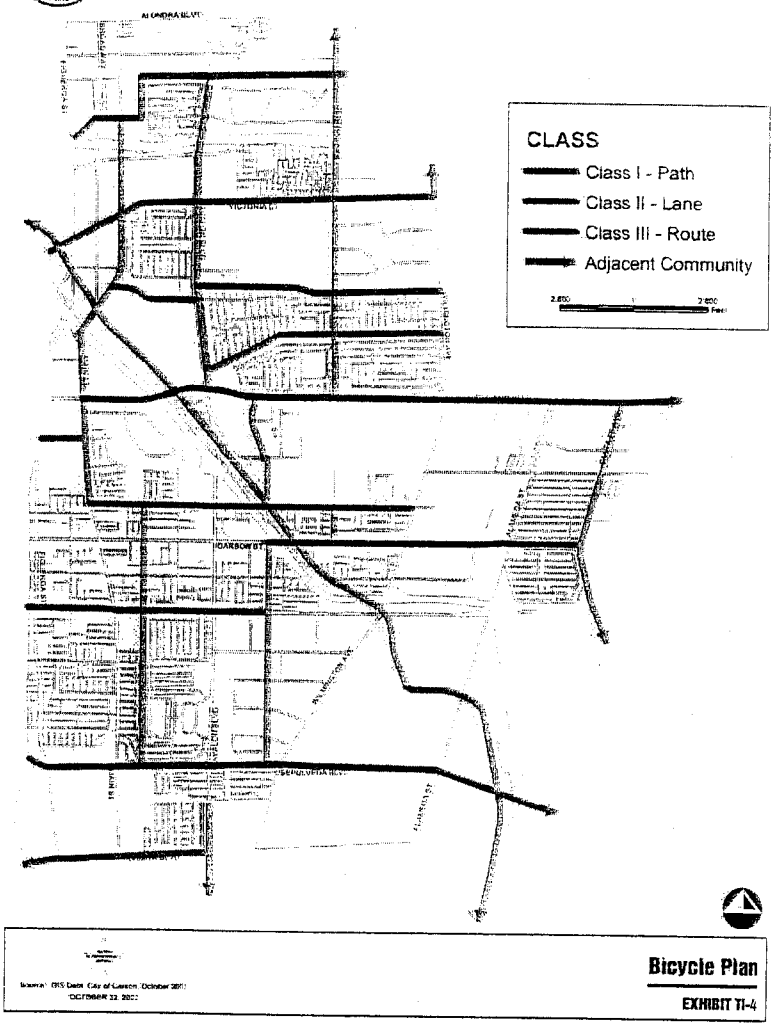


FIGURE 3.3 *Carson General Plan bicycle plan.*

Street*

» Central Avenue between University Drive and 169th Street (existing University to Radbard Street)*

» 169th Street between Billings Drive and Central Avenue

» Walnut Street between Figueroa Street and Main Street

» Dominguez Channel*

- Bike lanes

» Avalon Boulevard between Del Amo Boulevard and 169th Street*

» Central Avenue between Del Amo Boulevard and

University Drive (existing)*

- Santa Fe Avenue between Del Amo Boulevard and I-405*
- Del Amo Boulevard between Figueroa Street and Santa Fe Avenue (existing between Wilmington and Avalon)*
- Carson Street between Bonita Street and Alameda Street*
- Chico Street between 213th Street and Del Amo Boulevard (existing)*
- University Drive between Avalon Boulevard and Wilmington (existing)*
- Sepulveda Boulevard between Figueroa Street and the east City boundary*
- 192nd Street between Avalon Boulevard and Main Street*

- Bike routes
  - Main Street between 213th Street and Walnut Street (included as bike lane in Master Plan of Bikeways)*
  - Dolores Street between Sepulveda Boulevard and 213th Street (existing between Sepulveda Boulevard and Carson Street)*
  - Victoria Street between Figueroa Street and Wilmington Avenue (included as bike lane and cycletrack in Master Plan of Bikeways)*
  - Turmont Street between Avalon Boulevard and Wilmington Avenue (existing)*
  - 213th Street between Main Street and Wilmington Avenue (included partially as bike lane in Master Plan of Bikeways)*
  - Carson Street between Alameda Street and Santa Fe Avenue (included partially as bike lane in Master Plan of Bikeways)*
  - 223rd Street between Figueroa Street and Bonita Street (included as bike lane in Master Plan of Bikeways)*
  - Torrance Boulevard between Main Street and the west City boundary
  - Vera Street between Carson Boulevard and 213th Street (included as bike lane in Master Plan of Bikeways)*

3-7

CITY OF CARSON MUNICIPAL CODE

The City of Carson Municipal Code states that non-residential development of 25,000 square feet or more shall provide the following:

- Current maps, routes, and schedules for public transit routes serving the site
- Telephone numbers for referrals on transportation information including numbers for the regional ridesharing agency and local transit operators
- Ridesharing promotional material supplied by commuter-oriented organizations
- Bicycle route and facility information, including regional/local bicycle maps and bicycle safety information
- A listing of facilities available for carpoolers, vanpoolers, bicyclists, transit riders and pedestrians at the site

Additionally, bicycle racks or other secure bicycle parking shall be provided to accommodate four (4) bicycles for the first 50,000 square feet of non-residential development and one (1) bicycle rack for each additional 50,000 square feet of non-residential development.

CITY OF CARSON BICYCLE MASTER PLAN, 1979

The City of Carson Bicycle Master Plan was adopted in 1979. The plan stems from the following sources:

- A survey completed by over 1,000 Carson residents
- Collision data
- Traffic counts
- City staff input

The 1979 Bike Plan recommended the following bikeways:

- Bike paths
  - » Greenleaf Boulevard from West City Limits to East City Limits
  - » Dominguez Channel from West City Limits to 223rd Street
  - » Central Avenue from 190th Street to Greenleaf Corridor
  - » Department of Water and Power Right of Way from Sepulveda Boulevard to Carson Street

- » Alameda Street from Sepulveda Boulevard to Del Amo Boulevard

- Bike lanes
  - » Del Amo Boulevard from eastern City Limits to Avalon Boulevard
  - » Avalon Boulevard from Greenleaf (extension) to Del Amo Boulevard
  - » Central Avenue form Del Amo Boulevard to 190th Street
  - » 190th Street from Avalon Boulevard to Central Avenue
  - » Santa Fe Avenue form Carson Street to Del Amo Boulevard
  - » Carson Street from Avalon Boulevard to Santa Fe Avenue
- Bike routes
  - » Sepulveda Boulevard from Harbor Freeway to Wilmington Avenue
  - » Dolores Street from Sepulveda Boulevard to Carson Street
  - » 223rd Street from Figueroa Street to Department of Water and Power Right of Way
  - » 213th Street from Main Street to Wilmington Avenue
  - » Turmont Street from Avalon Boulevard to Central Avenue
  - » Main Street form Victoria to Greenleaf
  - » Victoria from Dominguez Channel to Wilmington Avenue
  - » Chico Street from 213th Street to Dominguez Street
  - » Leapwood Avenue from Dominguez Street to Del Amo Boulevard

CITY OF CARSON PEDESTRIAN & BICYCLE SAFETY STUDY, 1978

The Pedestrian & Bicycle Safety Study utilized Statewide Integration Traffic Records System (SWITRS) collision reports for the period of 1974 to 1976. Results indicated that bicycle collisions occurred slightly less than pedestrian collisions. Within the three-year period, 95% of bicycle accidents reported in Carson resulted in injury, and one fatality occurred. The primary bicycle collision factor was violation of right-of-way followed by violation of stop sign or signal. Bicyclists were reported to

be at fault in about 70% of the cases. Residential and commercial areas were both significant locations of bicycle collisions, which suggested bicycles were being used as a means of transportation to commercial areas. Of all the reported bicycle related collisions, 67% involved cyclists less than 15 years of age. The safety study recommended more safety education should be concentrated at elementary schools. Chapter 7 of the Master Plan of Bikeways provides education and safety programs that the City of Carson can administer.

SPECIFIC PLANS

Specific plans pertain to special areas or projects within a city. A specific plan provides both policy guidance and regulations for its coverage area. Within each specific plan, circulation is addressed. Many times, trails or bikeways are included as part of a specific plan approval. As the specific plan area is developed, proposed trails and bikeways will be constructed as well. There are seven specific plans areas within Carson:

- Arbors at Avalon
- Dominguez Technology Center Specific Plan – Phase 1
- Dominguez Technology Center Specific Plan – Phase 2 (notes bike lanes on University Drive)
- Carson Town Center Specific Plan (notes that Torrance Boulevard has proposed bike lanes; recommends bicycle parking be provided by individual site developers)
- Dominguez Hills Village Specific Plan (notes bike path and lanes on Central Avenue)
- Monterey Pines Specific Plan
- Villages of Bright and Strathmore Specific Plan
- The Boulevards at Southbay Specific Plan (includes proposed bike lanes and paths within the development)

BICYCLE PLANS OF NEIGHBORING COMMUNITIES

Existing and planned bikeways in the cities and County adjacent to Carson were considered in the development of the Master Plan of Bikeways. Future bikeways in Carson will be designed to align with those of surrounding jurisdictions so cyclists can seamlessly transverse the region.

Existing and planned bikeways within neighboring municipalities offer a good starting point for providing candidate bicycle facilities within the City of Carson.

METRO BICYCLE TRANSPORTATION STRATEGIC PLAN

In 2006, the Los Angeles County Metropolitan Transportation Authority (Metro) commissioned a Bicycle Transportation Strategic Plan. This plan designated bike-transit hubs and identified gaps in the regional bikeway network throughout Los Angeles County.

According to the Plan, bike transit hubs are "locations where a combination of elements—numerous transit and/or rail service lines, activity, and surrounding demographics—make them prime candidates to improve bicycle access. The goal is to allocate bikeway resources to areas that will improve both bicycle and transit ridership in the form of linked trips." The Plan identifies the following bike-transit hubs in the immediate vicinity of Carson:

- Cal State Dominguez Hills
- Del Amo Metro Blue Line Station (Los Angeles County)
- Artesia Transit Center (City of Los Angeles)
- Carson Station on Harbor Freeway transitway (Los Angeles County)

The Carson Master Plan of Bikeways proposes bicycle facilities that either connect directly to these bike-transit hubs or connect to bikeways in other jurisdictions that access the bike-transit hubs.

Around Carson, Metro's Bicycle Transportation Strategic Plan also identifies regional bikeway network gaps along Carson Street (west of Santa Fe Avenue in the City of Long Beach) and Compton Creek in the vicinity of the Del Amo Metro Blue Line Station. The Master Plan of Bikeways proposes bicycle facilities that connect with both of the Metro-identified regional bikeway gaps, should those corridors eventually receive bikeways as well.

LOS ANGELES COUNTY BICYCLE MASTER PLAN

Los Angeles County has jurisdiction over unincorporated areas to the north, east, and west of Carson. The County recently adopted its 2012 Bicycle Master Plan, which is a sub-element of the County's General Plan Transportation Element. This plan includes more than 800 miles of bikeways throughout Los Angeles County. In the vicinity of Carson, the County Bicycle Master Plan proposes bike paths along the Dominguez Channel and Compton Creek; bike lanes along Broadway, Avalon Boulevard, and Alondra Boulevard to the north of Carson; bike lanes along Rancho Way and Susana Road to the east of Carson; and bike lanes along Del Amo Boulevard, 223rd Street, and Lomita Boulevard to the west of Carson. All of the County's proposed bikeways that abut Carson will connect to proposed bikeways within the City of Carson.

LOS ANGELES COUNTY TRANSIT ORIENTED DISTRICTS STATION ACCESS STUDY

This study assesses bicycle and pedestrian access to nine Metro rail/bus stations in unincorporated Los Angeles County around which the County has established transit-oriented districts (TODs). The study recommends infrastructure enhancements that improve bicyclist/pedestrian safety on key routes to each of the transit stations. Of the stations in this study, only the Carson Station is proximate to the City of Carson. This station is a freeway bus stop located within the Interstate 110 right-of-way; the east half of the station is in the City of Carson and the west half is in unincorporated Los Angeles County.

The TOD Station Access Study recommends a number of proposed bikeways connecting the Carson Station area with the City of Carson. These include bike lanes on Del Amo Boulevard, Torrance Boulevard, Carson Street, and 223rd Street as well as bike routes on 214th and 228th Streets. Each of these bikeways connects to a proposed bikeway within the City of Carson.

SOUTH BAY BICYCLE MASTER PLAN

The South Bay Bicycle Master plan was prepared in 2011 to guide the development of a comprehensive bicycle network throughout the cities of El Segundo, Gardena, Hermosa Beach, Lawndale, Manhattan Beach, Redondo Beach, and Torrance. Existing and planned bikeways identified in the South Bay Bicycle Master Plan will be considered in the development of Carson's Master Plan of Bikeways. However, since none of the cities in the South Bay Bicycle Master Plan abut Carson, no direct connections will exist between South Bay Bicycle Master Plan bikeways and those in the City of Carson.

CITY OF LONG BEACH BICYCLE MASTER PLAN

The City of Long Beach, located east of Carson, is a regional leader in implementing innovative bikeways. The City's extensive network of bikeways includes cycletracks, bicycle boulevards, and the County's only type B sharrows. Long Beach has a Bicycle Master Plan that identifies bikeways, support facilities, and other programs for Long Beach through the year 2020. The City is currently updating the master plan to include new projects and new goals, such as:

- New proposed bike lanes, bike boulevards, and dedicated bike lanes
- Proposed bike facilities such as shower/changing stations and bike share locations at schools, parks, transit stations, and park and ride locations
- Ideas for proposed signage and bike racks

Long Beach has proposed bikeways adjacent to Carson on Susana Road, Del Amo Boulevard, Wardlow Road, and Compton Creek. All of these facilities connect to proposed bikeways within the City of Carson.

CITY OF LONG BEACH METRO BLUE LINE BICYCLE AND PEDESTRIAN ACCESS PLAN

In 2009, the City of Long Beach developed a bicycle and pedestrian access plan for all Metro Blue Line stations within and in the immediate vicinity of the city. The Plan focuses on the half-mile radius surrounding each station. It recommends infrastructure improvements to enhance the safety and accessibility of biking and walking to the stations. Of the stations included in the Plan, Del Amo is the only station proximate to Carson. For Del Amo Station, the Plan recommends:

- Bike lanes on Del Amo Boulevard east of Compton Creek
- A bike bridge across Compton Creek north of Del Amo Boulevard
- A continuation of the Compton Creek bike path southeast from Del Amo Boulevard to the Los Angeles River
- A bike bridge over the Los Angeles River connecting the Compton Creek bike path extension with the existing Los Angeles River bike path

Of these proposed projects, the bike lanes along Del Amo Boulevard in Long Beach will connect with a proposed bikeway on Del Amo Boulvevard in Carson. Further, a section of bike path along Compton Creek is also proposed in the Carson Master Plan of Bikeways.

CITY OF LOS ANGELES BICYCLE PLAN

A narrow section of the City of Los Angeles is located directly to the west of Carson. Additionally, the Wilmington neighborhood of Los Angeles is located south of Carson. Los Angeles adopted its Bicycle Plan in 2010, which designates a more than 1,600-mile bikeway system and introduces a comprehensive collection of bicycle programs and policies. Some of the key elements of the plan include a Citywide Bikeway System comprised of three bikeway networks, Bicycle Friendly Streets, the bundling of programs and policies into ten categories, and a multi-pronged implementation strategy. The plan includes

bicycle lane connections to Carson via Del Amo Boulevard, Lomita Boulevard, and Avalon Boulevard.

CITY OF COMPTON

The City of Compton is located northeast of Carson. Although Compton does not have an adopted plan for bikeways, existing bike lanes in the City of Compton along Central Avenue and Greenleaf Boulevard connect to proposed bike lanes in the City of Carson. Additionally, the City of Compton has bike lanes on Alondra Boulevard east of Central Avenue, which are close to, although not coterminous with, proposed bike lanes on Alondra Boulevard in Carson. The City of Compton should consider closing this gap to create a continuous inter-city bikeway.

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CHAPTER 4

GOALS, POLICIES, AND ACTIONS

OVERVIEW

This section describes the intentions and aspirations of this Plan. The consultant team and City staff developed this guiding framework through a collaborative process.

DEFINITIONS

GOALS

Goals are desired outcomes. They represent the ideal future the City intends to create. They are often general and abstract.

POLICIES

Policies are specific statements that guide decision-making. They follow from the goals, and they help to achieve the goals. They indicate a commitment to a particular course of action.

ACTIONS

Actions are particular programs, procedures, or techniques that carry out policies. Actions are listed as bullet points below each policy. Each action also identifies the parties who will conduct the action and the intended timeline over which the action will take place.

As feasible, some actions also include ways in which the city can measure the success of the action.

GOALS, POLICIES, AND ACTIONS

GOAL 1

Create a physical environment where people of all ages and physical abilities feel safe and comfortable bicycling throughout Carson for everyday purposes

Policy 1.1: Create a complete, citywide bikeway network in Carson

- Construct the bikeways proposed in this Master Plan of Bikeways over the next 20 years

GOALS AT A GLANCE

1. Create a physical environment where people of all ages and physical abilities feel safe and comfortable bicycling throughout Carson for everyday purposes
2. Make bicycling the most attractive transportation choice for short trips
3. Increase safety for all road users
4. Increase economic vitality by making Carson a more livable city

  - » Responsible parties: Public Works Department, Planning Division
  - » Timeline: Phase 1: 2013-2020, Phase 2: 2020-2026, Phase 3: 2026-2033
  - » How to measure: Miles of bikeways completed per year
- Conduct maintenance of pavement and markings on the bikeway and roadway system, and prioritize maintenance for bikeways
  - » Responsible parties: Public Works Department Engineering, Traffic, and Maintenance Divisions
  - » Timeline: Ongoing
- Add destination and wayfinding signage along bikeways; add signs and/or pavement markings labeling cross streets on bikeways, especially bike paths; and add signs directing cyclists to bikeways from streets without bikeways
  - » Responsible party: Public Works Department
  - » Timeline: To be installed as bikeways are implemented
- Update the Carson Master Plan of Bikeways every five years to remain eligible for Caltrans funding
  - » Responsible party: Planning Division
  - » Timeline: Every five years

Policy 1.2: Ensure that all Carson streets accommodate safe bicycling

- Ensure that bicyclists can activate traffic signals at all vehicle-activated intersections
  - » Responsible party: Public Works Department
  - » Timeline: Ongoing, as intersections are modified

Policy 1.3: Make bicycle parking available, secure, and convenient throughout Carson

- Create design standards for bicycle parking regarding the device type, spacing, and location
  - » Responsible parties: Public Works Department,, Planning Division, Community Services Department
  - » Timeline: 2013-2014
- Require bicycle parking in all new development; in commercial development, require showers and clothing lockers as well. Enable developers to reduce the amount

of required auto parking to allow for the placement of bicycle racks and lockers
  - » Responsible parties: Planning Division, Community Services Department
  - » Timeline: 2013-2015
- Add and maintain bicycle parking at parks, libraries, and other civic facilities as needed
  - » Responsible parties: Public Works Department, Landscape & Building Maintenance Division, Planning Division
  - » Timeline: Ongoing
  - » How to measure: Number of racks installed per year
- Add and maintain bicycle parking in the public right-of-way to serve existing uses
  - » Responsible parties: Public Works Department, Community Development Department, Planning Division
  - » Timeline: Ongoing
  - » How to measure: Number of racks installed per year
- Create program for businesses to request bicycle parking in front of their business, which the City would install, at no cost to the business, in the public right-of-way
  - » Responsible parties: Public Works Department, Planning Division
  - » Timeline: Ongoing
  - » How to measure: Number of racks requested and number installed per year
- Work with Compton Unified and Los Angeles Unified School Districts to provide adequate bicycle parking at Carson schools
  - » Responsible parties: Public Works Department, Community Development Department, Planning Division, school districts
  - » Timeline: Ongoing
  - » How to measure: Number of racks installed per year
- Work with Metro to provide and maintain bicycle lockers, racks, and other parking options at major transit stops
  - » Responsible parties: Transportation Services Division, Metro
  - » Timeline: Ongoing

- Enact a "bikes in buildings" ordinance requiring owners of commercial office buildings to provide secure bicycle storage for employees and/or allow tenants to bring bicycles into the building
  - » Responsible parties: Planning Division, Buildings & Safety
  - » Timeline: 2016-2018
- Inventory existing publicly owned bicycle parking, conduct periodic surveys to determine where bicycle parking is needed, create a database of bicycle parking locations, and update database as new parking is added
  - » Responsible parties: Public Works Department, GIS, Planning Division
  - » Timeline: Inventory existing parking and build database: 2013; other actions: ongoing

Policy 1.4: Conduct regular monitoring of bicycle activity

- Conduct recurring manual bicycle and pedestrian counts, integrate bicycle counts into routine traffic studies, and consider purchasing automated bicycle counting infrastructure; use these data to inform planning and transportation decisions
  - » Responsible parties: Planning Division, Public Works Department
  - » Timeline: Ongoing, with manual bicycle counts occurring annually

GOAL 2

Make bicycling the most attractive transportation choice for short trips

Policy 2.1 Create safe bicycling routes to all schools in the City of Carson

- Collaborate with Compton Unified and Los Angeles Unified School Districts to create and implement Safe Routes to School (SRTS) plans that include all "5 Es"—education, engineering, evaluation, enforcement, and encouragement—for each school in the city

- » Responsible parties: Planning Division and Community Services Department will convene a citywide coalition of SRTS stakeholders and form coalitions at each Carson school
- » Timeline: 2013-2018

- Apply for SRTS funding for both infrastructure improvements and non-infrastructure programs
  - » Responsible parties: Public Works Department, Planning Division
  - » Timeline: The City will aim to submit at least one application each funding cycle for the next 10 years
  - » How to measure: Grant dollars obtained per year

Policy 2.2: Ensure that new development accommodates and encourages bicycling

- Promote land use decisions that support bicycle-, pedestrian-, and transit-oriented development (see Policy 4.2); require bicycle parking in new developments (see Policy 1.3, bullet 2)
  - » Responsible party: Planning Division
  - » Timeline: 2013-2018
- Enforce California's Parking Cash-Out law
  - » Responsible party: Planning Division
  - » Timeline: Ongoing
  - » How to measure: Number of businesses at which employees take advantage of the law

Policy 2.3: Encourage bicycling through promotions, fun, and incentives

- Provide a dedicated space on the City website for information about bicycling
  - » Responsible parties: Public Information Office, Community Services Department
  - » Timeline: 2013-2015
- Carry out promotional efforts to encourage bicycling
  - » Responsible parties: Public Information Office, Community Services Department
  - » Timeline: Ongoing
- Initiate and support group bicycle rides, bike-to-work days, biking school buses, educational events, and other activities to encourage more people to ride bicycles in Carson

  - » Responsible parties: Community Services Department, Public Information Office, Transportation Division
  - » Timeline: Ongoing
- Assist employers with promotional campaigns to encourage walking and bicycle commuting
  - » Responsible parties: Community Services Department, Public Information Office, Transportation Division
  - » Timeline: Ongoing
- Work with outside organizations and agencies to provide free helmets and lights to students and low-income cyclists
  - » Responsible parties: Community Services Department, Los Angeles County Bicycle Coalition, City of Lights
  - » Timeline: 2013-2018
- Publish a citywide bikeways map that includes safe bicycling tips
  - » Responsible parties: Public Information Office, Planning Division, GIS, Community Services Department, and/or consultant
  - » Timeline: 2013-2018

GOAL 3

Increase safety for all road users

Policy 3.1: Educate all road users

- Educate bicyclists, pedestrians, and motorists about safe use of the streets
  - » Responsible parties: Public Information Office, Community Services Department, Los Angeles County Sheriff's Department
  - » Timeline: Ongoing
- Educate Los Angeles County Sheriffs about bicyclists' rights, pedestrian rights, and the crash report procedures desired by the City
  - » Responsible parties: Public Works Department, Public Safety Division

» Timeline: 2013-2018

- Provide bicycle safety education in schools, at worksites, in parks, and in other public venues
  - » Responsible parties: Public Information Office, Community Services Department, Los Angeles County Sheriff's Department
  - » Timeline: Ongoing

Policy 3.2: Systematically reduce crash risk on City streets through design and enforcement

- Implement traffic calming projects to reduce average vehicle speeds to safe levels
  - » Responsible parties: Public Works Engineering and Maintenance Divisions, Planning Division
  - » Timeline: Ongoing
  - » How to measure: Pre- and post-implementation speed surveys; number of traffic calming project completed
- Enforce traffic laws as applicable to bicyclists, pedestrians, and motorists, focusing enforcement resources on behaviors that endanger vulnerable users, such as speeding, unsafe passing, harassment, and hit-and-runs
  - » Responsible party: Los Angeles County Sheriff's Department
  - » Timeline: Ongoing
  - » How to measure: Number of hit-and-runs per year, number of bicycle- and pedestrian-involved crashes per year
- Measure and report on bicycle-involved crash rates and crash factors
  - » Responsible parties: Public Works Department, Los Angeles County Sheriff's Department
  - » Timeline: Ongoing, with annual reports

GOAL 4

Increase economic vitality by making Carson a more livable city

Policy 4.1: Attract customers by creating inviting public places centered around bicycling and walking

- Develop streetscape standards that promote bicycling and walking
  - » Responsible parties: Planning Division, Public Works Department
  - » Timeline: 2013-2018
- Require that public spaces associated with new developments, such as plazas and parking lots, seamlessly interconnect with the City's bikeways and sidewalks, rather than create barriers
  - » Responsible party: Planning Division
  - » Timeline: Ongoing
- Review and adopt relevant sections of the Model Design Manual for Living Streets
  - » Responsible party: Planning Division
  - » Timeline: 2013-2018

Policy 4.2: Encourage new businesses to locate in Carson by promoting walkable and bikeable development

- Develop specific plans that cultivate bicycle-, pedestrian-, and transit-oriented developments with compact, mixed-use form
  - » Responsible parties: Community Development Department, Planning Division
  - » Timeline: 2013-2018
- Encourage large new developments and redevelopments to be designed with small blocks that have interconnected street networks—both internally and with adjacent development—and direct, convenient bicycling and walking linkages between residences and businesses
  - » Responsible party: Planning Division
  - » Timeline: Ongoing

Policy 4.3: Develop an institutional culture in City government that treats streets as public spaces

- Share livable streets resources and best practices between various branches of Carson city staff
  - » Responsible parties: All government divisions in-

volved with street management and transportation
  - » Timeline: Ongoing
- Increase collaboration among city bureaus when planning, designing, or otherwise modifying city streets
  - » Responsible parties: All government divisions involved with street management and transportation
  - » Timeline: Ongoing
- Consider integrating responsibilities for land use and transportation planning/decision-making into a combined planning and transportation bureau
  - » Responsible parties: Public Works Department, Planning Division
  - » Timeline: As determined by City

CHAPTER 5 EXISTING CONDITIONS

OVERVIEW

The City of Carson is well poised to expand bicycle transportation in the city. Carson already has a handful of existing bikeways and bicycle parking at key civic destinations. These investments provide a foundation upon which the City can build a high quality, citywide bicycle transportation system—one that is safe and appealing for everyday use. The following details existing bicycling conditions in Carson.

EXISTING BIKEWAYS

This section describes the types of bikeways currently used in Carson and the City's existing bikeway network. "Bikeway" and "bicycle facility" are catchall terms that describe any and all types of bicycle infrastructure. Carson's existing bikeway network includes Class I, II, and III facilities:

- Class I paths are corridors for the exclusive use of bicyclists, pedestrians, and other non-motorized travel modes. Class I paths in Carson take the following forms:
  - » Off-street rights-of-way paralleling waterways
  - » Roadway-adjacent sidepaths parallel to streets
- Class II bike lanes are on-street lanes reserved for the exclusive use of bicyclists
- Class III bike routes are preferred travel routes for bicyclists on which a separate lane or path is either not feasible or not desirable. Bicyclists and cars share lanes on bike routes (typically the rightmost lane). "Bike Route" signs are the only markings that identity bike routes

Carson has a limited existing bikeway network, which stems largely from the City's 1979 Bicycle Master Plan. Carson has about 10.5 miles of bikeways, and these facilities exist predominately in residential areas. There are approximately 1.25 miles of Class I bike paths, 6.75 miles of Class II bike lanes, and 2.5 miles of Class III bike routes. No individual bicycle facility is longer than two miles. Table 5.1 catalogues the City's existing bikeway network and Figure 5.1 provides a map of the network.

FIGURE 5.1 *Map of existing bikeways in Carson.*

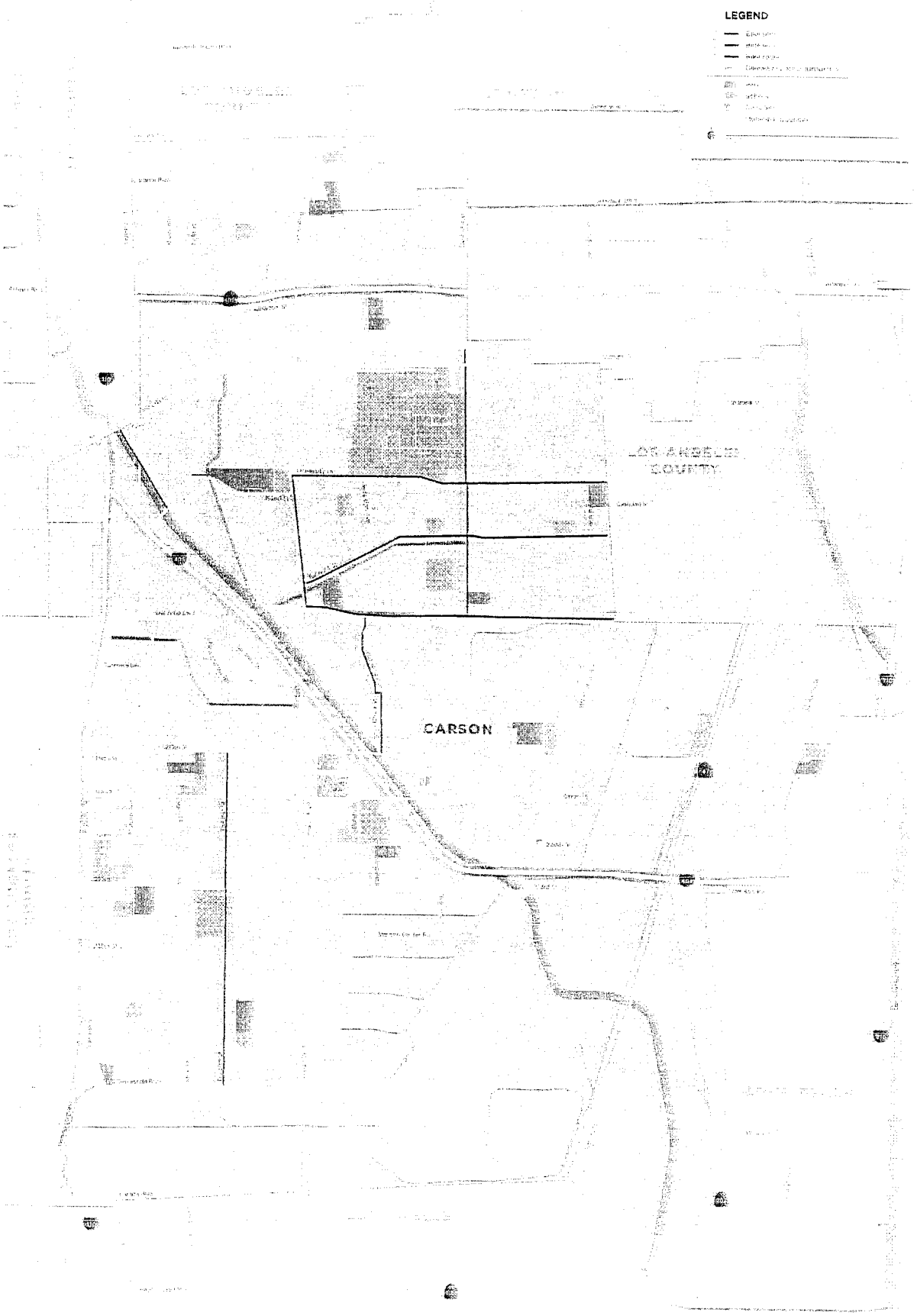


FIGURE 5.2 *Existing end-of-trip facilities*

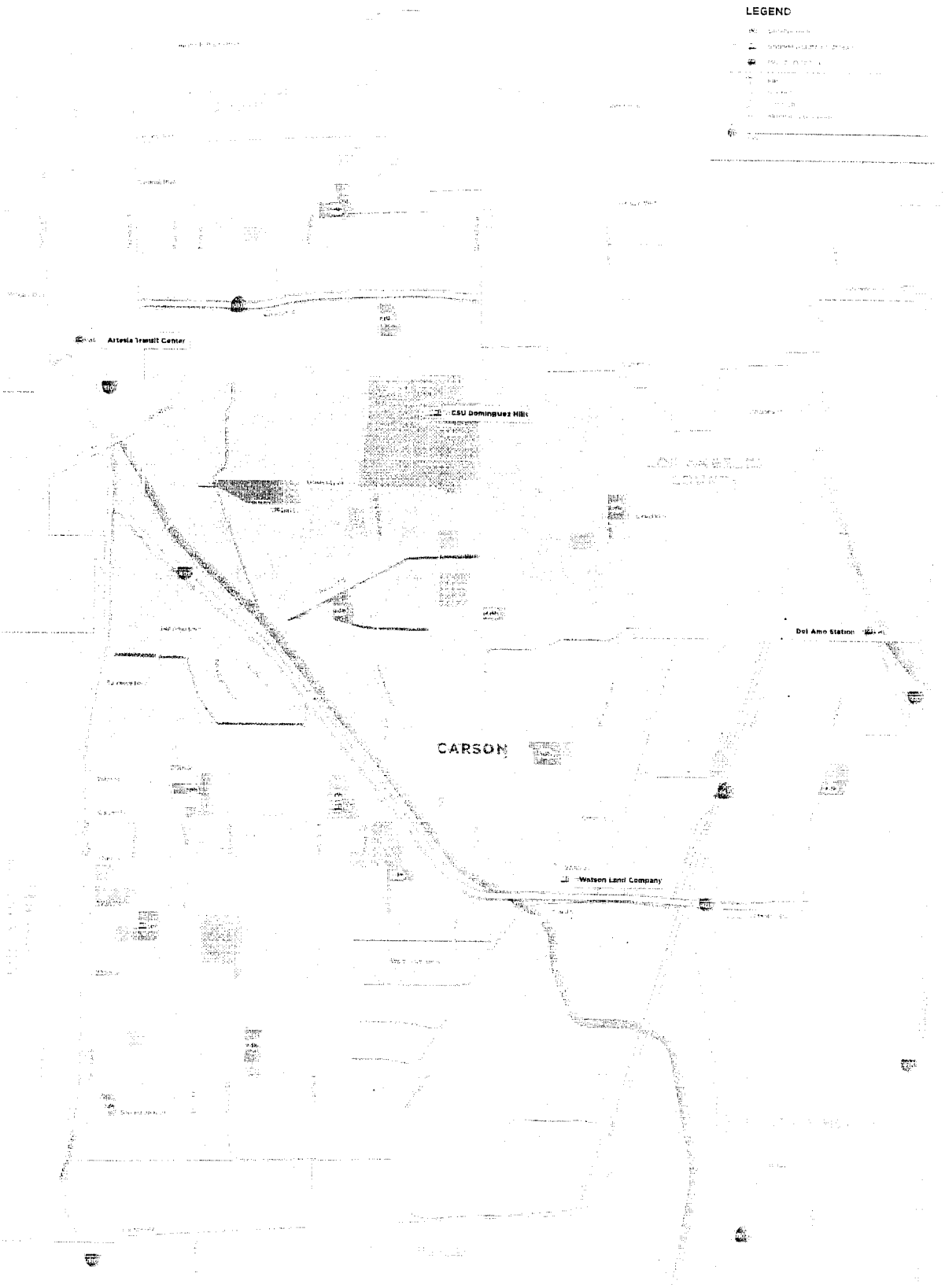


TABLE 5.1 *Existing bikeways in Carson.*

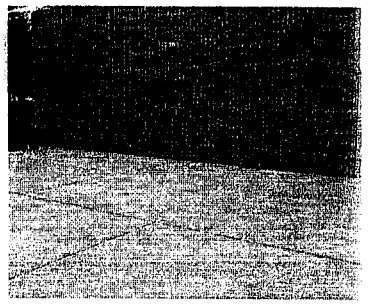
TYPE	BIKEWAY NAME	FROM	TO	ORIEN-TATION	LENGTH (MI)
Bike path	Central Avenue Sidepath	Aspen Hill Road	University Drive	North-south	0.76
Bike path	Dominguez Channel Path	190th Street	Main Street	North-south	0.52
Bike lane	University Drive	Avalon Boulevard	Wilmington Avenue	East-west	1.78
Bike lane	Del Amo Boulevard	Avalon Boulevard	Wilmington Avenue	East-west	1.76
Bike lane	Avalon Boulevard	University Drive/192nd Street	Del Amo Boulevard	North-south	0.66
Bike lane	Central Avenue	University Drive	Del Amo Boulevard	North-south	0.73
Bike lane	Leapwood Avenue	Del Amo Boulevard	Dominguez Street	North-south	0.43
Bike lane	Chico Street	Dominguez Street	213th Street	North-south	0.33
Bike lane	Dolores Street	223rd Street	Sepulveda Boulevard	North-south	1.09
Bike route	Turmont Street	Avalon Boulevard	Cul-de-sac west of Wilmington Avenue	East-west	1.79
Bike route	Dolores Street	213th Street	223rd Street	North-south	0.75

EXISTING END-OF-TRIP FACILITIES

BICYCLE PARKING

Bicycle parking can be provided in two general types: racks and high-security bicycle parking. Racks are best for short-term needs like quick shopping trips or stops at the library or post office. Racks are also beneficial in commercial corridors where bicyclists may want to get a meal or go from store to store. Racks should be placed at dispersed locations to take advantage of the point-to-point flexibility of the bicycle. Commuters and those who park for longer times need higher security parking. High-security parking may consist of lockers, attendant parking, or automated parking.

As described in the municipal code review in Chapter 2, the City requires bicycle racks only for large (greater than 25,000 square feet) non-residential developments. Such develop-



Existing bicycle parking at Scott Pool

ments must provide four bicycle parking spaces for the first 50,000 square feet and one bicycle parking space for each additional 50,000 square feet of non-residential development.

Figure 5.2 and Table 5.2 show that the City provides bicycle parking racks at public buildings, parks, and recreation areas. Additionally, Metro provides bicycle racks and lockers at the Artesia Transit Center and Del Amo Blue Line stations, both of which are located immediately outside Carson limits.

TABLE 5.2 *Existing end-of-trip facilities*

LOCATION	ITEM	QUANTITY
Anderson Park	Multi-bike rack (8-bike capacity)	1
Calas Park	Multi-bike rack (5-bike capacity)	1
Carson Pool	Bike rack (2-bike capacity)	4
Carriage Crest Park	Bike rack (2-bike capacity)	1
City Hall	Bike rack (2-bike capacity)	1
City Hall	Employee-only showers	N/A
CSU Dominguez Hills	Student/faculty-only showers	N/A
Del Amo Park	Bike rack (2-bike capacity)	2
Dolphin Park	Bike rack (2-bike capacity)	1
Dominguez Aquatic Center	Bike rack (2-bike capacity)	4
Dominguez Park	Multi-bike rack (8-bike capacity)	2
Hemingway Aquatic Center	Bike rack (2-bike capacity)	5
Hemingway Park	Bike rack (2-bike capacity)	1
Mills Park	Bike rack (2-bike capacity)	1
Scott Park	Bike rack (2-bike capacity)	2
Scott Pool	Bike rack (2-bike capacity)	15
Stevenson Park	Bike rack (2-bike capacity)	2
Veterans SportsComplex	Bike rack (2-bike capacity)	1
Veterans SportsComplex	Employee-only showers	N/A
Watson Land Company	Employee-only showers	N/A

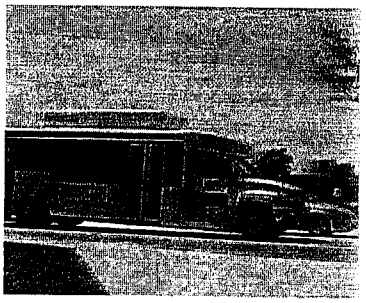
OTHER AMENITIES

The City of Carson does not have public showers or clothing lockers for commuters to use. There are showers at City Hall

and the Veterans SportsComplex for staff and other restricted users. Watson Land Company Headquarters and CSU Dominguez Hills both provide showers for their employees and students, respectively. The City's municipal code does not contain any requirements for bicycle amenities in new development.

LINKS TO OTHER TRANSPORT MODES

Multiple agencies offer transit service in and around Carson—namely Carson Circuit and Metro. Other transit service in the City includes Gardena Municipal Bus Lines, Long Beach Transit, and Torrance Transit. Figure 5.3 provides a map of the core transit services in the Carson area, which include light rail, bus rapid transit (BRT), express bus, and rapid bus service.



Carson Circuit bus with bicycle racks.

CARSON CIRCUIT

The City operates its own local bus service, the Carson Circuit, which runs Monday through Saturday. All buses are equipped with bike racks that accommodate two bicycles. Bus stops do not customarily include bicycle parking.

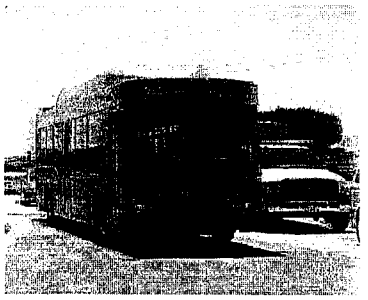
Carson Circuit includes eight lines, lettered A through H, and each operates in a large, one-way loop throughout a portion of the city. The lines radiate out from the central bus terminal on Del Amo Boulevard just north of the South Bay Pavilion. All buses meet every 40 minutes at this transfer point.

Carson also operates a North-South Shuttle. This route links the areas between the Artesia Transit Center and Lomita Boulevard. Like the Carson Circuit, the North-South Shuttle operates in a one-way loop. It provides two morning loops and one afternoon loop Mondays through Fridays.

METRO

Metro is the primary transit provider throughout Los Angeles County. All the agency's buses are equipped with bicycle racks that accommodate two bicycles. Metro trains include designated areas where passengers may ride with their bikes. Local bus stops typically do not include bicycle parking; however the agency operates two major transit centers in the vicinity of Carson—the Artesia Transit Center and the Del Amo Blue Line

Station—each of which includes bicycle racks and lockers. The Artesia Transit Center is located on 182nd Street, just west of the city across Interstate 110. The Del Amo Blue Line Station is located just northeast of Carson at the intersection of Del Amo Boulevard and Santa Fe Avenue.



Metro bus with bicycle racks.

Metro operates local bus service on a number of streets throughout Carson. These routes include Lines 45 (late-night only), 52/352, 53, 130, 205, and 246. In addition to local bus service, Metro operates bus rapid transit (BRT), express bus, and light rail lines with stations immediately outside Carson's city limits. These services connect Carson with the greater Los Angeles region and include the following:

- **Silver Line (BRT)** runs between El Monte, Downtown Los Angeles, and the Artesia Transit Center
- **Metro Express 450** (freeway express bus) links the Artesia Transit Center with San Pedro. It makes select local stops in northwestern Carson before entering Interstate 110. Once on the freeway, the route makes two stops adjacent to Carson, at I-110/Carson Street and I-110/Pacific Coast Highway
- **Blue Line (light rail)** extends from Downtown Los Angeles to Long Beach. It stops at the Del Amo Station immediately northeast of Carson

OTHER TRANSIT SERVICES

Torrance Transit, Gardena Municipal Bus Lines, and Long Beach Transit provide additional transit service within Carson. All of the agencies' buses are equipped with bicycle racks that accommodate two bicycles. Within Carson, none of the bus stops served by these providers offer bike parking.

Additional transit services available in Carson include:

- Gardena Municipal Bus Lines: Line 3
- Long Beach Transit: Lines 191 and 192
- Torrance Transit: Lines 1, 3, Rapid 3, 6, 7, and 9

FIGURE 5.3 *Map of key transit corridors in Carson.*

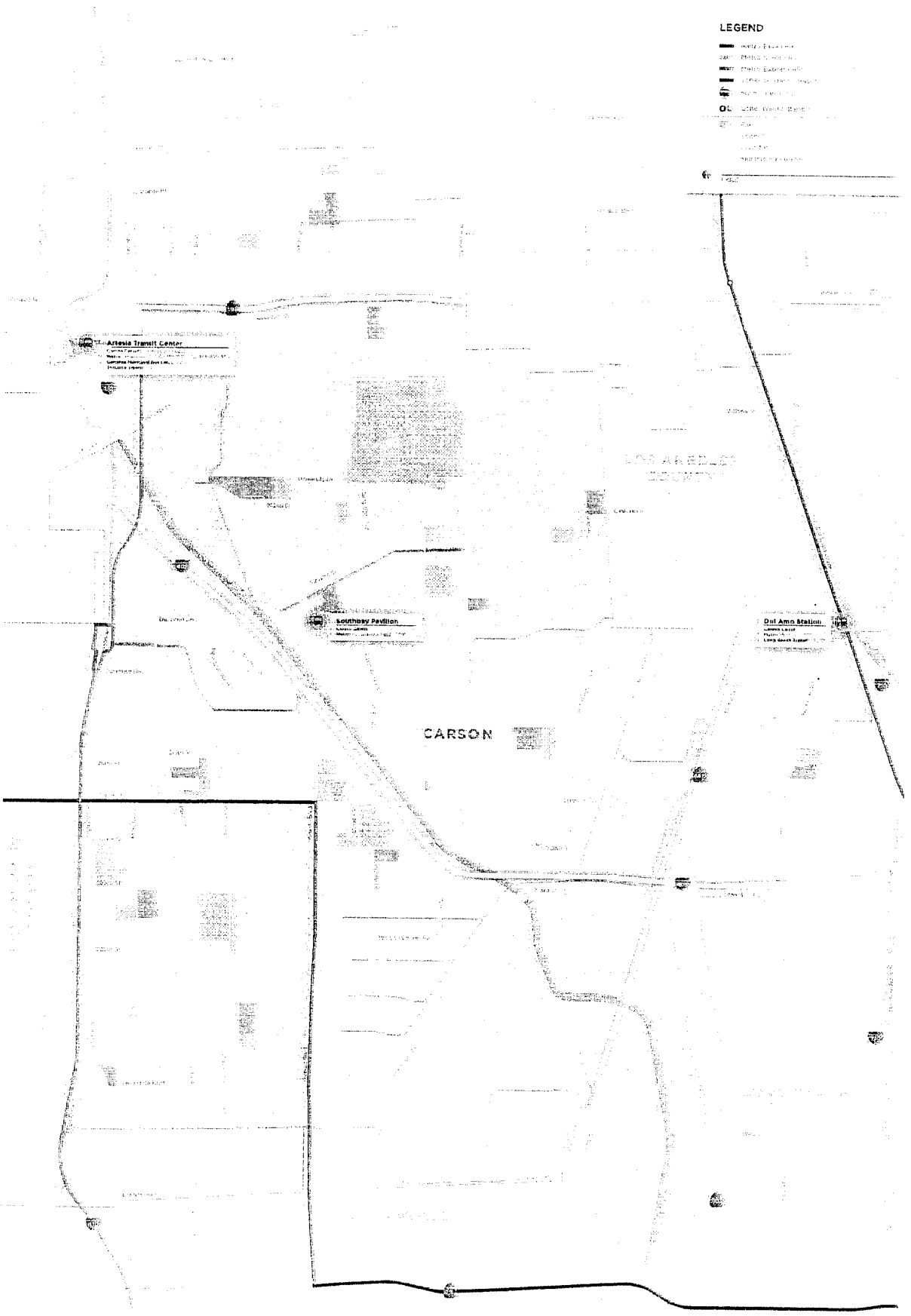
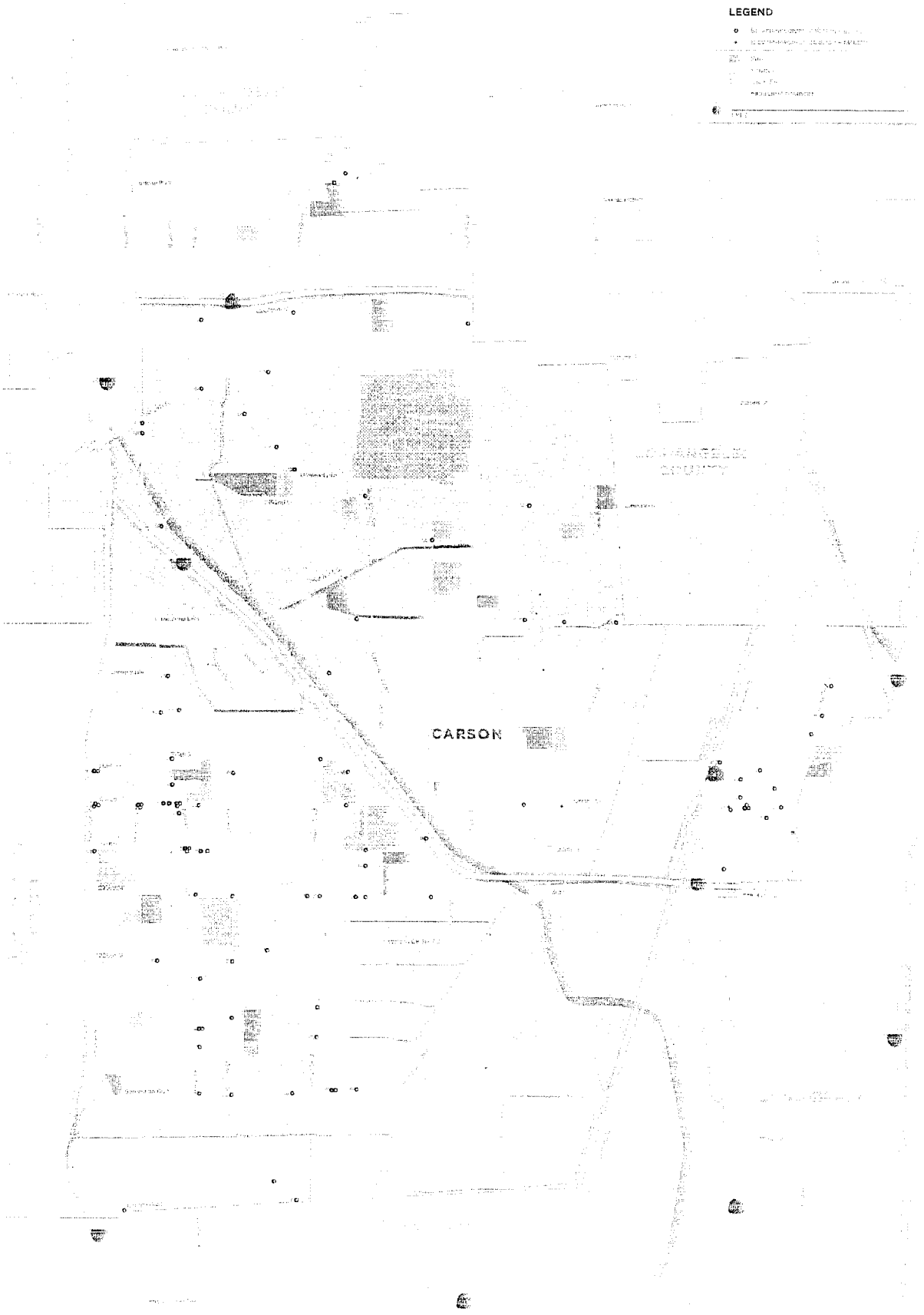


FIGURE 5.4 *Locations of bicyclist-involved crashes in Carson, 2005-2010*



PARK-AND-RIDE

There are no park-and-ride lots in Carson.

EXISTING BIKE USAGE

The US Census Bureau's 2011 American Community Survey 1-year estimates show that about 780 out of some 39,000 Carson workers age 16 and over commute by bicycle, which is a mode split of about 0.2%.

CRASH ANALYSIS

This analysis of bicyclist-involved collisions in Carson aims to answer two questions. First, how many of these crashes have happened in recent years? We look for any trends over time, and compare the number of crashes to statewide rates. Second, where are crashes occurring? Again, we limit our analysis to crashes resulting in injury or fatality and look for spatial clusters and patterns.

HOW MANY CRASHES?

The California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS) database shows that between 2005 and 2010, 114 bicycle-involved crashes were reported in Carson. These resulted in a total of 102 injuries and three fatalities. The fatalities occurred on Santa Fe Ave. at 218th Pl., on Carson St. at Wilmington Ave., and on Carson St. at Bataan Ave., as shown in Figure 5.4.

Table 5.3 compares the number of bicycle-involved crashes resulting in injury per 1000 people in Carson with the rate in the State of California as a whole, using the five most recent years for which there is statewide data available.

The number of crashes has dropped in recent years, while the crashes per capita shows no discernible trend. The per capita crash rate in Carson is lower than the statewide per capita crash rate. Because of the little direct data on how much bicycling is happening in Carson, we cannot say that the lower crash rate means that bicycling in Carson is safer. It may also be the case that there is less bicycling happening in Carson.

TABLE 5.3 *Comparison of bicycle-involved crash rates, City of Carson and State of California*

YEAR	CARSON			CALIFORNIA		
	NUMBER OF CRASHES*	POPULATION ESTIMATE**	CRASHES PER 1000 PEOPLE	NUMBER OF CRASHES	POPULATION ESTIMATE**	CRASHES PER 1000 PEOPLE
2006	22	87,876	0.25	10,352	36,457,549	0.28
2007	16	98,731	0.16	10,646	36,553,215	0.29
2008	16	99,342	0.16	11,814	36,756,666	0.32
2009	18	92,255	0.20	12,150	36,961,664	0.33
2010	17	91,828	0.19	12,763	37,349,363	0.34

* Source: California Highway Patrol's Statewide Integrated Traffic Records System (SWITRS)

** Source: U.S. Census Bureau, American Community Survey One-Year Estimates

WHERE ARE THE CRASHES HAPPENING?

Figure 5.4 displays the locations of bicyclist-involved crashes resulting in injury or fatality for the five most recent years for which there is data available, 2006-2010. The crashes are dispersed throughout the city. The streets on which the most crashes occurred were Carson St., 223rd St., Main St., and Avalon Blvd.

BICYCLE AND PEDESTRIAN COUNTS

As part of the planning process for the Master Plan of Bikeways, the City, consultant team, and LACBC conducted bicycle counts at 8 locations in Carson.

The number of locations, time of the count, location selection, and count methodology were all informed by the National Bicycle and Pedestrian Documentation Project (NBPD) as well as recent count experience in Los Angeles County.

LOCATIONS

The choice of 8 locations was informed by the NBPD guidance which recommends 1 location for every 15,000 people. In Carson, with a population of just over 90,000, this would be 6 locations. Two additional locations were possible because of volunteer capacity.

LACBC, City staff, and the consultant team collaborated to choose the locations. Overall, locations were chosen to cover the various portions of the city geographically as well as a variety of location types. Table 5.4 shows the locations along with the team's reason for counting at each location. Each location is an intersection of two streets, with counting taking place on two imaginary screenlines, one on each street.

TABLE 5.4 *2012 Carson bicycle count locations.*

LOCATION	REASONS TO COUNT HERE
Victoria St./Avalon Blvd.	Proximity to California State University Dominguez Hills (CSUDH), Home Depot Center, and bus stops
University Dr./Central Ave.	2010 count location, proximity to CSUDH, existing bicycle facilities
Dominguez Channel/Main St.	2010 count location, existing bike path on the channel
Turmont St./Avalon Blvd.	2010 count location, existing bicycle facilities
Van Buren St./Santa Fe Ave.	2010 count location, proximity to school
Carson St./Main St.	Highest number of bicycle-involved crashes at this location
Carson St./Avalon Blvd.	2010 count location, proximity to civic and retail destinations
Sepulveda Blvd./Figueroa St.	2010 count location, proximity to park and retail

LACBC count supervisors recruited and trained the volunteers to ensure an accurate count. During the counts, LACBC staff and City of Carson staff provided quality checks and breaks for volunteers.

DATES AND TIMES

In order to maximize the sample of bicyclists observed with a limited volunteer labor force, counts took place during peak periods of travel, when the most cyclists would be expected. A count period on Saturday was included to capture recreational cycling volumes. The count periods were:

- Wednesday, October 24 2012 7:00-10:00 AM
- Wednesday, October 24 2012 3:00-6:00 PM
- Saturday, October 27 2012 10:30 AM-1:30 PM

These periods are referred to as "AM," "PM," and "WKND" respectively throughout this report.

PEDESTRIANS

Both cyclists and pedestrians were counted, due to the efficiency in counting both modes with a single volunteer. Although the analysis in this report focuses on cyclists, the City is also interested in the pedestrian data. The City will keep the pedestrian data on file to inform future efforts.

VOLUMES

Table 5.5 displays the total volumes counted in each time period in 2011. The table is sorted by total bicycle volumes, so that the intersections with the most bicycle activity appear at the top. Summary statistics for the mean and median appear at the bottom of the table.

TABLE 5.5 *Numbers of bicyclists counted by time period and location.*

LOCATION	AM	PM	WKND	TOTAL
Carson St./Main St.	27	142	75	244
Carson St./Avalon Blvd.	40	61	28	129
Victoria St./Avalon Blvd.	26	42	26	94
Turmont St./Avalon Blvd.	28	33	25	86
Sepulveda Blvd./Figueroa St.	25	17	30	72
Van Buren St./Santa Fe Ave.	6	38	23	67
Dominguez Channel/Main St.	7	12	9	28
University Dr./Central Ave.	9	7	4	20
Mean	21	44	27.5	92.5
Median	25.5	35.5	25.5	79
Total	**168**	**352**	**220**	**740**

As Table 5.5 shows, the number of cyclists that were counted at each location ranged from a high of 244 to a low of 20 cyclists. Volumes at the intersection of Carson St. and Main St. were nearly three times the mean volume. The very high volumes at Carson St. and Main St. cause the mean to exceed the median.

Hourly Variations

Trip volumes typically vary systematically by the hour of the day in a pattern that peaks during the familiar morning and evening rush hours. Similarly, trip patterns on Saturdays differ markedly from trip patterns during the work week. For these reasons, the counts target windows of time when we expect the most travel to be happening. It is then interesting to compare the volumes observed with the expected trip making patterns. In Carson, we find that bicyclist are generally greater in the PM period than in the AM period. This is particularly the case at Carson St./Main St., Carson St./Avalon Blvd., and Victoria St./Avalon Blvd. This may mean that bicyclists are making more after-school and after-work trips for socializing, recreation, and shopping, rather than commute trips.

By comparing weekend volumes to weekday volumes and making the assumption that most weekday trips are utilitarian while some share of weekend trips are recreational, we can ascertain relative rates of recreational bicycling and utilitarian bicycling. Any given bicyclist traveling during any of the three count periods could be bicycling for recreation or for some utilitarian purpose (or both), so this ratio is an indirect proxy. It helps us to understand relative rates of utilitarian and recreational bicycling, but does not directly capture them. In Carson in 2012, bicyclist trip volumes are roughly equal in the AM and WKND periods, and slightly greater in the PM period. This means that utilitarian bicycle trips probably exceed recreational bicycle trips in Carson.

BEHAVIOR

Counters recorded a number of behavioral variables. They tallied cyclists who were riding on the sidewalk, cyclists riding the wrong way on the street, and cyclists who were not wearing helmets.

Sidewalk Riding

Counters marked when bicyclists rode on the sidewalk. The resulting data is displayed in Figure 5.5.

As Figure 5.5 indicates, the percentage of cyclists who rode on the sidewalk ranged from 7% to 64% by location. The percentage across all locations was 36%. Sidewalk riding is an indication that bicyclists do not feel comfortable on the street. Especially in areas with heavy pedestrian traffic, it creates potential for conflict between bicyclists and pedestrians, and it crowds the sidewalk. By implementing bikeways, the City will enable more people to ride on the street, freeing up room for pedestrians on the sidewalks.

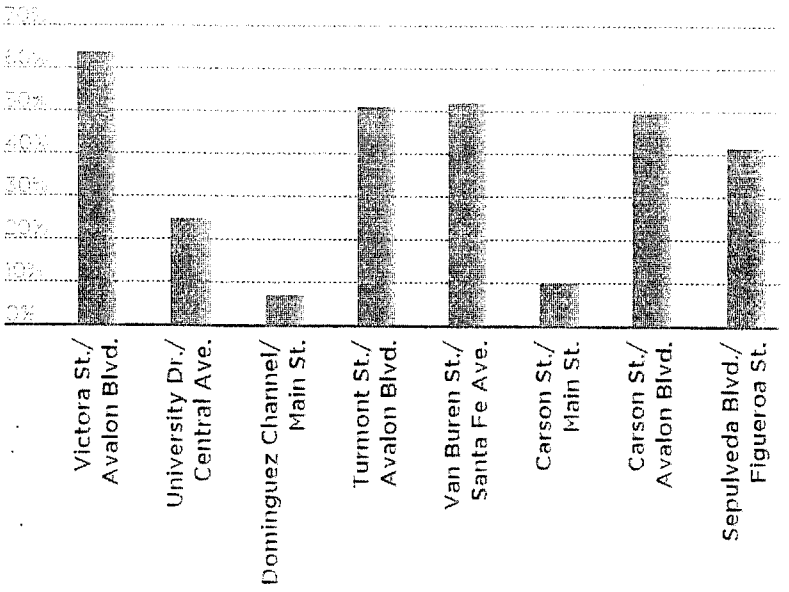


FIGURE 5.5 *Percentage of cyclists riding on the sidewalk by intersection.*

Wrong Way Riding

Counters marked when bicyclists rode the wrong way on the street. (To clarify, there is no wrong way to ride on the sidewalk.) Figure 5.6 displays the resulting data.

Across all locations, 12% of bicyclists rode the wrong way. This ranged from a high of 21% at Victoria St./Avalon Blvd. to a low of 0% at University Dr./Central Ave. Site-specific reasons can often cause wrong way riding. These include sidewalk obstructions and medians and heavy vehicle traffic that make it difficult to cross to the correct side of the street. The City should investigate locations with consistently high rates of wrong way riding to discover any site-specific reasons for these high rates.

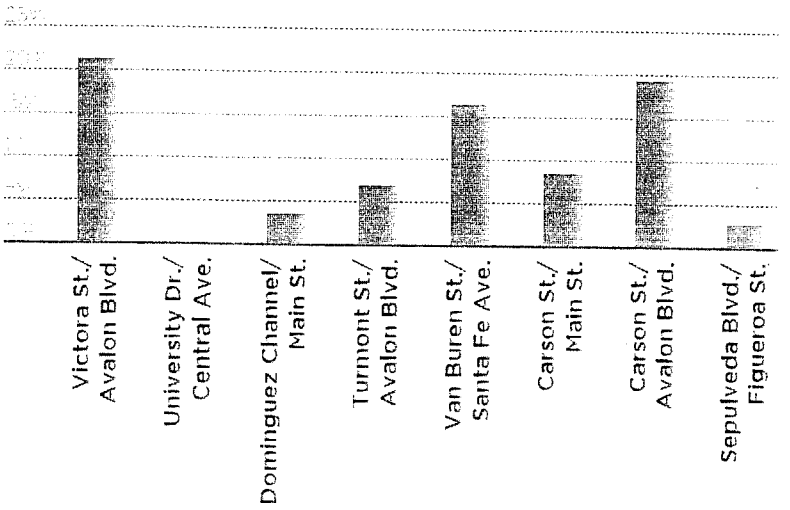


FIGURE 5.6 *Percentage of cyclists riding the wrong way on the street.*

Helmets

Counters also recorded whether or not bicyclists were wearing helmets. Figure 5.7 displays the resulting data.

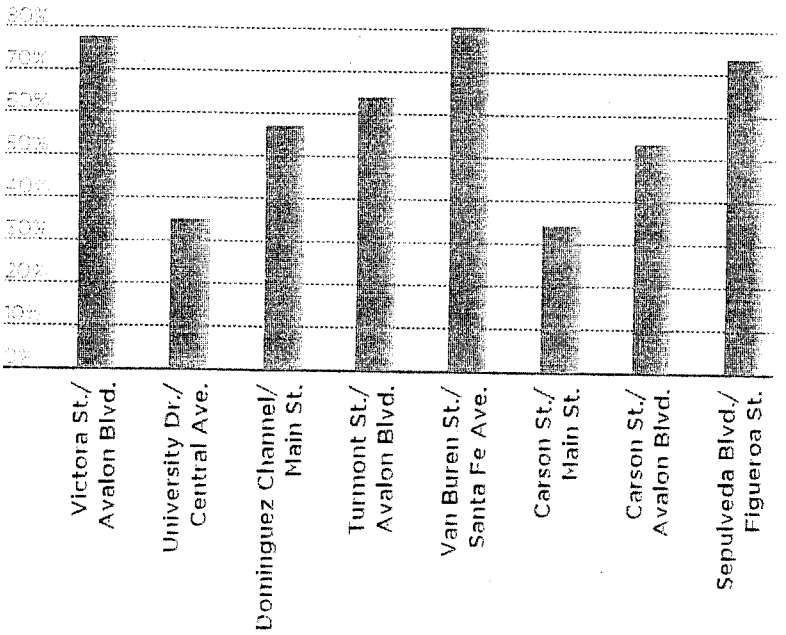


FIGURE 5.7 *Percentage of cyclists not wearing helmets by intersection.*

Citywide, about half (56%) of riders are not wearing a helmet. This varies from location to location from a low of 34% at Carson St./Main St. to a high of 81% at Van Buren St./Santa Fe Ave.

DEMOGRAPHICS

Gender

The percentage of people on bicycles who are female is an accepted indicator of the extent to which a place makes bicycling possible for all kinds of people, not just the "strong and fearless." From country to country, there is a correlation between the percentage of bicyclists who are female and the share of all trips that are taken by bicycle. Figure 5.8 displays the perceived gender of bicyclists for all locations in 2012.

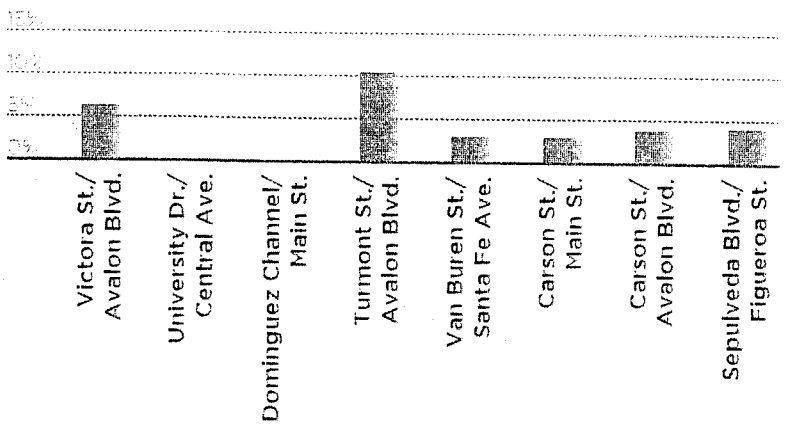


FIGURE 5.8 *Percentage of cyclists perceived as female by intersection.*

Citywide, only 4% of all bicyclists counted in Carson were perceived to be female. The percentage ranged from a low of 0% at University Dr./Central Ave. to a high of only 10% at Turmont St./Avalon Blvd. The gender disparity suggests that people who are risk-averse are not bicycling at high rates in Carson, especially in certain locations. Gendered travel patterns and needs may also cause the disparity. Women tend to do a disproportionate share of family-serving travel, including transporting children.[1] This kind of travel is more difficult to do by bicycle.

By implementing more bicycle infrastructure that makes risk-averse people feel safe riding their bikes, the City should enable a better gender balance in its ridership.

1 Taylor, Brian and Michael Mauch, 1998. "Gender, Race, and Travel Behavior: An Analysis of Household-Serving Travel in the San Francisco Bay Area." *Women's Travel Issues: Proceedings from the Second National Conference.* Available at http://www.fhwa.dot.gov/ohim/womens/chap20.pdf

Children

The count also tracked the number of children bicycling in each location. Counters marked as a child anyone they perceived to be under the age of 13. This figure is of interest for several reasons. First, the percentage of children in the U.S. who bicycle and walk to school has severely dropped since the 1960s.[2] The federal and state Safe Routes to School programs aim to enable more children to walk and bike to school; data on the numbers of children who are walking and biking are relevant to Carson's consideration of when and how to participate in Safe Routes to School. Second, locations where many children are walking and bicycling should be considered high priority for safety improvements and traffic calming. Young children have more difficulty navigating traffic, and they are vulnerable to be more seriously injured if they are in a collision. Third, and most simply, it is useful to track children because the walking and bicycling traffic caused by the beginning and end of the school day can be a major driver of overall count volumes. Counting children allows us to examine if large volumes are driven by packs of schoolchildren. Figure 5.9 displays the percentage of bicyclists who were perceived as children at each location.

2 The National Center for Safe Routes to School, 2011. "How Children Get to School: School Travel Patterns from 1969 to 2009." Available at http://saferoutesinfo.org/sites/default/files/resources/NHTS_school_travel_report_2011_0.pdf

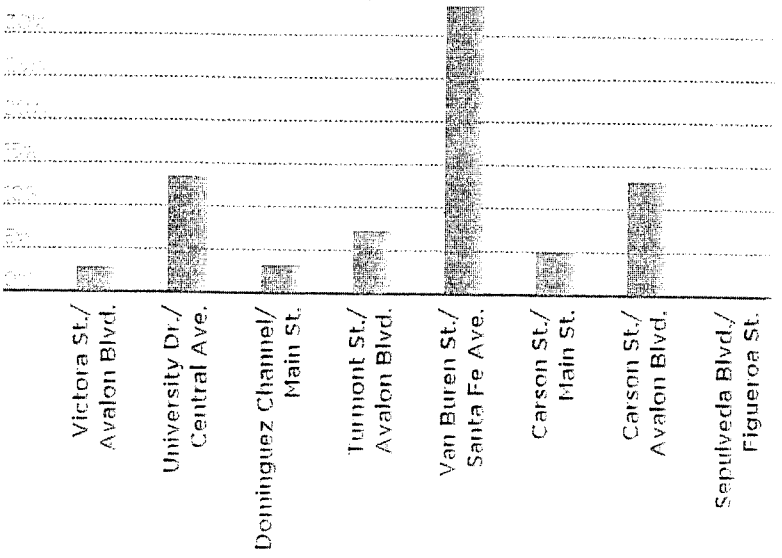


FIGURE 5.9 *Percentage of cyclists perceived as children under 13*

The percentage of people bicycling who were perceived to be children ranged from a low of 0% to a high of 37% at Van Buren St./Santa Fe Ave. Citywide, children comprised 10% of all cyclists counted. The high percentage of children at Van Buren St./Santa Fe Ave. indicates that much of the bicycling there is probably travel to and from school.

COMPARISON TO 2010 COUNT DATA

The City also conducted counts in 2010, on Thursday, November 4 and Saturday, November 7. These took place at six locations as noted in Table 5.4 and below. The 2010 count only included a PM and a WKND period, identical to the 2012 PM and WKND periods. Table 5.6 compares volumes for the six locations that were counted in both 2010 and 2012. There was a slight change in methodology between 2010 and 2012 which may account for some of the difference. Appendix B lists methodology details. The totals shown only include PM and WKND count periods. As Table 5.6 shows, bicycling has had a massive increase of 48% in Carson since 2010. At Carson St./Avalon Blvd., the number of cyclists more than doubled.

TABLE 5.6 *Comparison between bicycle count volumes in 2010 and those in 2012.*

LOCATION	2010 PM AND WKND	2012 PM AND WKND	PERCENT CHANGE
University Dr./Central Ave.	10	11	10%
Dominguez Channel/Main St.	22	21	-5%
Turmont St./Avalon Blvd.	34	58	71%
Van Buren St./Santa Fe Ave.	46	61	33%
Carson St./Avalon Blvd.	43	89	107%
Sepulveda Blvd./Figueroa St.	39	47	21%
All Locations	**194**	**287**	**48%**

Demographics and Behavior

Table 5.7 compares the demographics and behavioral variables observed in 2010 and 2012. To calculate the percentages in this table, only the PM and WKND periods from 2012 are in-

cluded, and only the six locations counted in both 2012 and 2010 are included.

TABLE 5.7 *Behavioral and demographic variables observed in 2010 and 2012*

VARIABLE	% IN 2010	% IN 2012
Female	12%	6%
Child under 13	8%	16%
No Helmet	75%	63%
Sidewalk Riding	56%	52%
Wrong Way Riding	5%	15%

As Table 5.7 shows, many of these variables are relatively unchanged, which is surprising given the large increase in the number of cyclists. Particularly concerning is that the percentage of female cyclists dropped, and the rate of wrong way riding increased from 5% to 10%.

Because trip volumes vary by time of day, the City should continue to count during the same time periods in future years, to allow for year-over-year comparisons. The City should also consider using automatic counters to count continuously. These will allow a better understanding of bicyclist volumes and trip-making patterns in Carson, and they enable a much more accurate understanding of trends over time.

PROGRAMS

Non-infrastructure programs can be categorized according to the 4 non-infrastructure Es of a bicycle-friendly community. These are:

- Education
- Encouragement
- Enforcement
- Evaluation

The City of Carson does not currently conduct any programs related to bicycling. Specifically, the City does not conduct any enforcement programs or safety programs that could have an impact on crash rates. Chapter 7 of this plan proposes new programs that the city could undertake.

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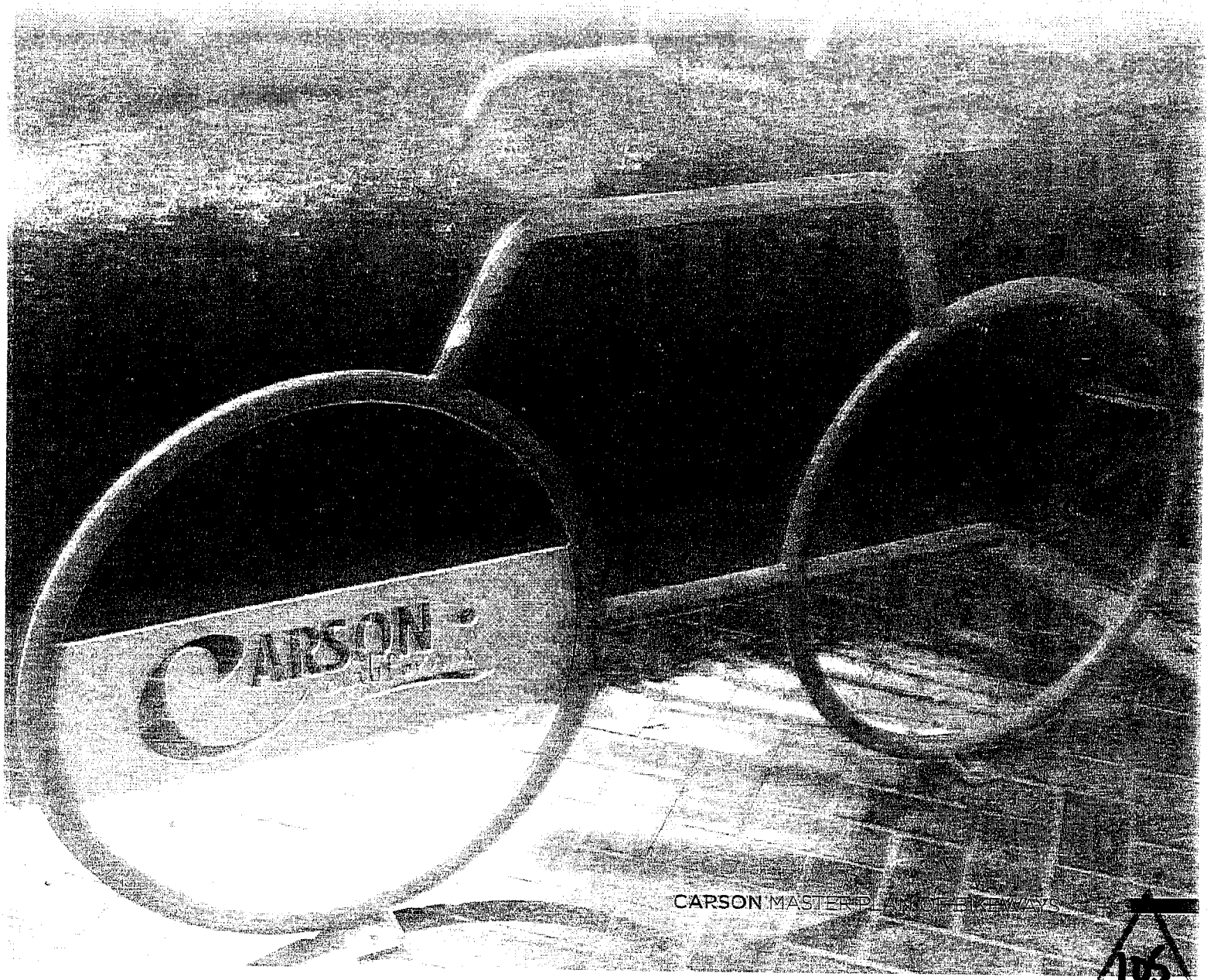
CHAPTER 6

PROPOSED BICYCLE PROJECTS



OVERVIEW

This chapter details the network of bikeways proposed in Carson. ("Bikeways" and "bicycle facilities" are catchall terms used to describe any and all types of bicycle infrastructure.) We begin by defining the various bikeway types recommended for Carson—from standard bike lanes and paths to newer cycletracks and colored sharrows. Each bikeway description includes a summary of its defining characteristics as well as an example photo.

A series of tables describes each of Carson's proposed bikeways in detail. Each bikeway is broken into segments corresponding with major changes in roadway configuration or width. For each segment, we describe the existing roadway configuration, width, and speed limit before listing proposed modifications to add bikeways. The tables include both on- and off-street bikeways; they present east-west bikeways first and then show north-south routes. Within these groupings, east-west bikeways are ordered from north to south; north-south bikeways, from east to west. All the proposed bikeways are also mapped and shown in a summary table.

This chapter concludes with a discussion of recommended bicycle parking and cyclist amenities, such as showers and clothing lockers.

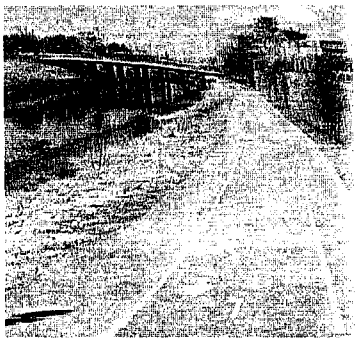
BIKEWAY TYPES

BIKEWAY TYPES IN CARSON

The following bicycle facility types are proposed in Carson:

- Bicycle paths (also known as Class I facilities)
- Bicycle lanes (also known as Class II facilities), including:
  - » Buffered bike lanes
  - » Colored bike lanes
- Bicycle routes (also known as Class III facilities), including:
  - » Routes with sharrows
  - » Routes with type B sharrows
- Cycletracks

The plan also recommends a number of "road diets" to implement certain bike lanes and cycletracks.



Dominguez Channel bicycle path in Carson

Bicycle lane in San Luis Obispo, CA.

Buffered bicycle lane in San Jose, CA

Colored bicycle lane in Santa Monica, CA

Chapter 10, "Design," includes more details on design features and recommended design guidance for each bikeway type.

BICYCLE PATH (CLASS I)

Bike paths are paved corridors completely separate from streets that are reserved for the exclusive use of bicyclists and pedestrians. It is important to note that sidewalks are not bike paths or multipurpose paths. Sidewalks are typically reserved only for pedestrians and are not designed to accommodate safe or convenient bicycle travel. Bicycle paths are often planned along uninterrupted linear rights-of-way and commonly take one of two forms:

- Off-street rights-of-way, often paralleling waterways or railroad tracks
- Roadway-adjacent sidepaths parallel to, but separate from, streets

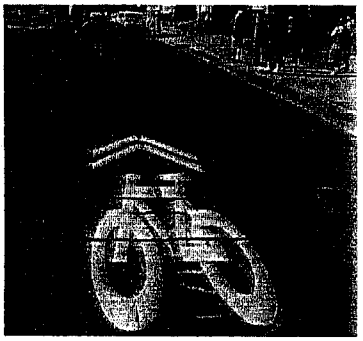
BICYCLE LANE (CLASS II)

Bike lanes are on-street lanes reserved for the exclusive use of bicyclists. Bike lanes are painted (or "striped") with a white line and a bicycle stencil. Bike lanes may also include the following additions, either independently or in combination:

- **Buffered bike lanes**, which include additional space between the bike lane and auto travel lanes or on-street parking. This buffer space is painted with a hatched striping pattern
- **Colored bike lanes** painted a bright, chartreuse green to enhance their visibility. The color may be applied in a continuous strip or used only at conflict points such as intersections and driveways

BICYCLE ROUTE (CLASS III)

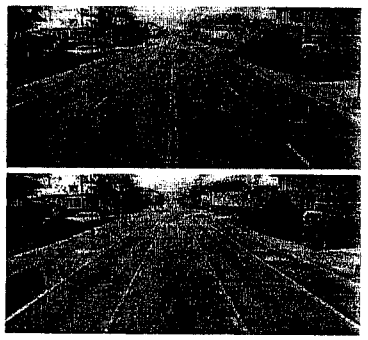
Bike routes are preferred travel routes for bicyclists on which a separate lane or path is not feasible or not desirable. Bicyclists and cars share lanes on bike routes (and typically cy-



Sharrow in Los Angeles, CA.

Type B sharrow lane in Long Beach, CA

Cycletrack in Long Beach, CA



Road diet used to achieve bike lanes in Albuquerque, NM. Top: before. Bottom: after.

clists must ride in the rightmost lane). Traditionally, bike routes have been demarcated only with "Bike Route" signs. Recently though, cities have begun to use the following additional features to indicate bike routes:

- **Shared lane markings**, or "**sharrows**," which are pavement markings that a) alert motorists that a particular travel lane is to be shared with bicyclists, b) indicate to cyclists the preferred riding position within the lane, and c) assist bicyclists with wayfinding
- **Type B sharrows**, which are experimental sharrow treatments with enhanced visibility. Long Beach, CA uses a painted green lane underneath the sharrow. Brookline, MA uses large, frequently-spaced sharrows with dashed lateral lines resembling lane lines.
- **Bicycle wayfinding signage**, which helps cyclists navigate by illustrating turns in bike routes and providing directions to key destinations

All planned bike routes in Carson include, at a minimum, one form of sharrows and wayfinding signage.

CYCLETRACKS

Cycletracks (also referred to as **protected bikeways**) function like on-street Class I paths (and are considered Class I paths in some cities). These facilities, which may either accommodate one-way or two-way bicycle travel, are physically separated from auto traffic, usually by parked cars, curbs, or planters. Cycletracks typically require special treatments at intersections.

ROAD DIETS

This plan recommends a handful of "**road diets**." A road diet is the removal of at least one travel lane or on-street parking to accommodate a bikeway. Road diets are only recommended in conditions where removing a travel lane or parking will not cause traffic delay. More detailed traffic studies may be required prior to implementing road diets.

CHOICE OF TREATMENT

The type of treatment depends on the street or right-of-way width, adjacent land uses, traffic volumes, and traffic speeds. When exclusive right-of-way exists, bike paths are planned. Bike lanes are planned on streets that have enough width to accommodate them. Road diets are planned to create space for bike lanes on multi-lane streets where traffic volumes allow. Improvements to bike lanes are planned where enough space exists to widen bike lanes or to stripe buffers. Bike routes are planned on streets where network connectivity is needed, but insufficient space exists for bike lanes, or where traffic volumes do not call for bike lanes.

GUIDING ASSUMPTIONS FOR BIKEWAYS

The following factors should be considered guidelines, and will be modified and interpreted as necessary for a given situation. The City will use its judgment if it chooses to plan additional bikeways in the future or modify the proposed bikeways due to engineering constraints. The City will also use appropriate experimental processes and guidelines when implementing devices such as bicycle boxes, pavement wayfinding markings, type B sharrows, colored bike lanes, etc.

Lane Widths

- Truck route with 45 MPH speed limit: Minimum 12' lanes
- Truck route with 40 MPH speed limit: Minimum 11' lanes
- Any road with 45 MPH speed limit: Minimum 11' lanes
- Any road with 40 MPH speed limit: 11' lanes preferred, minimum of 10' allowable
- All other roads: Minimum 10' lanes
- Parking lane: Minimum width of 7'

Bikeway Type

- Minimum width of a bike lane is 5', but prefer to use 6' as the standard wherever possible
- Where bike lanes do not fit, but network connectivity is necessary, bike routes with sharrows will be planned
- Propose bike paths along existing or potential rights-of-way such as waterways and rail lines

- Buffers are painted between the travel lanes and bike lane and/or between on-street parking and striped bike lanes to provide extra comfort to the cyclist where roadway width permits (see note on buffer design and MUTCD compliance below)
- Where average daily traffic (ADT) is high, in central areas of the city, at confusing intersections, and at appropriate freeway off and on-ramps, use colored bike lanes to ensure the bikeway is prominent to motorists
- Consider traffic circles to replace stop-controlled intersections to improve bikeways where appropriate

Painted buffers greater than 2' in width are legal in California if they are placed outside of a bicycle lane where there is no on-street parking. If there is on-street parking, the City may want to go through an experimental process with the California Traffic Control Device Committee (CTCDC) to install buffers wider than 2'. Some jurisdictions, such as the City of Los Angeles, have developed striping plans that they believe comply with the California MUTCD and California Vehicle Code, allowing them to install wide painted buffers without going through an experimental process. The striping plans include breaks in the buffers.

Colored bike lanes have interim approval from the Federal Highway Administration. Colored bike lanes have interim approval from the CTCDC. The City simply needs to notify the state in order to implement colored bike lanes.

Type B sharrows will also have to go through the experimental process with the CTCDC.

The City will consider installation and maintenance costs prior to implementation. Type B sharrows require more materials than other treatments, and will be implemented at key locations first to evaluate cost-effectiveness. Directional signage will also be crucial to create a legible network. The City will explore experimental directional pavement markings and signs.

PROPOSED BIKEWAYS

EAST-WEST BIKEWAYS

ALONDRA BOULEVARD

FROM: **Figueroa St. (Los Angeles city limit)**

TO: **Compton city limit**

EXISTING	PROPOSED
• 4 lanes with on-street parking/peak hour lanes and median/center turn lane • 32' wide curb-to-median • 24-hour traffic volume in May 2012: 9,400–10,700 • Truck route • Posted speed limit: 40 mph • North side of street is in unincorporated Los Angeles County	• Road diet to one lane in each direction, make on-street parking permanent, and add 6' bike lanes with 2' buffer on travel lane side and 2' buffer on parking side of bike lane • Coordinate with Los Angeles County

GARDENA BOULEVARD

FROM: **Figueroa St. (Los Angeles city limit)**

TO: **Broadway**

EXISTING	PROPOSED
• 4 lanes with on-street parking • 63' wide • 24-hour traffic volume in December 2009: 6,000 • Posted speed limit: 40 mph	• Road diet to 2 lanes, center turn lane, and on-street parking; add 6' bike lanes with 2' buffer • Option: Add sharrows and wayfinding signage

FROM: **Broadway**

TO: **Main St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane • 63' wide • 24-hour traffic volume in December 2009: 6,000 • Posted speed limit: 40 mph	• Road diet to 2 lanes, center turn lane, and on-street parking; add 6' bike lanes with 2' buffer • Option: Add sharrows and wayfinding signage

GARDENA BOULEVARD (CONTINUED)

FROM: **Main St.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with on-street parking • 63' wide • 24-hour traffic volume in December 2009: 5,100 • Posted speed limit: 40 mph	• Road diet to 2 lanes, center turn lane, and on-street parking; add 6' bike lanes with 2' buffer • Option: Add sharrows and wayfinding signage

ALBERTONI STREET

FROM: **Figueroa St.**

TO: **Star of India Ln.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 84' wide curb-to-curb • 35' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes

FROM: **Star of India Ln.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 5 lanes (3 eastbound, 2 westbound) with center turn lane and on-street parking on the north side only • 84' wide • Posted speed limit: 40 mph	• Add 5' bike lanes with 2' buffer

ALBERTONI STREET (CONTINUED)

FROM: **Avalon Blvd.**
TO: **SR-91 eastbound off-ramp**

EXISTING	PROPOSED
• 4 lanes with median, on-street parking on the north side, and on-street parking/ peak-hour travel lane on the south side • 34' wide curb-to-median • 24-hour traffic volume in December 2009: 13,700 • Truck route • Posted speed limit: 45 mph • Minimal use of on-street parking observed	• Remove on-street parking; add 12' two-way cycletrack on south side of street • Add bicycle and pedestrian crossing of Bitterlake St. to provide access to Stevenson Park • Add bike-only signal phase at Albertoni St./Avalon Blvd. intersection where bike lanes on both sides of the street transition to the cycletrack on south side

FROM: **SR-91 eastbound off-ramp**
TO: **SR-91 eastbound on-ramp**

EXISTING	PROPOSED
• 3 lanes, one-way eastbound only • 34'-55' wide • 24-hour traffic volume in December 2009: 13,700 • Truck route • Posted speed limit: 45 mph	• In 34' section, remove 1 eastbound travel lane and add 12' two-way cycletrack on south side of street • In 55' section, add 15' two-way cycletrack on south side of street

FROM: **SR-91 eastbound on-ramp**
TO: **Lysander Dr.**

EXISTING	PROPOSED
• 2 lanes, one-way eastbound only, and on-street parking on the south side only • 32' wide • Minimal use of on-street parking observed • Truck route • Posted speed limit: 45 mph	• Remove on-street parking; add 12' two-way cycletrack on south side of street • Add short bike path connection across landscaped median between terminus of proposed cycletrack on Albertoni St. and Bitterlake St.

BITTERLAKE STREET/AMANTHA AVENUE/RADBARD STREET

FROM **Lysander Dr.**
TO **Central Ave.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 35' wide • Posted speed limit: 30/25	• Add bike route with sharrows and wayfinding signage

VICTORIA STREET

FROM **Figueroa St. (Los Angeles city limit)**
TO **Main St.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 32' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 5' colored bike lanes • Option: Add sharrows and wayfinding signage

FROM **Main St.**
TO **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with median • 32' wide curb-to-median • Posted speed limit: 40 mph	• Add 6' bike lanes with 2' buffer

FROM **Avalon Blvd.**
TO **Eastern Home Depot Center Driveway**

EXISTING	PROPOSED
• 4 lanes with right turn lane for Home Depot Center, center turn lane, and on-street parking on the north side only • 83' wide • Posted speed limit: 40 mph	• Add 6' bike lane with 2' buffer on the north side • Add 5' colored bike lane on the south side • Option: Add 15' two-way cycletrack on the south side of the street

VICTORIA STREET (CONTINUED)

FROM **Eastern Home Depot Center Driveway**
TO **Central Ave.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking on the north side only • 83' wide • Posted speed limit: 40 mph	• Add 6' bike lane with 2' buffer on the north side • Add 6' bike lane with 2' buffer on both sides on the south side • Option: Add 15' two-way cycletrack on the south side of the street

FROM **Central Ave.**
TO **Wilmington Ave. (Compton city limit)**

EXISTING	PROPOSED
• 4 lanes with center turn lane • 83' wide • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes with 2' buffer

192ND STREET

FROM **Main St.**
TO **West of Victoria Park parking lot**

EXISTING	PROPOSED
• 2 lanes with center turn lane and on-street parking • 57'-65' wide • Posted speed limit: 35 mph	• Add 5' bike lanes with 2' buffer

FROM **Towne Ave.**
TO **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 65' wide • Posted speed limit: 35 mph	• Road diet to 2 lanes, center turn lane, and on-street parking • Add 6' bike lanes with 2' buffer

UNIVERSITY DRIVE

FROM **Avalon Blvd.**
TO **Central Ave.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and 5' bike lanes • 65' wide curb-to-curb • Posted speed limit: 45 mph	• Road diet to one westbound lane • Add 15' two-way cycletrack on north side • Keep eastbound bike lane on south side and widen it to 6' with a 3' buffer

FROM **Central Ave.**
TO **Wilmington Ave.**

EXISTING	PROPOSED
• 4 lanes with median/center-turn lane and bike lanes • 27' wide curb-to-median	• Add color to bike lanes

TURMONT STREET/CRAIGJON AVENUE/CASHDAN STREET

FROM **Avalon Blvd.**
TO **Wilmington Ave.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • Signed bike route • 36' wide • Posted speed limit: 35 mph	• Add sharrows and wayfinding signage

TURMONT WASH

FROM **Dominguez Channel**
TO **Central Ave.**

EXISTING	PROPOSED
• Channelized waterway with parallel paved path	• Add bike path along waterway east of Avalon Blvd.; align path with north side of Del Amo Blvd. west of Avalon Blvd. • Add signalized crossing at Avalon Blvd. • Coordinate with Los Angeles County Flood Control District

DEL AMO BOULEVARD

FROM: **I-110 (Unincorporated Los Angeles County limit)**

TO: **Main St.**

EXISTING	PROPOSED
• 6 lanes with median • 40' wide curb-to-median • Truck route • Posted speed limit: 45 mph	• Add 5' colored bike lanes with 2' buffer

FROM: **Main St.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 6 lanes with median • 35'–37' wide curb-to-median • 24-hour traffic volume in December 2009: 16,200 • Truck route • Posted speed limit: 45 mph	• Add 5' colored bike lanes with 2' buffer

FROM: **Avalon Blvd.**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• 4 lanes with median and 5' bike lane • 37' wide curb-to-median • Truck route • Posted speed limit: 45 mph	• Widen bike lanes to 6' and add 3' buffer

FROM: **Wilmington Ave.**

TO: **Reeves Ave.**

EXISTING	PROPOSED
• 5 lanes (3 eastbound, 2 westbound) with median and on-street parking on the north side only • 35' wide curb-to-median • Traffic volume data not available • Truck route • High volumes of truck traffic observed • Posted speed limit: 45/50 mph • North side of the street is owned by Los Angeles County	• Add 6' bike lane with 2' buffer on the north side • Add 5' colored bike lane on the south side • If road is widened in the future, add 6' bike lane with 2' buffer on the south side • Coordinate with Los Angeles County

DEL AMO BOULEVARD (CONTINUED)

FROM: **Reeves Ave.**
TO: **Alameda Corridor bridge west approach**

EXISTING	PROPOSED
• 6 lanes with median • 35' wide curb-to-median • Traffic volume data not available • High volumes of truck traffic observed	• Add 5' colored bike lanes • If road is widened in the future, add 6' bike lanes with 2' buffer • Coordinate with Los Angeles County

FROM: **Alameda Corridor bridge west approach**
TO: **Alameda Corridor bridge east approach**

EXISTING	PROPOSED
• 6 lanes with median • 37' wide curb-to-median	• Add 5' colored bike lanes with 2' buffers • Coordinate with Los Angeles County

FROM: **Alameda Corridor bridge east approach**
TO: **"RXR" (railroad crossing ahead) striping east of Alameda St. access road**

EXISTING	PROPOSED
• 6 lanes with median • 32' wide curb-to-median • Traffic volume data not available • High volumes of truck traffic observed	• Add type B sharrows • Coordinate with Los Angeles County

FROM: **"RXR" (railroad crossing ahead) striping east of Alameda St. access road**
TO: **Santa Fe Ave. (Del Amo Metro Blue Line Station)**

EXISTING	PROPOSED
• 5 lanes (3 eastbound, 2 westbound) with median and on-street parking on the north side only • 34' wide curb-to-median • Traffic volume data not available • High volumes of truck traffic observed	• Add 5' bike lane with 2' buffer on the north side • South side option 1: Add 4' bike lane • South side option 2: Add type B sharrows • Coordinate with Los Angeles County

FROM: **Santa Fe Ave. (Del Amo Metro Blue Line Station)**
TO: **I-710**

EXISTING	PROPOSED
• 6 lanes with median • 29-32' wide curb-to-median • Traffic volume data not available	• Add type B sharrows • Add bike lanes in coordination with Metro I-710 Corridor Project

NEW STAMPS ROAD - LENARDO DRIVE

FROM: **Del Amo Blvd.**

TO: **Intersection of Lenardo Dr. and Loop Rd.**

EXISTING	PROPOSED
• A private road, New Stamps Rd., will be constructed here to serve the Boulevards at South Bay development • New Stamps Rd. will be 27-8' from curb-to-median with 4 travel lanes and bike lanes	• Add 5-6' bike lane with 2' buffer • Option: add multipurpose path along Lenardo Dr. alignment

FROM: **Intersection of Lenardo Dr. and Loop Rd.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• Bikeway called for by Boulevards at South Bay specific plan	• Add 12' multipurpose path

213TH STREET

FROM: **Main St.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 30 mph	• Add type B sharrows

FROM: **Avalon Blvd.**

TO: **Selwyn Ave.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking on the north side only • 64' wide • 24-hour traffic volume in December 2009: 5,700 • Posted speed limit: 30 mph	• Road diet to 2 lanes, center turn lane, and on-street parking • Add 6' bike lanes with 2' buffer

213TH STREET (CONTINUED)

FROM **Selwyn Ave.**
TO **West side of Dominguez Channel bridge**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 30 mph	• Add 5' bike lanes • Remove parking on south side of street and widen sidewalk/add bike path between proposed path on west side of I-405 and proposed path along Dominguez Channel

FROM **West side of Dominguez Channel bridge**
TO **Chico St.**

EXISTING	PROPOSED
• 2 lanes • 29' wide • Posted speed limit: 30 mph	• Add 4.5' bike lanes

FROM **Chico St.**
TO **Thomas Dr.**

EXISTING	PROPOSED
• 2 lanes • 40' wide • Posted speed limit: 30 mph	• Add 6' bike lanes

FROM **Thomas Dr.**
TO **Martin St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking on the south side only • 40' wide • Posted speed limit: 30 mph	• Add 6' bike lanes

FROM **Martin St.**
TO **Wilmington Ave.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide	• Add bike route with sharrows and wayfinding signage

214TH STREET

FROM: **I-110 (Unincorporated Los Angeles County limit)**

TO: **Main St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 33' wide	• Add sharrows and wayfinding signage • Coordinate with Los Angeles County to connect 214th St. bikeway via existing bridge over I-110

CARSON STREET

FROM: **I-110 (Unincorporated Los Angeles County limit)**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 34'-36' wide curb-to-median	• Add type B sharrows

FROM: **Avalon Blvd.**

TO: **I-405**

EXISTING	PROPOSED
• 3 lanes westbound, 2 lanes eastbound • 35' wide curb-to-median	• Add type B sharrows

FROM: **I-405**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 35' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes

CARSON STREET (CONTINUED)

FROM: **Wilmington Ave.**

TO: **Driveway west of Alameda Corridor railroad bridge**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 84' wide • High volumes of truck traffic observed • Truck route • Posted speed limit: 45 mph	• Add 6' colored bike lanes with 2' buffer

FROM: **Driveway west of Alameda Corridor railroad bridge**

TO: **Alameda St. access ramps**

EXISTING	PROPOSED
• 4 lanes with median • 29' wide curb-to-median • High volumes of truck traffic observed • Truck route • Posted speed limit: 45 mph	• Add 7' colored bike lanes • Option: Add 5' colored bike lanes

FROM: **Alameda St. access ramps**

TO: **Harbor View Ave.**

EXISTING	PROPOSED
• 4 lanes, center turn lane, and on-street parking on the south side only • 60' wide • 24-hour traffic volume in December 2009: 10,400 • Posted speed limit: 35 mph	• Option 1: Road diet to 2 lanes, center turn lane, and on-street parking on both sides; add 6' bike lanes with 2' buffer • Option 2: Add type B sharrows

FROM: **Harbor View Ave.**

TO: **Santa Fe Ave.**

EXISTING	PROPOSED
• 4 lanes with on-street parking • 63' wide • 24-hour traffic volume in December 2009: 10,400 • Posted speed limit: 35 mph	• Option 1: Road diet to 2 lanes, center turn lane, and on-street parking; add 6' bike lanes with 2' buffer • Option 2: Add type B sharrows

220TH STREET/LUCERNE STREET

FROM: **Figueroa St.**

TO: **223rd St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 36' wide • Posted speed limit: 25/30 mph	• Add bike route with sharrows and wayfinding signage

223RD STREET

FROM: **I-110 (Unincorporated Los Angeles County limit)**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 82'-84' wide • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes with 2' buffer

FROM: **Avalon Blvd.**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking on the north side only • 36' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 5' bike lane on the north side • Add 6' bike lane with 2' buffer on the south side

FROM: **Wilmington Ave.**

TO: **Emergency signal at City of Carson Fire Station 127**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 84' wide • Truck route • Posted speed limit: 45 mph	• Add 6' colored bike lanes with 2' buffer

223RD STREET (CONTINUED)

FROM **Emergency signal at City of Carson Fire Station 127**
TO **BP Campus Dr.**

EXISTING	PROPOSED
• 4 lanes, center turn lane, and on-street parking on the north side only • 70' wide • Truck route • Posted speed limit: 45 mph	• Add 6' bike lanes

FROM **BP Campus Dr.**
TO **Alameda St. (Los Angeles city limit)**

EXISTING	PROPOSED
• 6 lanes with median • 32' wide curb-to-median • 24-hour traffic volume in December 2009: 16,200 • Truck route • Posted speed limit: 45 mph	• Road diet to 4 lanes; add 6' bike lanes with 2' buffer • Coordinate with City of Los Angeles to extend project between Carson city limit at Alameda St. and Carson city limit at Hesperian Ave.

WARDLOW ROAD

FROM **Hesperian Ave. (Los Angeles city limit)**
TO **River Ave. (Long Beach city limit)**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking on the south side only • 32' wide curb-to-median • South side of street is in City of Long Beach	• Add 6' bike lane • Coordinate with City of Long Beach and add type B sharrows on the south side

228TH STREET

FROM **I-110 (Unincorporated Los Angeles County limit)**
TO **Avalon Blvd.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 36-40' wide • Posted speed limit: 30 mph	• Add bike route with sharrows and wayfinding signage

WATSON CENTER ROAD

FROM: **Avalon Blvd.**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 60' wide • Posted speed limit: 40 mph	• Add 5' bike lanes with 2' buffer

SEPULVEDA BOULEVARD

FROM: **I-110 (Unincorporated Los Angeles County limit)**

TO: **Figueroa St.**

EXISTING	PROPOSED
• 6 lanes with median/center turn lane • 36' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Road diet to four lanes with median/ center turn lane • Add 6' bike lanes with 4' buffer • Color conflict zone at eastbound on-ramp to northbound I-110

FROM: **Figueroa St.**

TO: **Avalon Blvd.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 34' wide curb-to-median • 24-hour traffic volume in May 2012: 25,700–27,700	• Add 5' colored bike lanes

FROM: **Avalon Blvd.**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 34' wide curb-to-median • 24-hour traffic volume in May 2012: 17,000 • Truck route • Posted speed limit: 40 mph	• Add 5' colored bike lanes

SEPULVEDA BOULEVARD (CONTINUED)

FROM: **Wilmington Ave.**

TO: **Alameda St.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane • 35' wide curb-to-median • High volumes of truck traffic observed	• Add 6' bike lane with 4' buffer

FROM: **Alameda St.**

TO: **Los Angeles city limit**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane • 35' wide curb-to-median • 52' wide curb-to-curb on bridge over Dominguez Channel • High volumes of truck traffic observed • No parking utilization observed	• Add 6' bike lane with 2' buffer where space permits • Prohibit parking

BNSF RAILWAY HARBOR SUBDIVISION

FROM: **Wilmington Drain**

TO: **Wilmington Ave.**

EXISTING	PROPOSED
• Wide railroad right-of-way • Railroad is active, but sees limited train service • East of Avalon Blvd., right-of-way is within the City of Los Angeles	• Add bike path along right-of-way • Add bridge over Main St. • Connect to proposed bike paths along Wilmington Drain and LADWP utility corridor • Coordinate with BNSF Railway, City of Los Angeles, and Metro

LOMITA BOULEVARD

FROM: **I-110 (Los Angeles City limit)**
TO: **Figueroa St.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane • 35' wide curb-to-median • 24-hour traffic volume in December 2009: 17,000 • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes with 2' buffers • Coordinate implementation with City of Los Angeles

FROM: **Figueroa St.**
TO: **Main St.**

EXISTING	PROPOSED
• 4 lanes, median/center turn lane, and on-street parking on the south side only • 34' wide curb-to-median • No traffic volume data available • Truck route • Posted speed limit: 40 mph	• Add 7' bike lane with 5' buffer • Coordinate implementation with City of Los Angeles

FROM: **Main St.**
TO: **Wilmington Blvd.**

EXISTING	PROPOSED
• 4 lanes, median/center turn lane, and on-street parking on the south side only • 34' wide curb-to-median • No traffic volume data available • Truck route • Posted speed limit: 40 mph	• On the north side, add 6' bike lane with 2' buffer • On the south side, add 6' bike lane • Coordinate implementation with City of Los Angeles

FROM: **Wilmington Blvd.**
TO: **Los Angeles city limit**

EXISTING	PROPOSED
• 4 lanes, median/center turn lane, and on-street parking • 79' wide • 24-hour traffic volume in December 2009: 3,300 • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes • Coordinate implementation with City of Los Angeles

NORTH-SOUTH BIKEWAYS

WILMINGTON DRAIN

FROM **Sepulveda Blvd. west of Figueroa St.**

TO **Lomita Blvd. west of I-110 (in City of Los Angeles)**

EXISTING	PROPOSED

• Channelized waterway with unpaved path along east side for majority of corridor
• Portion south of I-110 is within City of Los Angeles and has no parallel unpaved path
	• Add bike path along right-of-way
	• Add railroad crossing at BNSF railroad
	• Add lighting under I-110
	• Coordinate with:
	  • Los Angeles County Flood Control District
	  • Caltrans
	  • City of Los Angeles
	  • BNSF Railway
	  • California Public Utilities Commission (for railroad crossing)
	  • Adjacent property owners, as necessary

FIGUEROA STREET

FROM **Alondra Blvd.**

TO **Del Amo Blvd.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 82' wide curb-to-curb • 32' wide curb-to-median • 24-hour traffic volume in May 2012: 10,100–15,000 • Western portion of street is in City of Los Angeles from Alondra Blvd. to Victoria St.	• Road diet to one lane in each direction, make on-street parking permanent, and add 6' bike lanes with 2' buffer on travel lane side and 2' buffer on parking side of bike lane • Coordinate with City of Los Angeles where jurisdiction over street is shared

FIGUEROA STREET (CONTINUED)

FROM: **Del Amo Blvd.**
TO: **223rd St.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 82' wide curb-to-curb • 32' wide curb-to-median • 24-hour traffic volume in May 2012: 10,800-21,700	• Add 5-6' colored bike lanes

FROM: **223rd St.**
TO: **Lomita Blvd.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane and on-street parking • 82' wide curb-to-curb • 32' wide curb-to-median • 24-hour traffic volume in May 2012: 13,500	• Road diet to one lane in each direction, make on-street parking permanent, and add 6' bike lanes with 2' buffer on travel lane side and 2' buffer on parking side of bike lane

MONETA AVENUE

FROM: **Carson St.**
TO: **228th St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 30 mph	• Add bike route with sharrows and wayfinding signage

BROADWAY

FROM: **Alondra Blvd.**
TO: **Griffith St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 75' wide • 24-hour traffic volume in December 2009: 3,800-5,700 • Truck route • Posted speed limit: 40 mph	• Add 5' bike lanes

FROM: **Griffith St.**
TO: **Main St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 54' wide • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes

MAIN STREET

FROM: **Alondra Blvd.**
TO: **Victoria St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane/median and on-street parking • 83' wide curb-to-curb • 34' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes to sections with median • Add 6' bike lanes with 2' buffer to sections without median

FROM: **Victoria St.**
TO: **220th St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane/median and on-street parking • 83' wide curb-to-curb • 34' wide curb-to-median • Posted speed limit: 45 mph	• Add 6' bike lanes to sections with median • Add 6' bike lanes with 2' buffer to sections without median

MAIN STREET (CONTINUED)

FROM: **220th St.**
TO: **223rd St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane/median and on-street parking • 83' wide curb-to-curb • 32' wide curb-to-median • Posted speed limit: 35 mph	• Add 5' colored bike lanes to sections with median • Add 6' colored bike lanes with 2' buffer to sections without median

FROM: **223rd St.**
TO: **Lomita Blvd.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 34' wide curb-to-median • 22' wide curb-to-median for brief section at BNSF railroad underpass • A portion of this segment is a truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes • Add type B sharrows at railroad underpass

DOMINGUEZ CHANNEL

FROM: **Main St. (end of existing Dominguez Channel path)**
TO: **223rd St.**

EXISTING	PROPOSED
• Channelized waterway with parallel unpaved paths along both sides • Proposed bike path in Los Angeles County Bicycle Master Plan	• Add bike paths along both sides of waterway (prioritize implementation on the east side) • Add access points at existing bridges over channel • Coordinate with Los Angeles County Flood Control District

FROM: **223rd St.**
TO: **North of Pacific Coast Highway (Los Angeles city limit)**

EXISTING	PROPOSED
• Channelized waterway with parallel unpaved paths along both sides • Proposed bike path in Los Angeles County Bicycle Master Plan	• Add bike path on east side • Add access point at Sepulveda Blvd. • Coordinate with Los Angeles County Flood Control District

DOLORES STREET

FROM: **213th St.**

TO: **223rd St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • Signed bike route • 40' wide • Posted speed limit: 30 mph	• Add bike route with sharrows and wayfinding signage

FROM: **223rd St.**

TO: **Sepulveda Blvd.**

EXISTING	PROPOSED
• 2 lanes, center turn lane, on-street parking, and 5' bike lanes • 56' wide • Signed as "Bike Route" at Sepulveda Blvd. • 24-hour traffic volume in December 2009: 4,300 • Posted speed limit: 35 mph	• Replace "Bike Route" signs with "Bike Lane" signs • Option 1: Widen bike lanes to 6' • Option 2: Remove center turn lane, widen bike lanes to 6,' and add 2' buffer on travel lane side and 2' buffer on parking side of bike lane

LADWP UTILITY CORRIDOR

FROM: **Carson Plaza Dr.**

TO: **Lenardo Dr. alignment at Boulevards at South Bay**

EXISTING	PROPOSED
• Utility corridor connecting Dominguez Channel to Southbay Pavilion • Plant nursery located within utility corridor • Flood control channel passes underneath I-405 and connects to channel on the perimeter of the Boulevards at South Bay project	• Add bike path along LADWP Utility Corridor right-of-way • Coordinate with Los Angeles Department of Water and Power, nursery, and Los Angeles County Flood Control District • Add bridge over Dominguez Channel • Add bike path along flood control channel to connect to proposed multipurpose path on Lenardo Dr.

AVALON BOULEVARD

FROM: **Alondra Blvd.**

TO: **Walnut St.**

EXISTING	PROPOSED
• 6 lanes with median • 34' curb-to-median • 24-hour traffic volume in May 2012: 24,000 • Posted speed limit: 40 mph	• Road diet to two lanes in each direction • Add 6' bike lanes with 4' buffers

FROM: **Walnut St.**

TO: **Victoria St.**

EXISTING	PROPOSED
• 6 lanes with median • 49' wide curb-to-median • 24-hour traffic volume in May 2012: 29,900 • Posted speed limit: 40 mph	• Add 6' bike lanes with 4' buffers

FROM: **Victoria St.**

TO: **University Dr.**

EXISTING	PROPOSED
• 6 lanes with right turn lane for Home Depot Center, median, and on-street parking on the northbound side only • 38' wide, curb-to-median, southbound side • 47' wide, curb-to-median, northbound side • 24-hour traffic volume in May 2012: 23,000 • Posted speed limit: 40 mph	• Add 6' colored bike lane northbound • Add 6' colored bike lane with 2' buffer southbound • Option: Add 15' two-way cycletrack on the east side of the street

FROM: **University Dr.**

TO: **Del Amo Blvd.**

EXISTING	PROPOSED
• 6 lanes with median and 5' bike lanes • 47' wide curb-to-median • 24-hour traffic volume in May 2012: 25,200 • Posted speed limit: 40 mph	• Widen bike lane to 6', add 4' buffer, and add color • Option: Continue road diet and use resulting space for sidewalk improvements or additional bikeway improvements

AVALON BOULEVARD (CONTINUED)

FROM **Del Amo Blvd.**
TO **South side of Dominguez Channel bridge**

EXISTING	PROPOSED
• 6 lanes with median • 32'-48' wide curb-to-median • 24-hour traffic volume in May 2012: 24,100 • Posted speed limit: 35 mph	• Add 6' colored bike lanes • Where right-of-way constraints necessitate, add type B sharrows

FROM **South side of Dominguez Channel bridge**
TO **End of median south of I-405 southbound ramps**

EXISTING	PROPOSED
• 5-6 lanes with median • 28'-48' wide curb-to-median • 24-hour traffic volume in May 2012: 31,100 • Posted speed limit: 35 mph	• Road diet to 4 lanes • Add 6' colored bike lanes with 2' buffer

FROM **End of median south of I-405 southbound ramps**
TO **Carson St.**

EXISTING	PROPOSED
• 6 lanes with median • 34' wide curb-to-median • 24-hour traffic volume in May 2012: 28,100-31,100 • Posted speed limit: 35 mph	• Option 1: Road diet to 4 lanes; add 6' colored bike lanes with 4' buffer • Option 2: Add 4' bike lanes • Option 3: Add sharrows and wayfinding signage

FROM **Carson St.**
TO **Sepulveda Blvd.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 83' wide • Posted speed limit: 35 mph	• Add 6' colored bike lanes with 2' buffer

AVALON BOULEVARD (CONTINUED)

FROM: **Sepulveda Blvd.**

TO: **South of BNSF railroad crossing (Los Angeles city limit)**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 35' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes with 2' buffer

CAMPAIGN DRIVE

FROM: **University Dr.**

TO: **Turmont St.**

EXISTING	PROPOSED
• 2 lanes with and on-street parking • 36' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage

GALWAY AVENUE/DENWALL DRIVE

FROM: **Turmont St.**

TO: **Leapwood Ave.**

EXISTING	PROPOSED
• 2 lanes with and on-street parking • 40' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage

LEAPWOOD AVENUE/CHICO STREET

FROM **Denwall Dr.**
TO **Del Amo Blvd.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage

FROM **Del Amo Blvd.**
TO **Dovlen Pl.**

EXISTING	PROPOSED
• 2 lanes with center turn lane and 5' bike lanes • 40' wide • Posted speed limit: 35 mph	• No change from existing conditions

FROM **Dovlen Pl.**
TO **Dominguez St.**

EXISTING	PROPOSED
• 2 lanes with center turn lane and 5' bike lanes • 47' wide • Posted speed limit: 35 mph	• Widen bike lanes to 7'

FROM **Dominguez St.**
TO **213th St.**

EXISTING	PROPOSED
• 2 lanes with center turn lane and 5' bike lanes • 48' wide • Posted speed limit: 45 mph	• Widen bike lanes to 6' and add 2' buffer

SELWYN AVENUE/DESFORD STREET

FROM **213th St.**
TO **Civic Plaza Dr.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage

CIVIC PLAZA DRIVE

FROM: **Desford St.**

TO: **Roundabout at Merchants Bank of California building**

EXISTING	PROPOSED
• 2 lanes • 25' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage

FROM: **Roundabout at Merchants Bank of California building**

TO: **Carson St.**

EXISTING	PROPOSED
• 2 lanes • 40' wide • Posted speed limit: 25 mph	• Add 6' bike lanes

BONITA STREET

FROM: **Carson St.**

TO: **223rd St.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 30 mph	• Add bike route with sharrows and wayfinding signage

FROM: **223rd St.**

TO: **Watson Center Rd.**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 60' wide • Posted speed limit: 40 mph	• Add 5' bike lanes with 2' buffer

INTERSTATE 405 RIGHT-OF-WAY/LADWP UTILITY CORRIDOR

FROM: **213th St.**

TO: **BNSF Railway Harbor Subdivision**

EXISTING	PROPOSED
• Mostly vacant right-of-way along west side of I-405 and high-voltage power line corridor • Some plant nurseries located within utility corridor south of 223rd St. • South of Deloras Dr., right-of-way is within the City of Los Angeles	• Add bike path along right-of-way • Add signal where proposed path crosses Carson St. • Link to proposed Dominguez Channel bike path via connecting path along 213th St. (see 213th St. proposed bikeways) • Connect to proposed path along BNSF Railway Harbor Subdivision • Coordinate with Caltrans, Los Angeles Department of Water and Power, City of Los Angeles, and utility corridor tenants, as necessary

CENTRAL AVENUE

FROM: **Greenleaf Blvd.**

TO: **Walnut St.**

EXISTING	PROPOSED
• 4 lanes with median • 34' wide curb-to-median • East side of street is in City of Compton • Truck route • Posted speed limit: 40 mph	• Add 6' bike lanes with 4' buffer • Coordinate with City of Compton

FROM: **Walnut St.**

TO: **Artesia Blvd.**

EXISTING	PROPOSED
• 5 lanes (2 northbound, 3 southbound) with median • 34' wide curb-to-median • Traffic volume data not available • East side of street is in City of Compton • Truck route • Posted speed limit: 40 mph	• Coordinate with City of Compton and add 6' bike lane with 4' buffer on east side of street • West side option 1: Remove 1 southbound travel lane and add 6' bike lane with 4' buffer • West side option 2: Add 4' bike lane

CENTRAL AVENUE (CONTINUED)

FROM **Artesia Blvd.**
TO **Albertoni St.**

EXISTING	PROPOSED
• 6 lanes with center turn lane • 84' wide curb-to-curb • Traffic volume data not available • East side of street is in City of Compton • Truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes • Coordinate with City of Compton

FROM **Albertoni St.**
TO **University Dr.**

EXISTING	PROPOSED
• 4 lanes with median/center turn lane • Wide sidewalk/bicycle sidepath on west side of street between Aspen Hill Rd. and University Dr. • 35' wide curb-to-median • 84' wide curb-to-curb • Truck route • Posted speed limit: 40 mph	• Add 12' cycletrack on west side of street • Add 6' bike lanes with 4' buffer on east side of street • Add bike signals at intersections • Option: Add 6' bike lanes with 4' buffer • Add "Bike Path" signage and pavement markings to sidepath; add signage notifying motorists of crossing bicyclists at intersections

FROM **University Dr.**
TO **Del Amo Blvd.**

EXISTING	PROPOSED
• 4 lanes with median and 5' bike lanes • 35' wide curb-to-median • Posted speed limit: 40 mph	• Widen bike lanes to 6' and add 4' buffer

VERA STREET

FROM: **213th St.**

TO: **Carson St.**

EXISTING	PROPOSED
• 3 lanes with on-street parking • 56' wide • Posted speed limit: 35 mph	• Add 6' bike lanes

FROM: **Carson St.**

TO: **Dominguez Channel**

EXISTING	PROPOSED
• 2 lanes with on-street parking • 40' wide • Posted speed limit: 25 mph	• Add bike route with sharrows and wayfinding signage • Connect to proposed Dominguez Channel path via vacant lot southeast of Vera St./213th St. intersection • Add bridge to cross Dominguez Channel

WILMINGTON AVENUE

FROM: **Victoria St. (Compton city limit)**
TO: **Del Amo Blvd.**

EXISTING	PROPOSED
• 6 lanes with median • 35' wide curb-to-median • 24-hour traffic volume in May 2012: 18,700 • Eastern portion of street is in unincorporated Los Angeles County • Truck route • Posted speed limit: 45 mph	• Add 5' colored bike lanes • Coordinate with Los Angeles County

FROM: **Del Amo Blvd.**
TO: **213th St.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 35' wide curb-to-median • High volumes of truck traffic observed • Minimal use of on-street parking observed • Posted speed limit: 40 mph	• Option 1: Remove on-street parking and add 6' colored bike lanes with 2' buffer • Option 2: Add 6' colored bike lanes

FROM: **213th St.**
TO: **220th St.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 35' wide curb-to-median • High volumes of truck traffic observed • Truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes

WILMINGTON AVENUE (CONTINUED)

FROM: **220th St.**
TO: **223rd St.**

EXISTING	PROPOSED
• 6 lanes with median • 35' wide curb-to-median • High volumes of truck traffic observed • Truck route • Posted speed limit: 40 mph • 24-hour traffic volume in May 2012: 20,800-33,600 • Planned capital project will add a travel lane in each direction and widen sidewalks	• Add type B sharrows

FROM: **223rd St.**
TO: **Sepulveda Blvd.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking on west side only • 35' wide curb-to-median • High volumes of truck traffic observed • Minimal use of on-street parking observed • Truck route • Posted speed limit: 45 mph	• Option 1: Remove on-street parking and add 6' colored bike lanes with 2' buffer • Option 2: Add 6' colored bike lanes

FROM: **Sepulveda Blvd.**
TO: **BNSF railroad crossing south of Sepulveda Blvd.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 35' wide curb-to-median • Minimal use of on-street parking observed on east side of street • Truck route • Posted speed limit: 45 mph	• Add 6' colored bike lanes

WILMINGTON AVENUE (CONTINUED)

FROM: **BNSF railroad crossing south of Sepulveda Blvd.**
TO: **Lomita Blvd. (Los Angeles city limit)**

EXISTING	PROPOSED
• 4 lanes with center turn lane • 56' wide • Few driveways or land uses fronting onto segment • Truck route • Posted speed limit: 45 mph	• Remove center turn lane and add 6' colored bike lanes

SANTA FE AVENUE

FROM: **Del Amo Blvd. (Unincorporated Los Angeles County limit)**
TO: **Dominguez St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 84' wide • Truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes with 2' buffer

FROM: **Dominguez St.**
TO: **Carson St.**

EXISTING	PROPOSED
• 4 lanes with center turn lane and on-street parking • 79' wide • Truck route • Posted speed limit: 40 mph	• Add 6' colored bike lanes

FROM: **Carson St.**
TO: **218th Pl.**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 36' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add 5' colored bike lanes with 2' buffer

SANTA FE AVENUE (CONTINUED)

FROM **218th Pl.**

TO **Warnock Wy. (Long Beach city limit)**

EXISTING	PROPOSED
• 4 lanes with median and on-street parking • 30' wide curb-to-median • Truck route • Posted speed limit: 40 mph	• Add type B sharrows

COMPTON CREEK

FROM **Del Amo Blvd.**

TO **I-710 (Long Beach city limit)**

EXISTING	PROPOSED
• Channelized waterway • Existing bike path north of Del Amo Blvd. • Proposed bridge to connect to Del Amo Station just north of Del Amo Blvd. (City of Long Beach Metro Blue Line Bike and Pedestrian Access Plan)	• Add bike path on the east side • Coordinate implementation with Metro and the City of Long Beach

FIGURE 6.1 *Proposed Carson network of bikeways.*

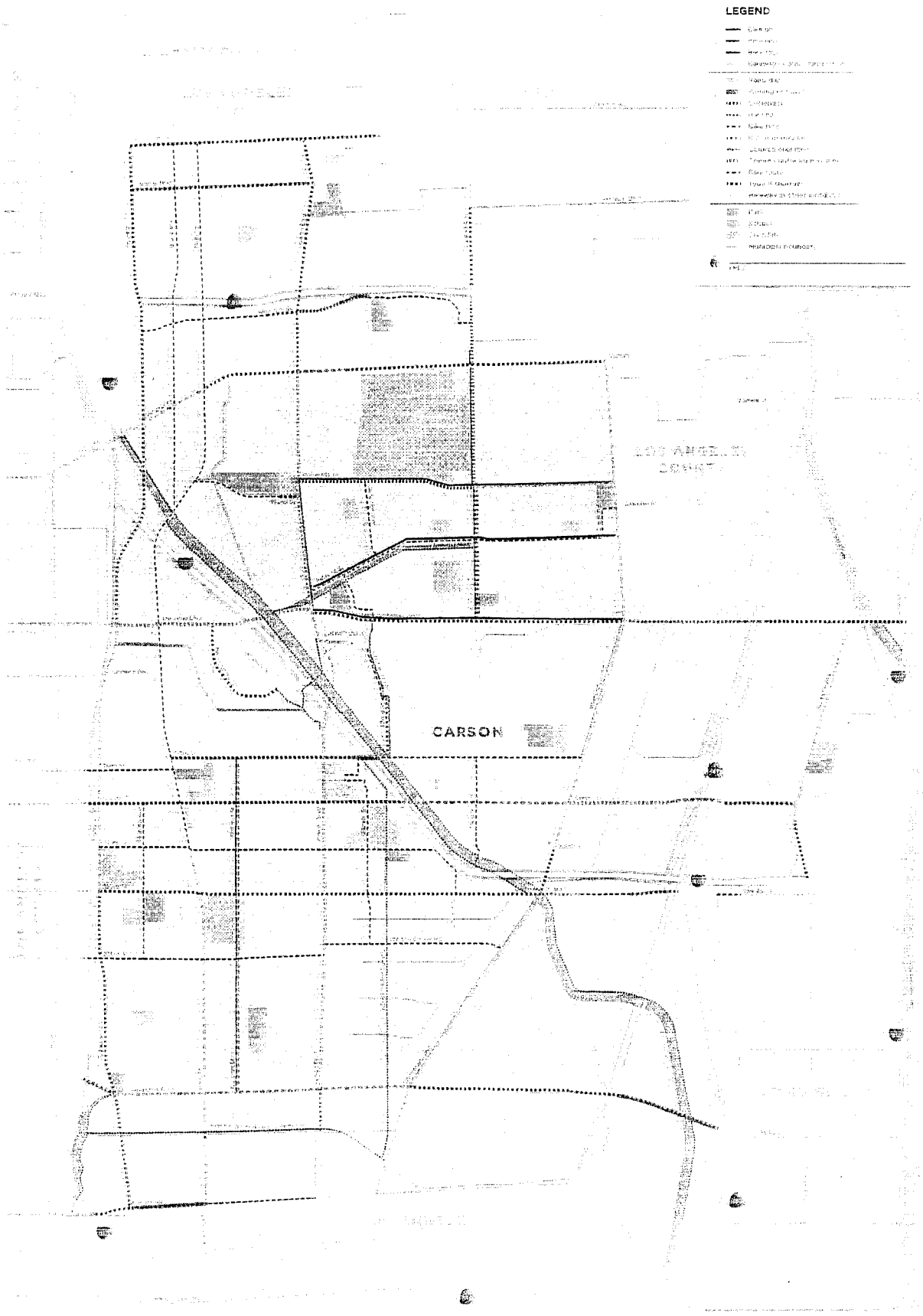
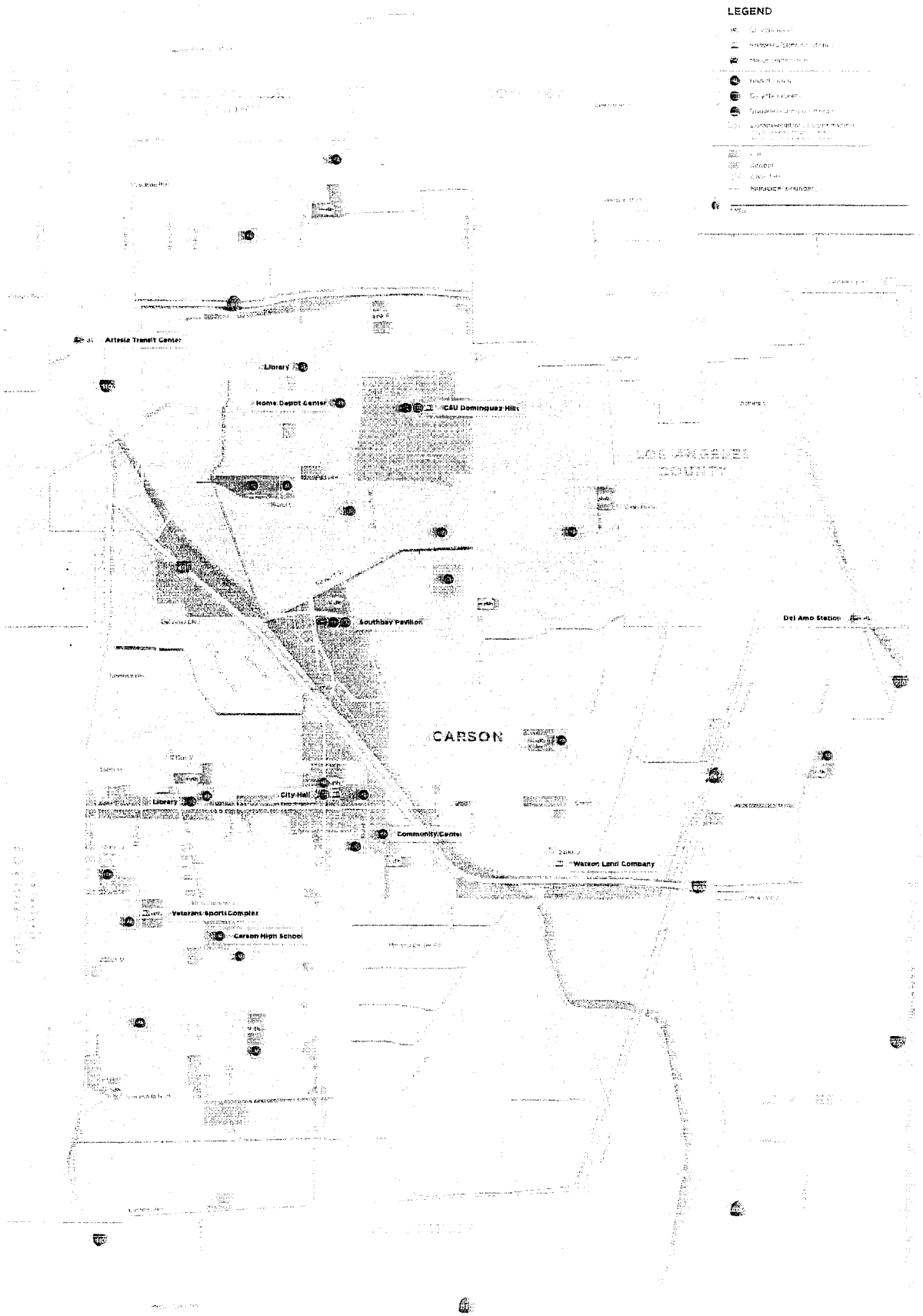


FIGURE 6.2 *Existing and proposed end-of-trip facilities.*



PROPOSED END-OF-TRIP FACILITIES

BICYCLE PARKING

Chapter 5 discusses that Carson already has bicycle racks at most City parks and City Hall. To enhance the convenience of bicycling for current cyclists and to encourage additional bicycle travel, the City should expand the quantity and types of bicycle parking it supplies as well as the locations at which it supplies parking.

As Figure 6.2 illustrates, the City should provide bicycle parking at all public parks. The City may want to add additional bicycle racks at parks that already have them—both to augment capacity and to replace poor-quality racks that do not meet the design specifications presented in Chapter 10. Further, the City should work with school districts to make sure that all K-12 schools in Carson have adequate bicycle parking facilities. For larger schools, such as Carson High School and California State University Dominguez Hills (CSUDH), the City must also work to provide bicycle lockers—which may be used by staff and for other longer-term bicycle storage needs—in addition to ample bicycle racks. Further, in partnership with CSUDH and AEG, the City should supply bike racks at the Home Depot Center.

At City Hall, Carson can supplement existing bike parking with additional bike racks, and can provide bicycle lockers for employees. Other community destinations, including the Congresswoman Juanita Millender-McDonald Community Center and Carson's libraries, need additional bicycle parking as well. The City of Carson will need to coordinate with Los Angeles County to provide bicycle parking at libraries. Additionally, Carson should collaborate with Metro to supply bicycle racks and lockers at the Southbay Pavilion transit hub.

In addition to parking recommendations at individual locations, Figure 6.2 displays commercial and mixed use zoning for the City of Carson. As appropriate, the City should provide bicycle racks within the public right-of-way throughout these areas. The types of parking provided could include sidewalk racks as well as bike corrals, which replace one or more car parking spaces with several bike parking spaces. As men-

tioned in Chapter 4, the City aims to establish a "request a rack" program. In this program, businesses can request bicycle parking in front of their business that the City would install—at no cost to the business—in the public right-of-way. This program represents an effective way to prioritize bicycle parking in commercial areas. The City should also install racks where bicycles are regularly seen locked to trees, parking meters, or other fixtures.

The City will seek funds for an ongoing bicycle parking program so it can add parking as discussed above.

OTHER AMENITIES

Key civic destinations, certain large employers, and CSUDH already provide showers for their employees and students, respectively. A potential next step, pending demand, may be to open showers in public buildings to members of the public who commute by bicycle.

In addition to bicycle parking requirements, the City should require showers and clothing lockers in large new commercial developments. The 2010 California Green Building Standards Code recommends the following:

> **Changing rooms**. For buildings with over 10 tenant-occupants, provide changing/shower facilities for tenant-occupants only in accordance with Table 6.1 or document arrangements with nearby changing/shower facilities. For public schools and community colleges, provide changing/shower facilities for the "number of administrative/teaching staff " equal to the "number of tenant occupants" shown in Table 6.1.

The City should also enact a "bikes in buildings" ordinance stipulating that owners of commercial office buildings provide secure bicycle storage for employees and/or allow tenants to bring bicycles into the building. Bicycling is a great way to get to work, but often barriers exist at the workplace, including the lack of a safe, secure place to store bicycles or private prohibitions on bikes in buildings. When commuters are allowed

to bring bicycles into the workplace, they may be more likely to bicycle to work. City staff should determine appropriate parameters for Carson.

TABLE 6.1 *Changing room requirements*

NUMBER OF TENANT OCCUPANTS	SHOWER/ CHANGING FACILITIES REQUIRED	PERSONAL LOCKERS REQUIRED
0-10	0	0
11-50	1 unisex shower	2
51-100	1 unisex shower	3
101-200	1 shower stall per gender	4
Over 200	1 shower stall per gender for each 200 additional tenant-occupants	1 locker for each 25 additional tenant-occupants

ESTIMATED NUMBER OF EXISTING BIKE COMMUTERS AND ESTIMATED INCREASE

The US Census Bureau's 2011 American Community Survey 1-year estimates show that about 780 out of some 39,000 Carson workers age 16 and over commute by bicycle, which is a mode split of about 0.2%.

The City hereby sets a goal of 5% of all commute trips to be made by bicycle when this plan is fully implemented 20 years from now. Carson's plan is ambitious; however, other cities that have become bicycle-friendly, and have supported bicycles through policy, engineering, encouragement, enforcement, education, and evaluation campaigns, have seen roughly this level of increase.

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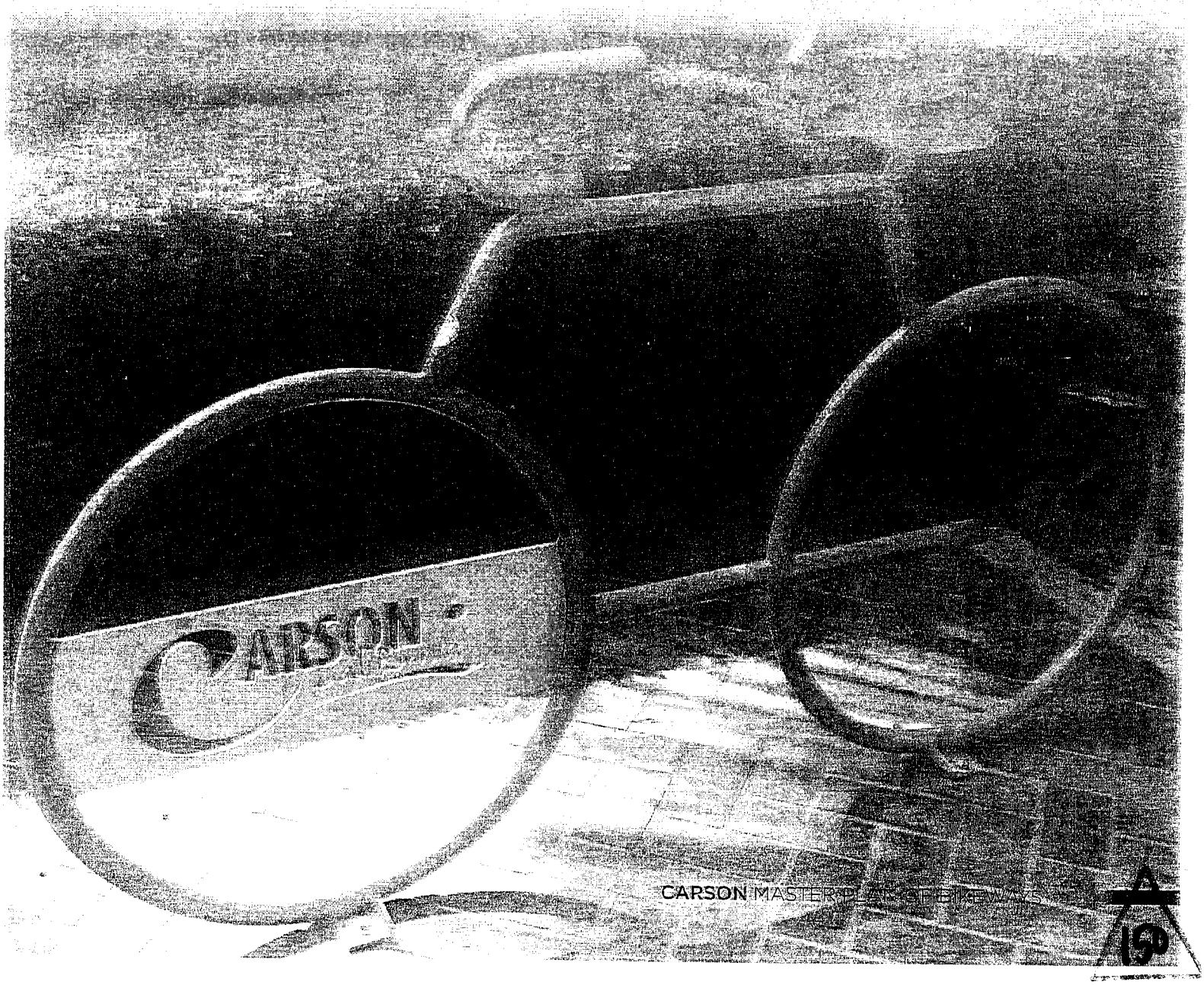
CHAPTER 7

BICYCLE PROGRAMS



PROPOSED PROGRAMS

Cities that implement programs that support bicycling see greater shifts in behavior among residents than cities that implement physical projects alone. Although changing the physical environment is very important to make bicycling safe and attractive, non-infrastructure programs help to spark and sustain long-term behavioral change among Carson residents.

Programs are grouped into four primary categories; each targets different issues that affect bicycling.

Enforcement programs deter unsafe behaviors of drivers, pedestrians and bicyclists, and encourage all road users to obey traffic laws and share the road safely. Enforcement is one of the complementary strategies that will enable more residents to bike safely.

Education activities include teaching safe driving around bicyclists, safe bicycling, and traffic laws, and creating awareness of the benefits of a healthy and safe walking and bicycling environment.

Encouragement programs generate excitement about bicycling. They can help spread the message that bicycling is not only beneficial for health, social, and economic reasons, but are enjoyable as well. Encouragement strategies are especially important when working with youth.

Evaluation is used to determine if goals are being met, help direct resources, and expand programs and efforts. Conducting regular evaluations will be key to understanding the efficacy of programs.

The Pedestrian and Bicycle Information Center (PBIC) recommends six concepts to guide program development:

1. Make walking and bicycling "try-able." Give people a chance to "try out" bicycling instead of driving for something they do regularly. This could be by organizing a group ride to school, or providing route maps for a citywide event, etc.
2. Communicate the behavior you want to see. Bumper stickers, billboards, banners, signs, pamphlets, and public service announcements can all convey messages to encourage travel by bicycle.
3. Reward behavior. Provide incentives and gifts to motivate people to try bicycling for a trip. These strategies are especially effective for school children. With rewards in place, people are more likely to continue bicycling once they've tried it.
4. Make it convenient. Design bike-friendly places throughout the City; prioritize improvements to key destinations such as downtown, routes to school, and along commercial corridors.
5. Institutionalize support for bicycling. Strong policies that support bicycling will help guide programs and ensure ideas have staying power.
6. Capitalize on other agendas. Making bicycling part of the solution to a wider range of issues the community faces such as obesity, environmental concerns, and economic depression. This can help grow the bicycle movement.

Following these principles will help Carson develop a well-rounded program.

The City will consider enacting the following programs within the next five years. The City wil also establish a bicycle coordinator position, or will assign bicycle coordinator duties to existing staff.

COMMUNITY TASK FORCE

The City should first consider organizing a formal community task force that meets regularly to discuss bicycling issues.

Through the Master Plan of Bikeways process, Carson staff engaged many parents, students, and business-owners. These stakeholders can form the task force. Task force members can also include:

- City staff from Public Works and Community Services Departments
- Students
- Parents
- Teachers
- Principals
- Law enforcement
- Fire department
- Local bicycle and pedestrian organizations
- Neighborhood business owners
- Hospital/public health staff

There are several reasons to organize a high-level, community-led task force:

1. Identify key problems. Who better than Carson residents, business-owners, and employees to identify the barriers to walking and bicycling? This group will be able to discuss specific issues and locations in Carson that may serve as barriers to bicycling. Working as a team, the task force can then address problems with a multi-faceted approach.
2. Craft messaging. Successful campaigns and messaging are typically those crafted by and for the community itself. Key stakeholders will know what messaging will resonate with their peers.
3. Organize the community. By including a diverse set of stakeholders in the task force, each member will be able to relay messages to his or her constituents. This will help increase the level of public participation.
4. Promote the programs. Stakeholders will feel ownership over much of the programming, and will likely want to promote the cause. Members can spread the message and encourage the rest of the community to get involved.

Examples of programming by type (enforcement, education, encouragement, evaluation) that have been successful in other communities are outlined below. With the assistance of the task force, Carson should customize a comprehensive program for itself.

ENFORCEMENT

Enforcement activities bring the community together to promote safe walking, bicycling, and driving. Law enforcement plays a key role in this effort; however, residents and youth can get involved as well.

As a first step, the City should convene a meeting with local law enforcement. Officers have first-hand knowledge of unsafe behavior and locations. In addition, mutual understanding of the purpose, direction, and benefits of an enforcement campaign between the law enforcement, staff, and community will be critical. A law enforcement representative should be a part of the community task force.

The second step is to identify unsafe behaviors and locations. These can range from speeding vehicles to bicycles riding the wrong direction. Outreach at schools, events like "National Night Out," or with the established community task force, can help identify hot spots and issues. This will assist law enforcement and community members in shaping a campaign.

Law Enforcement Methods

Law enforcement use a variety of methods to enforce driver, pedestrian, and cyclist behavior. Active education campaigns should coincide with targeted enforcement. If officers plan to target speeding, a media campaign informing citizens to slow down and obey the posted speed limit will complement the effort. Enforcement methods include:

1. Speed Trailers and Active Speed Monitors. Speed trailers and active speed monitors display the speed of oncoming vehicles. Speed trailers are portable, whereas speed monitors are installed at permanent locations. Both de-

vices help officers track motorist speed, display current speed to motorists, and create awareness of the posted speed limit. Devices should be placed at known locations with reported speeding, and should be used in conjunction with random ticketing operations.

2. Traffic Complaint Hotline. Carson residents can report non-emergency traffic violations to law enforcement if there is an established traffic complaint hotline. Officers can target problem areas more effectively with records of traffic complaints. This also allows the community to engage efficiently with officers.
3. Photo Enforcement. Automated photo enforcement takes a real-time photo of traffic to record vehicle speeds and behaviors. It can be used to document speeders and those who drive dangerously through crosswalks. Often the presence of cameras alone can help curb dangerous behavior. The use of cameras will require a complimentary public education campaign, and should be evaluated by the City Attorney prior to use.
4. Speed Enforcement in School Zones. Strict enforcement of speed laws in school zones can improve the safety for children walking and bicycling to school. A 'zero tolerance' policy for speeders in school zones, and an increase in fines for drivers who violate the posted school zone speed limit, are both potential approaches.
5. Presence. The presence of officers at random locations throughout the City can be an enforcement tool in and of itself. Drivers' fear of getting ticketed can serve to correct behavior.
6. Other Personal Safety Concerns. Often, people do not walk or bike because they are concerned about their personal safety. Law enforcement can increase patrol in areas identified by residents. Officers should work with the community to create an enforcement strategy that addresses these concerns.

Community Enforcement

Residents have an important part to play in enforcement initiatives. Community members can work with officers to assist with catching repeat offenders, letting officers know where there are problems, and setting examples for friends and neighbors.

1. Student Safety Patrols. Student safety patrols enhance enforcement of drop-off and pick-up procedures at schools by increasing safety for students and traffic flow efficiency for parents. Having a student safety patrol program at a school requires approval by the school and a committed teacher or parent volunteer to coordinate the student trainings and patrols. Before beginning a program, school officials should be contacted for approval of the program and to determine how liability issues will be addressed.
2. Corner Captains. The corner captain program is effective in neighborhoods with short, grid-like blocks, with clear sight lines from street to street. The program is effective in neighborhoods where lack of adult supervision is a barrier to walking and bicycling. Neighbors or parents agree to stand at a corner of a route to school during the start or end of the school day to supervise kids as they walk to or from school. With short blocks and clear sight lines, students will be seen the entire length of the block. Corner captains should wear reflective vests.
3. Neighborhood Speed Watch/Radar Lending Program. If speeding is a problem, law enforcement officers can lend their speed radar guns to students or residents to check speeds of passing vehicles. The student or resident records the license plate number of any speeding vehicles, and law enforcement will send a speeding notice warning to the motorist. A group of organized neighbors can also commit to periodically monitoring streets for speeding vehicles.
4. Pace Vehicle. Residents can set the pace on streets in their neighborhood by driving no faster than the posted speed limit. On streets with only one lane in each direction, this will effectively force other motorists to drive

slower. Many communities distribute stickers that say "Neighborhood Pace Car - Drive the Speed Limit." which residents can place on their rear windshield.

EDUCATION

Define the Problems and Goals

Much like enforcement campaigns, defining education-related problems and goals should be the first step prior to programming. Some of the key education problems have already been identified as part of this planning process. For example, community members expressed concern about bicyclists traveling fast on the sidewalks, and about bicyclists riding without lights. It is likely that law enforcement has found motorists speeding on neighborhood streets, or passing bicyclists too closely at high speed. Some examples of common bicycle-related problems that can be addressed through education are:

- Commuters are unaware of alternative ways of traveling to work
- Developers, designers, and engineers are not using the best design practices for bicyclists
- Motorists are not aware that bicyclists can legally ride in the road
- Bicyclists do not know how to ride safely and predictably
- Motorists and bicyclists do not understand the meaning of sharrows

After the community and city staff identify the key education-related problems, they can create goals and objectives. If possible, they should be measurable.

Identify the Audiences

Educational programs must be tailored to specific audiences in order to effectively address the behaviors the programs seek to modify. For example, a child bicyclist will need different education on how to ride than an adult bicyclist. Similarly, different messaging will resonate with teen drivers than adult

drivers. The most common audiences that will benefit from education programs include:

1. Road users — drivers (young, adult, older), bicyclists and pedestrians (children, teens, adults/parents/neighbors, seniors)
2. Commuters and employers
3. Officials and policy makers — engineers, planners, council members, law enforcement
4. Visitors

For each group, the City should consider when and how the audience should receive the information, and the demographic factors that may affect how the audience understands/perceives the information. Descriptions of educational campaigns and programs that have been successful in other communities are described below. Each should be tailored to Carson's specific issues and audiences.

Citywide Campaigns

1. Public Service Announcements. Carson can promote and educate residents about walking and bicycling through frequent public service announcements (PSAs) on local channels. Organizations such as the National Highway Traffic Safety Administration (NHTSA), Safe Kids Coalition, and California Office of Traffic Safety, have existing PSAs that Carson can use. Carson can incorporate its own logos and slogans into these PSAs. Carson's mayor or council members could also record their own radio or television announcements for broadcast. Los Angeles' Mayor recently recorded PSAs alerting motorists to give a bicyclist 3 feet when passing, and stressing the importance of wearing a helmet while riding.
2. Bicycle Maps and Guides. Attractive maps with bicycle routes to destinations in Carson can serve as an educational tool. The guide should showcase how easy it is to get around Carson through alternative modes, and include tips on safe bicycling. The guide should be distributed at kiosks throughout the City, and at local bicycle shops.

3. Print and Media Campaign. Carson can incorporate educational messages such as "STOP! It could be someone you love in the crosswalk" or "Use the other pedal and slow down" into media coverage, events, street banners, maps, posters, stickers, guides, etc. Carson should work with the community to craft messaging that addresses specific educational goals. Messaging should be multilingual if necessary.
4. Signs/Pavement Markings. Educational signage and pavement markings such as "bicyclists may use full lane", and "riding the wrong way" signs on sidewalks can help spread educational messages. Depending on the type of sign or marking, the City may need to go through an experimental process with the California Traffic Control Device Committee (CTCDC) and/or Federal Highway Administration (FHWA).
5. Enforcement Education. The City should work with local law enforcement to consider creating a Diversion Program. This program serves as "traffic school" for any road user that violates rules concerning walking and bicycling. Rules concerning bicyclist and pedestrian behavior are often misunderstood. The program should specifically address motorists on how to interact with bicyclists and pedestrians, and clarify misconceptions. Huntington Beach is one of the only cities in Southern California that has a diversion program; it can serve as an example for Carson.

Commuters and Employers

1. Bike-Buddy Program. The City should work with employers to start a "bike-buddy program." This program would pair experienced cyclists with new cyclists to bicycle to work together. The City could offer organized skills training prior to the program's kick-off to teach bicycling safety skills to all employees.
2. Economic, Health, and Environmental Benefits. The City should create a presentation to educate employers on the potential economic, health, and environmental benefits if their employees walked and bicycled instead of drove. Employers of a certain size must meet air quality

goals based on how their employees commute to work. They also must pay if they exceed these thresholds. Employers have much to gain by changing driving trips to bicycling trips.

Youth Specific

1. Safe Routes to School. Safe Routes to School (SRTS) refers to a variety of programs aimed at promoting walking and bicycling to school, and improving traffic safety around schools. The program takes a comprehensive "5 E" approach (as defined in this chapter) with specific engineering, education, encouragement, enforcement, and evaluation. The programs involve partnerships among school staff, parents, students, city staff, school districts, neighbors, and law enforcement. The National Center for Safe Routes to School has in-depth programming information. Integrating educational messages into a comprehensive SRTS program can be a very effective way to kick-start a citywide program. Specific education tools include:
    - » Pedestrian skills training for 1st and 3rd graders
    - » Bicycle skills training for 3rd and 5th graders
    - » Messaging to parents about safe driving, walking and bicycling habits
    - » Creating drop-off and pick-up procedures
    - » Incorporating information about walking and bicycling into classroom subjects such as math or science (e.g., calculate average walking speeds or distances)
    - » Assemblies or classroom sessions about safety
    - » At-school bicycle and pedestrian rodeos, which are simulated traffic environments where students can learn to walk and bicycle safely
2. Teen Driving, Cycling, and Pedestrian Education. Teens need different educational messages than adults or children. The City should work with local teen-organizations, or schools to facilitate a participatory process whereby teens create educational messages. Youth Participatory Action Research (YPAR) is an effective way to assist youth to create visuals, videos, or campaigns for safety

among their peers. The California Department of Public Health has guides on YPAR and youth-led projects.

3. Personal Safety. Youth should go through a personal safety educational course to address topics such as bullying, alcohol, drugs, gangs, etc. The City should work with local law enforcement to address specific concerns of residents.

Adult Road Users

1. Skills Training. The City should work with organizations such as Sustainable Streets to offer free bicycling skills training on the weekends. The League of American Bicyclists has lists of League Certified Instructors who can also teach courses on bicycle safety.
2. City Webpage and Mailers. The City should create a designated webpage for bicycle programs, events, and education. The page should have a link to this Plan, maps, and safety tips. The City can also distribute road, bicycle, and pedestrian safety tips in utility bills to all residents.
3. Bicycle Shop Courses. The City can work with local bicycle shops to promote bicycle safety skills courses. The bicycle shop could also help spread the word for education courses through its clientele list.
4. Bicycle Repair Workshops. Partnering with local bike shops and/or bicycle advocacy organizations, such as the Los Angeles County Bicycle Coalition or Bicycle Kitchen, the City can offer instructional workshops teaching cyclists how to perform basic bicycle maintenance and repair.

Officials and Policymakers

1. Training for Law Enforcement. Law enforcement officers are first-responders to bicycle-involved collisions. Due to the complexity of these collisions, fault is often assigned incorrectly, and relevant information mis-recorded or omitted. Officers should receive special training to understand how to record and respond to bicycle-involved crashes. Officers that patrol on bicycles should receive special skills training.
2. Bicycle Audits. Carson can lead regular bicycling audits

as part of outreach strategies for new development projects, or as a comprehensive SRTS program. A bicycle audit leads interested stakeholders on a set course to discuss how comfortable the area is, concerns, and what can be done to improve the area. Educational components to the audit include discussing safety at specific locations and safe riding tips before the audit.

3. Public Transit and Taxi Driver Training. Operators of buses and taxis should receive special training on how to interact with bicyclists. Bus operators should also know how to operate bicycle racks on the bus.

ENCOURAGEMENT

Encouragement strategies promote bicycling as a fun activity, and generate excitement and interest. Encouragement programs play a key role in making bicycling "the norm." By showcasing how fun and easy it can be to bicycle, there is an opportunity to shift the perceptions of the community.

Encouragement programs should target the same audiences as education campaigns. Many encouragement programs are most successful when paired with existing institutions - such as schools or large businesses.

Strategies to encourage bicycling are limited only by the imagination. They can be anything creative such as contests, rides, special districts, etc. Getting the community involved to create messaging and programs will be essential to program success. Activities that can serve as a model to kick-start Carson's encouragement programs are described below.

Citywide Campaigns

1. Public Art. Public art, such as murals and sculptures, have been used to promote ideals and inform the community of important issues. The City can solicit help from local artists, children, and volunteers to create art that would encourage residents to live physically active lives.
2. Mobile Exhibit. The City could organize a traveling exhibit promoting bicycling. The exhibit could have photo

displays of new facilities around Carson, videos promoting bicycling, maps and guides, etc. This kiosk could be present during community events and local festivals.

3. First Friday Bike Rides. The City could initiate a campaign to bike in the evening as a community the first Friday of every month. This will help create awareness, make it fun to walk together as families and neighbors, and the City could provide central meeting points or music during the event in the Downtown area.
4. Two-Wheel Tuesdays. The City can work with community members to start a designated day that encourages residents to ride their bicycles together to work or for short trips. The City can promote the days through its website, and offer incentives such as free food or snacks at parks throughout Carson for those who arrive by bicycle.
5. Ciclovia. Started in Columbia, a ciclovia is a regular closing of a network of streets for exclusive use by non-motorized users. CicLAvia in Los Angeles draws over 100,000 people during each event. Streets are public space - this event helps residents see a new use for streets, and gets them used to walking and bicycling in a safe environment without cars. Volunteers are needed to support the event.
6. Equipment Giveaways. Carson can work with local law enforcement to create a program to give away found bicycles to low-income residents. In addition, the City can start a helmet, lights and bicycle fund.
7. Bike-Friendly Business District (BFBD). Long Beach began the first BFBD program in 2010. The program encourages merchants and their customers to replace cars with bicycles. The City works with local business owners in certain retail districts to offer incentives such as discounts for bicyclists, free bike valet, free bike tune-ups, bicycle parking, and special stickers. This creates an incentive to arrive by bicycle, and works well for the merchants who often see an increase in the number of customers.
8. Bicycle Sharing. A bicycle sharing program is a service in which bicycles have been purchased by the jurisdiction or in partnership with an outside organization to provide bicycles at certain locations for shared use by the com-

munity. Many cities throughout the United States and internationally have had success with bicycle sharing programs. These programs are especially useful when there may be a large tourist population, or for use in the central business district. The number, location, type of bicycle, and the payment system vary from program to program.

Youth Specific

1. "Walk and Roll" Wednesdays. City staff can work with parents and teachers at local elementary schools to establish a designated walk and bicycle to school day. Tokens such as bicycle lights or stickers can be given to those students that participate by walking or bicycling to school on the specified day. As part of this regular walking and bicycling day, the City can also participate on International Walk to School Day.
2. Mileage Club. School administrators can create a mileage club competition for the most miles bicycled by a student, classroom, or school. Prizes can be given to the group that accrues the most miles over a set period of time.
3. Bicycle Trains. Bicycle trains are organized bicycling groups. An adult supervises and leads a bicycling group of children to or from school.

Commuters and Employers

1. Commuter of the Month. Employers could organize a "commuter of the month" competition for the employee that commutes to work using alternative modes of transportation the most trips of the month. Prizes can vary.
2. Bike to Work Month. May is National Bicycle Month, and the City can piggy-back on this designated month with various activities for employers and employees. For example, employers can organize a bicycle to work day or week, with events at the employment site or prizes for those who commute by bicycle.
3. Parking Cash-out. California law requires employers of a certain size who provide subsidized parking to offer cash allowances in lieu of the parking space. The explicit

purpose of this law is to encourage getting to work by alternative modes. The City should work with employers to hold an informational workshop, complete with skills training, guides of how to get to work via transit, walking, or bicycling, and how to participate in parking cash-out, as an educational and encouragement program.

EVALUATION

Evaluation is used to determine whether goals and objectives are being met. The benefits of conducting regular program and project evaluations will ensure underlying problems are being addressed, will help set reasonable expectations, identify changes to improve the program, determine whether the program has the desired results, and help make adjustments to the program as needed. Evaluation can take many forms, from bicycle counts to attitudinal surveys. In addition, evaluation is a very important part of garnering additional funding for bicycle projects.

Baseline Data Collection

Collecting baseline data about attitudes toward bicycling, how people travel throughout Carson, infrastructure deficiencies, and crash data, will help inform program development. The following are pieces of data the City should consider collecting, evaluating, and incorporating results into policy and capital improvement project decisions.

1. Attitudinal surveys. Survey questions such as "what deters you from bicycling?" or "what mode do you use for short trips?" aim to understand attitudes toward bicycling, and common concerns. These surveys can be done citywide, or as part of a SRTS program for parents.
2. Mode of travel survey. This survey asks what mode a respondent used for a certain trip. Mode of travel surveys are commonly done in schools as part of SRTS to find out how many children walked, bicycled, were driven, etc. This will help city staff understand the current state

of walking and bicycling.

3. Bicycle Counts. Counting numbers of bicyclists around the City can help staff prioritize improvements. These counts can also be included in travel demand models. The Southern California Association of Governments is developing a count methodology which should be available for use by jurisdictions in 2013.
4. Crash Data. Analyzing crash data for type of crash, parties involved, and location will give a picture of safety of bicyclists, pedestrians and motorists. This data can also help set priorities.

Program-specific Evaluation

Another type of evaluation is to define goals and then corresponding objectives and measurements to achieve those objectives. For example, suppose the City plans to install bike lanes on a street with the objective to increase bicycle activity and decrease bicyclist-involved crashes. Prior to installation, staff can conduct bicycle counts and analyze the location of bicycle crashes. Periodically after installation, staff can measure these same factors. Analysis of these data will determine how effective the treatment was in achieving these goals.

The Pedestrian and Bicycle Information Center in collaboration with Safe Routes to School experts identify several key goals, objectives, and measurements on saferoutesinfo.org. For example:

- Goal: Encourage Speed Reduction
  - » Objective: Hold one news conference and deliver informational fliers to all parents regarding speed awareness campaign
  - » Measure: Number of news conferences and fliers distributed
  - » Objective: Reduce average speeds in school zones to 25 mph within 1 year
  - » Measure: Speed of vehicles near schools; number of citations

CARSON PROGRAM IMPLEMENTATION

The programs identified in this section should be modified and tailored to conditions in Carson. The City commits to starting a comprehensive program with initial steps, and will modify its programming with recommendations from this Plan as time goes on. The City will seek additional outside funding to continue and enhance programming in coming years.

CHAPTER 8 FUNDING

OVERVIEW

A variety of potential funding sources, including local, state, regional, and federal funding programs, may be used to construct the proposed bicycle improvements in the Carson Master Plan of Bikeways. Most of the federal and state programs are competitive, and involve the completion of extensive applications with clear documentation of the project need, costs, and benefits. Competition for funding can also take place at the regional level. A detailed program-by-program explanation of available funding along with the latest relevant information follows.

FEDERAL FUNDING PROGRAMS

MAP-21

The Moving Ahead for Progress in the 21st Century Act (MAP-21), passed in June 2012, sets the framework for spending federal transportation revenue. MAP-21 consolidates the three main programs that contained dedicated funding for biking and walking under SAFETEA-LU. These were Transportation Enhancements, Safe Routes to School, and Recreational Trails. They are now a single category, Transportation Alternatives. MAP-21 is only a two-year transportation spending bill. It is possible that MAP-21 funding programs may be modified, combined, eliminated, or supplemented with new programs in the next federal transportation spending bill. Accordingly, the following discussion is subject to change.

Under MAP-21, bicycling and walking projects are eligible for the following core programs: National Highway Performance Program (NHPP), Surface Transportation Program (STP), Highway Safety Improvement Program (HSIP), and Congestion Mitigation and Air Quality Improvement (CMAQ), Metropolitan Planning, and Transportation Alternatives. MAP-21's Transportation Alternatives combines the following SAFETEA-LU programs: Transportation Enhancements (now known under MAP-21 as Transportation Alternatives, a project category within the Transportation Alternatives program), Safe Routes to School, and Recreational Trails. Transportation Alternatives program funds are drawn from NHPP, STP, CMAQ, and Metropolitan Planning, and are dedicated funds by and large for bicycling, walking, and safety for all users. Biking, walking, and trails projects are also eligible for a handful of other programs

such as Scenic Byways funds, Transportation, Community, and System Preservation Program (TCSP), and Tribal High Priority Projects.

The Cardin-Cochran amendment to MAP-21 requires 50% of all program funding to be distributed by population directly to local metropolitan planning organizations. The rest of the funding is administered by the States. Thus, MAP-21 funding is administered by the California Department of Transportation (Caltrans) and the local metropolitan planning organization (MPO). In the past, this has been the Los Angeles Metropolitan Transportation Authority (Metro), but the law may be interpreted such that the Southern California Association of Governments will play the role of local MPO.

MAP-21's approach to distribution of funds among the states is based upon the amount of funds each state received under SAFETEA-LU's core programs. A primary difference from SAFETEA-LU is that states have the ability to transfer 50% of any apportionment to another formula program, except no transfers are permitted of Metropolitan Planning funds or funds suballocated to areas based upon population.

Generally, Caltrans distributes funding through each district's Local Assistance Program. Previously, Los Angeles County Metro was responsible for allocating all discretionary federal, state and local transportation funds to improve all modes of transportation for Los Angeles County, though that may change under MAP-21. Metro has done so primarily through the Call for Projects (CFP) program. The CFP is a competitive process by which these discretionary funds are distributed to regionally significant projects every other year. There are seven categories in which projects are competitively ranked, including categories for bikeways improvements and pedestrian improvements. The CFP process is part of the larger Los Angeles County Transportation Improvement Program.

Each state has its own method for distributing federal funds. The funding allocation process employed by Caltrans for core programs under SAFETEA-LU typically combined some form of state programming with some distribution of funds to re-

gions or local MPOs. Neither Caltrans nor Metro yet knows how funds from the various programs of MAP-21 will be distributed.

More information can be found at:

http://www.fhwa.dot.gov/map21/summaryinfo.cfm

Highway Safety Improvement Program (HSIP)

The Highway Safety Improvement Program (HSIP) is reauthorized under MAP-21, and received a substantial increase in funding relative to SAFETEA-LU. It aims to achieve a significant reduction in traffic fatalities and serious accidents through the implementation of infrastructure-related highway safety improvements. These improvements may be on any public road or publicly owned bicycle and pedestrian pathway or trail, and can include the use of devices such as traffic signals, curb extensions, and crosswalks. In 2009, $1.296 billion in funds was available nationwide.

MAP-21 allows each state to use HSIP funds for education and enforcement activities, as long as those activities are consistent with the state's Strategic Highway Safety Plan (SHSP). California completed its SHSP in September 2006, and created an Implementation Plan in April 2008. MAP-21 also requires states to focus funds on improvements for pedestrians and the elderly if crashes among these groups are not below a threshold level.

Applications are submitted electronically, and must demonstrate that the proposed engineering improvements will increase the safety of the proposed project area. These are calculated in the application program using Crash Reduction Factors with accompanying financial values. Project areas that have a prior history of injuries or fatalities are more likely to be funded.

More information can be found at:

http://www.dot.ca.gov/hq/LocalPrograms/hsip.htm

http://safety.fhwa.dot.gov/safetealu/fact_sheets/ftsht1401.cfm

http://www.bikeleague.org/resources/reports/pdfs/highway_safety_improvement_program.pdf

Recreational Trails Program

The Recreational Trails Program is reauthorized under MAP-21. The California State Parks and Recreation Department administered Recreational Trails Program (RTP) funds under SAFE-TEA-LU, and will likely continue to administer the state's half of the funds under MAP-21. RTP annually funds recreational trails, including bicycle and pedestrian paths. Cities, counties, districts, state agencies, federal agencies and non-profit organizations may apply. A 12 percent match is required. Federal, state, local and private funds may be used to match the grant. There is no limit to the grant request; however, there are different requirements within the grant application depending on whether the project requires more or fewer than $100,000.

More information can be found at:

Tel. (916) 653-7423
localservices@parks.ca.gov
http://www.parks.ca.gov/?Page_id=24324
http://www.fhwa.dot.gov/environment/rectrails/

Transportation, Community, and System Preservation Program (TCSP)

This program is reauthorized under MAP-21. It provides federal funding for projects that improve the efficiency of the transportation system, reduce the impact on the environment, and generally investigate the relationships between transportation, community and system preservation. Eligible projects include improving conditions for bicycling and walking, better and safer operations of existing roads, new signals, and development of new programs. States, MPOs and local jurisdictions are eligible to apply for the discretionary grants. Grantees must annually report on the status of the project and the degree to which the project is attaining the stated goals. The report must include quantitative and qualitative assessments. The Federal Highway Administration administers the program, and distributed approximately $29 million nationwide in FY 2012. The FHWA solicits a call for grant applications annually.

More information can be found at:

http://www.fhwa.dot.gov/tcsp/index.htm!

Land and Water Conservation Fund (LWCF)

The Land and Water Conversation Fund is reauthorized under MAP-21. States receive individual allocations of LWCF grant funds based upon a national formula, with state population being the most influential factor. States initiate a statewide competition for the amount available annually. The State then receives, scores, and ranks applications according to certain project selection criteria so that only the top-ranked projects (up to the total amount available that year) are chosen for funding. Chosen applications are then forwarded to the National Park Service for formal approval and obligation of federal grant monies. Bike paths and recreational trails are eligible uses of this money. Cities, counties, recreation and park districts, and any other entity that has the authority to develop or maintain a public park is eligible to apply. This program is a reimbursement program, and the applicant is expected to initially finance the entire project. A one for one match is required, and federal funds cannot be used as a match, except Community Development Block Grants. The California State Parks Department administered the state funds under SAFE-TEA-LU.

More information can be found at:

http://www.parks.ca.gov/?Page_id=21360

COMMUNITY DEVELOPMENT BLOCK GRANTS (CDBG)

The CDBG entitlement program allocates annual grants to larger cities and urban counties to develop viable communities by providing decent housing, a suitable living environment, and opportunities to expand economic opportunities, principally for low- and moderate-income persons. Every year the local governments receive federal money for a wide variety of community improvements in the form of CDBG funds. Bicycle and pedestrian facilities are eligible uses of these funds.

CDBG funds only pay for projects in areas of economic need. No match is required.

More information can be found at:

http://www.hud.gov/offices/cpd/communitydevelopment/programs/

RIVERS, TRAILS, AND CONSERVATION ASSISTANCE PROGRAM (RTCA)

The Rivers, Trails, and Conservation Assistance Program is the community assistance arm of the National Park Service. RTCA provides technical assistance to communities in order to preserve open space and develop trails. The assistance that RTCA provides is not for infrastructure, but rather building plans, engaging public participation, and identifying other sources of funding for conservation and outdoor recreation projects.

More information can be found at:

http://www.nps.gov/ncrc/programs/rtca/index.htm
http://www.nps.gov/ncrc/programs/rtca/contactus/cu_apply.html

STATE FUNDING PROGRAMS

State policymakers are currently proposing to restructure or combine existing statewide bicycle, pedestrian, and Safe Routes to School funding programs; however, no firm actions have been taken as of the writing of this plan. Thus, the structure, requirements, and availability of the state programs listed below are subject to change.

TRANSPORTATION DEVELOPMENT ACT (TDA) ARTICLE 3 (SB 821)

TDA Article 3 funds—also known as the Local Transportation Fund (LTF)—are used by cities within Los Angeles County for the planning and construction of bicycle and pedestrian facilities. Each city in Los Angeles County receives TDA Article 3 funds from Los Angeles County Metro according to population.

TDA Article 3 funds may be used for the following activities related to the planning and construction of bicycle and pedestrian facilities:

- Engineering expenses leading to construction.
- Right-of-way acquisition.
- Construction and reconstruction.
- Retrofitting existing bicycle facilities to comply with the Americans with Disabilities Act (ADA).
- Route improvements, such as signal controls for cyclists, bicycle loop detectors, rubberized rail crossings, and bicycle-friendly drainage grates.
- Purchase and installation of bicycle facilities, such as improved intersections, secure bicycle parking, benches, drinking fountains, changing rooms, rest rooms, and showers adjacent to bicycle trails, employment centers, park-and-ride lots, and/or transit terminals accessible to the general public.

BICYCLE TRANSPORTATION ACCOUNT (BTA)

The State Bicycle Transportation Account (BTA) is an annual statewide discretionary program that is available through the Caltrans Bicycle Facilities Unit for funding bicycle projects. Available as grants to local jurisdictions, the BTA emphasizes projects that benefit bicycling for commuting purposes. Agencies may apply for these funds through the Caltrans Office of Bicycle Facilities. Applicant cities and counties are required to have an approved bicycle plan that conforms to Streets and Highways Code 891.2 to qualify and compete for funding on a project-by-project basis. Cities may apply for these funds through the Caltrans Office of Bicycle Facilities. A local match of 10% is required for all awarded funds. Every year $7.2 million is allocated for bicycle projects statewide. The Non-motorized Transportation Plan establishes a regional network from which local plans can build upon for local-serving bicycle and pedestrian routes. Once a jurisdiction has an approved bicycle plan that meets the requirements of the Street and Highways Code 891.2, they may apply for the Caltrans grant.

MS

More information can be found at:

http://www.dot.ca.gov/hq/MassTrans/State-TDA.html

http://www.dot.ca.gov/hq/LocalPrograms/bta/btawebPage.htm

SAFE ROUTES TO SCHOOL (SR2S)

The Safe Routes to School (SR2S) program is separate from the federal Safe Routes to School Program. This program, initiated in 2000, is meant to improve school commute routes by improving safety to bicycle and pedestrian travel through bikeways, sidewalks, intersection improvements, traffic calming, and ongoing programs. This program funds improvements for elementary, middle, and high schools. A local match of 10% is required for this competitive program, which allocates approximately $24.25 million annually, or $40 million to $50 million in two-year cycles. Each year the state legislature decides whether to allocate funds to the program. Caltrans administers SR2S funds through its district offices.

More information can be found at:

http://www.dot.ca.gov/hq/LocalPrograms/saferoutes/saferoutes.htm

OFFICE OF TRAFFIC SAFETY (OTS)

The California Office of Traffic Safety (OTS) seeks to reduce motor vehicle fatalities and injuries through a national highway safety program. Priority areas include police traffic services, alcohol and other drugs, occupant protection, pedestrian and bicycle safety, emergency medical services, traffic records, roadway safety, and community-based organizations. The OTS provides grants for one to two years. The California Vehicle Code (Sections 2908 and 2909) authorizes the apportionment of federal highway safety funds to the OTS program. Bicycle safety programs are eligible programs for OTS start-up funds. City and county agencies are eligible to apply, as are councils of governments. There is no set maximum for grants, and no match is required; however, contributions of other funds may make projects more competitive.

More information can be found at:

http://www.ots.ca.gov/Grants/Apply/Proposals_2011.asp
http://www.dot.ca.gov/hq/traffops/saferesr/

ENVIRONMENTAL ENHANCEMENT AND MITIGATION PROGRAM (EEMP)

EEM Program funds are allocated to projects that offset environmental impacts of modified or new public transportation facilities, including streets, mass transit guideways, park-n-ride facilities, transit stations, tree planting to mitigate the effects of vehicular emissions, off-road trails, and the acquisition or development of roadside recreational facilities. Every year $10 million dollars is available, with individual grants limited to $350,000. Cities, counties, Councils of governments, state agencies, and non-profit organizations may apply. No match is required; however, additional points will be given for matching funds. The State Resources Agency administers the funds.

More information can be found at:

http://www.resources.ca.gov/eem/

AB 2766 SUBVENTION PROGRAM

AB 2766 Clean Air Funds are generated by a surcharge on automobile registration. The South Coast Air Quality Management District (AQMD) allocates 40% of these funds to cities according to their proportion of the South Coast's population for projects that improve air quality. The projects are up to the discretion of the city and may be used for bicycle or pedestrian projects that could encourage people to bicycle or walk in lieu of driving. The other 60% is allocated through a competitive grant program that has specific guidelines for projects that improve air quality. The guidelines vary and funds are often eligible for a variety of bicycle and pedestrian projects. The Mobile Source Review Committee administers the discretionary funds.

More information can be found at:

http://www.aqmd.gov/localgovt/AB2766.htm
http://www.aqmd.gov/trans/ab2766.html

PER CAPITA GRANT PROGRAM

The Per Capita Grant Program is intended to maintain a high quality of life for California's growing population by providing a continuing investment in parks and recreational facilities. Specifically, these funds are for the acquisition and development of neighborhood, community, and regional parks and recreation lands and facilities in urban and rural areas.

Eligible projects include acquisition, development, improvement, rehabilitation, restoration, and enhancement projects, and the development of interpretive facilities for local parks and recreational lands and facilities. Per Capita grant funds can only be used for capital outlay. They may be used for bike paths and trails. This grant is given to local governments based on their population. Some cities have used up their full allocation, while others have not. Regional parks and open space districts also receive these funds. The California State Parks Department administers the grant funds.

More information can be found at:

http://www.parks.ca.gov/?page_id=22333

ROBERTI-Z'BERG-HARRIS (RZH) GRANT PROGRAM - PROPOSITION 40

Funds for this grant program are to be allocated for projects pursuant to the Roberti-Z'berg-Harris Urban Open Space and Recreational Grant Program and are to be used for:

- High priority projects that satisfy the most urgent park and recreation needs, with emphasis on unmet needs in the most heavily populated and most economically disadvantaged areas within each jurisdiction.
- Projects for which funding supplements—rather than supplants—local expenditures for park and recreation fa-

cilities and does not diminish a local jurisdiction's efforts to provide park and recreation services.

- Block grants allocated on the basis of population and location in urbanized areas.
- Need-basis grants to be awarded competitively to eligible entities in urbanized areas and in non-urbanized areas.

Eligible projects include:

- Acquisition of park and recreation lands and facilities
- Development/rehabilitation of park and recreation lands and facilities
- Special Major Maintenance of park and recreation lands and facilities
- Innovative Recreation Programs

The California State Parks Department administers these funds. Cities, counties, and recreation and parks districts may apply for them. The maximum grant request is $250,000 per project, and no match is required. Bike paths and recreational trails are eligible to receive these funds. Therefore, funding could be used for either the Arroyo Seco Bike Path or the Eaton Canyon Bike Path.

More information can be found at:

http://www.parks.ca.gov/default.asp?page_id=22329

PROPOSITION 84 - STATEWIDE PARK PROGRAM

The Statewide Park Act awards grants on a competitive basis to the most critically under-served communities across California for the creation of new parks and new recreational facilities. Altogether, $368 million will be given in two funding cycles. The first funding cycle in 2009 awarded $184 million. Grants range from $100,000 to $5 million. No match is required. Bikeways and trails can be funded with this program, and they need not be in a park.

The creation of new parks in neighborhoods where none currently exist will be given priority. These new parks will meet the recreational, cultural, social, educational, and environmental needs of families, youth, senior citizens, and other population groups.

Cities, counties, districts with a park and recreation director, councils of governments, joint power authorities, or nonprofit organizations are eligible to apply for these funds. The California State Parks Department administers the Statewide Park Program funds.

More information can be found at:

http://www.parks.ca.gov/?Page_id=26025

PROPOSITION 84 - URBAN GREENING PROJECT GRANTS

In 2006 California voters passed Proposition 84 to expand recreational facilities and to fund environmental quality projects. Of this, $70 million was set aside to fund urban greening projects that reduce energy consumption, conserve water, improve air and water quality, and reduce global warming gases. This money will be dispersed in three funding cycles. The first cycle ended in April 2010. Cities, counties, and nonprofit organizations are eligible to apply for these funds. No matching funds are required, but they are encouraged. Bike paths and recreational trails are eligible uses of this money. The State of California Strategic Growth Council administers this program.

More information can be found at:

http://www.resources.ca.gov/bonds_prop84_urbangreening.html

http://sgc.ca.gov/urban_greening_grants.html

TRANSPORTATION PLANNING GRANT PROGRAM

The Transportation Planning Grant Program has two grant programs which can aide the planning and development of bicycle and pedestrian facilities. The Environmental Justice: Context Sensitive Planning (EJ) Grant is to promote the involvement of low-income and minority groups in the planning of transportation projects. The program requires a local match of 10% with a 5% in-kind contribution maximum. The Community Based Transportation Planning (CBTP) program funds coordinated transportation and land use planning projects that encourage community involvement and partnerships. These projects must support livable and sustainable community concepts. The Office of Community Planning, part of Caltrans's Division of Transportation Planning, is responsible for managing the program and receives approximately $3 million annually for each program. Grants are available up to $300,000 for the Community Based Transportation Planning grant, and $250,000 for the Environmental Justice Context Sensitive Planning Grant. MPOs, Regional Transportation Planning Agencies, cities, counties, and transit agencies are all eligible to apply for funding.

More information can be found at:

http://www.dot.ca.gov/hq/tpp/grants.html
For EJ - Tel. (916) 651-6889
For CBTP - Tel. (916) 651-6886

LOCAL FUNDING

PROPOSITION C LOCAL RETURN

Countywide, 20 percent of Proposition C Los Angeles County ½ cent sales tax revenue returns to the cities according to population. The money may be spent on a variety of transportation projects, including bicycle projects.

MEASURE R LOCAL RETURN

A portion of this Los Angeles County ½ cent sales tax revenue returns to the cities according to population. The money may be spent on a variety of transportation projects, including bicycle projects. The transit capital funds may be used for bicycle facilities at Gold Line stations. Metro is in the process of creating guidelines as to the uses of Measure R funds and other funds may become eligible.

RESURFACING AND REPAVING

The City is able to add bicycle lanes and sharrows upon resurfacing and repaving of streets. While other lanes are restriped, the bike facilities can be painted as well.

NEW CONSTRUCTION

Future road widening and construction projects are one means of providing bike lanes. To ensure that roadway construction projects provide bike lanes where needed, it is important that an effective review process is in place to ensure that new roads meet the standards and guidelines presented in this master plan. Developers may also be required to dedicate land toward the widening of roadways in order to provide for enhanced bicycle mobility.

IMPACT FEES AND DEVELOPER MITIGATION

Impact fees may be assessed on new development to pay for transportation projects, typically tied to vehicle trip generation rates and traffic impacts generated by a proposed project. A developer may reduce the number of trips (and hence impacts and cost) by paying for on- or off-site bikeway improvements that encourage residents to bicycle rather than drive. In-lieu parking fees may also be used to contribute to the construction of new or improved bicycle parking facilities. Establishing a clear nexus, or connection, between the impact fee and the project's impacts is critical in avoiding a potential lawsuit.

BENEFIT ASSESSMENT DISTRICTS

Bike paths, lanes, parking, and related facilities can be funded as part of a local benefit assessment district. However, defining the boundaries of the benefit district may be difficult since the bikeways will have citywide benefit.

BUSINESS IMPROVEMENT DISTRICTS

Bicycle improvements can often be included as part of larger efforts of business improvement and retail district beautification. Similar to benefit assessments, Business Improvement Districts (BIDs) collect levies on businesses in order to fund area-wide improvements that benefit businesses and improve access for customers. These districts may include provisions for bicycle improvements such as bicycle parking or shower and clothing locker amenities.

PARKING METER REVENUES

Cities can fund various improvements through parking meter revenues. The ordinance that governs the use of the revenues would specify eligible uses. Cities have the option to pass ordinances that specify bicycle facilities as eligible expenditures

ADOPT-A-PATH PROGRAM

Maintenance of bicycle paths and recreational trails could be paid for from private funds in exchange for recognition, such as signs along the path saying "Maintained by (name)". In order for this funding source to be sustainable, a special account can be set up for donors to pay into.

GENERAL FUNDS

Cities and counties may spend general funds as they see fit. Any bicycle, pedestrian, or trails project can be funded completely through general funds, or general funds can be used as a local match for grant funds.

INTERSTATE 710 CORRIDOR PROJECT

Caltrans has undertaken a planning effort to make changes to the Interstate 710 Freeway from Long Beach to Interstate 5. The project will widen the freeway and modify interchanges, access points, and the streets leading to the freeway. The Los Angeles County Metropolitan Transportation Authority is working with Caltrans and leading some of the planning efforts. A Technical Advisory Committee (TAC) comprised of these agencies along with the cities along the freeway is helping to steer the planning effort as well as make sure certain improvements, such as bicycle access, are incorporated into the project. Carson has a representative to this TAC. Through Carson's TAC representative, the City can ensure that the planned bicycle projects in the I-710 area are included in the I-710 project. Total predicted project cost as of September 2012 is $6.5 billion.

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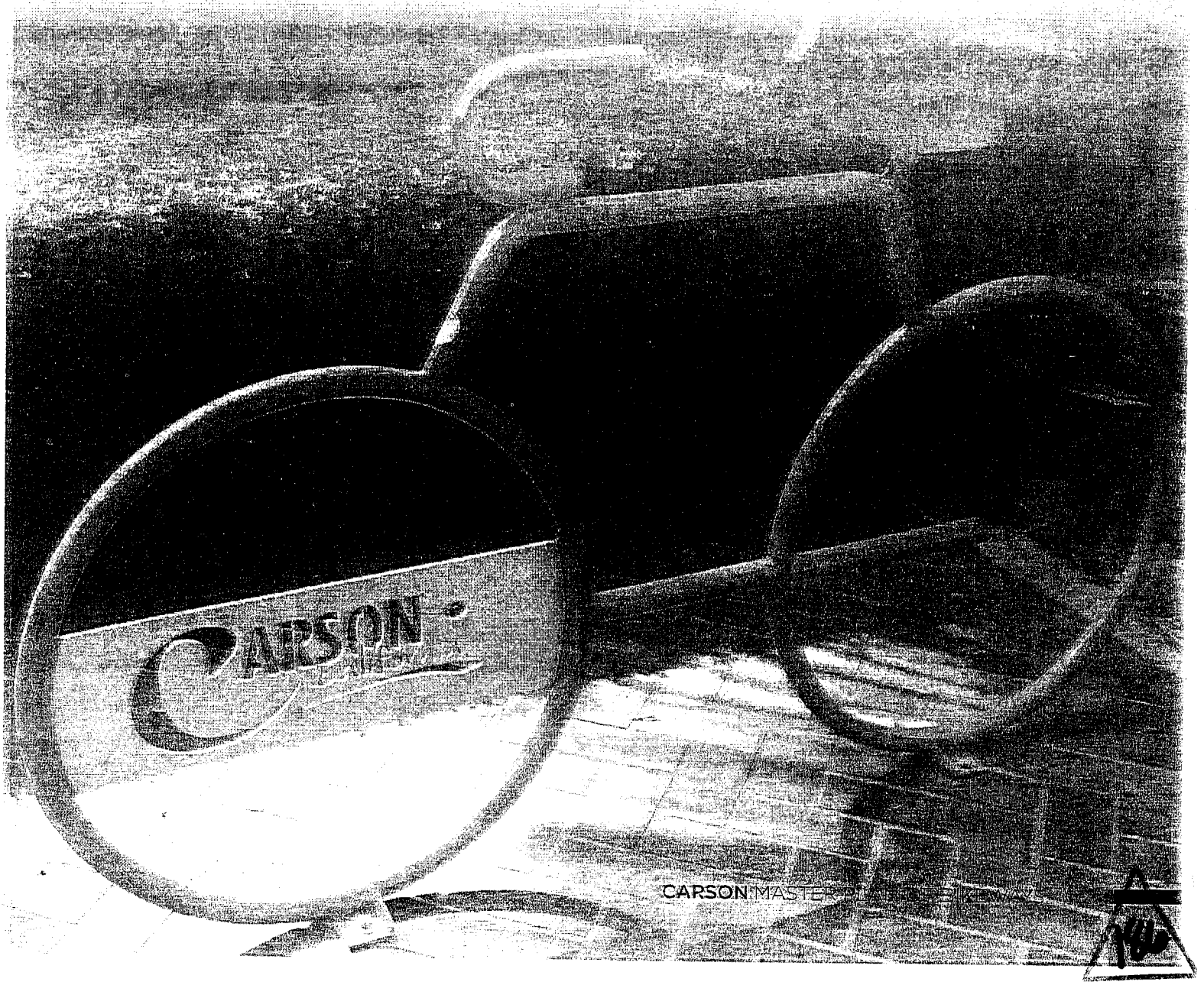
CHAPTER 9

COSTS AND IMPLEMENTATION



OVERVIEW

This chapter provides planning-level cost estimates for the proposed bikeways, and groups them into three groups: short-term, medium-term, and long-term, based on the priority of their implementation. A more detailed and careful cost estimate was prepared for short-term priority projects, which will facilitate their implementation. These detailed estimates include all "soft" costs such as design, labor, and contingency.

PAST EXPENDITURES

In the past five years, the only expenditures by the City of Carson on bicycle infrastructure have been about $4,000 for bicycle parking racks at the Civic Center and the aquatic centers. These were Caltrans Transportation Development Act (TDA) funds.

COST ESTIMATES AND PRIORITIZATION

COST ESTIMATES

The following estimated costs are based on unit costs per mile for the various bikeway types, along with unit costs for special treatments such as new access ramps to the Dominguez Channel or proposed bike signals where cycle tracks cross intersections. The cost estimate table employs abbreviations for the various bikeway types and treatments, as shown In Table 9.1.

The total estimated cost for the entire proposed bikeway network is about $30.6 million.

The City also has ongoing costs for planning, engineering, and other miscellaneous functions, and hopes to initiate bicycle education, encouragement, and enforcement programs at a cost of $50,000 per year.

Facilities must be maintained in order to stay effective. Treatments such as colored bicycle lanes and Type B sharrows will require more paint and maintenance than the typical bike lane or sharrow treatment. The City will ensure maintenance budget is set aside prior to implementing these types of bikeways.

TABLE 9.1 *Bikeway type and treatment codes used in cost estimates*

CODE	MEANING
R	Access ramps for paths
BL	Bike Lanes
BRBS	Bike Route with type B Sharrows
BRS	Bike Route with Sharrows
BRSD	Bike route with sharrows and directional Signage
Bike signal	Bike signal
BBL	Buffered bike lanes
BBLO	Buffered bike lanes—one side of street
CBL	Colored bike lanes
CBBL	Colored buffered bike lanes
CBBLO	Colored buffered bike lanes—one side of street
CBLO	Colored bike lanes—one side of street
CT	Cycle track
Bridge	Grade-separated crossing
L	Lighting
Parking Ts	Parking Ts
P	Path
PBS	Path both sides
PL	Path with lighting
PBSL	Path both sides with lighting
BRDG	Pre-fabricated bridge
RD	Road diet
RDBL	Road diet with bike lanes
RDBBL	Road diet with buffered bike lanes
RDCBL	Road diet with colored bike lanes
RDCBBL	Road diet with colored buffered bike lanes

PRIORITIZATION

This Plan will be implemented as funds become available to the City. Projects are prioritized into three categories: short-term, medium-term, and long-term, according to the following criteria:

- Preferences expressed by the community at the public workshops and through comments received from the public via email and personal contact
- City staff preferences
- Destinations served
- History of bicycle-involved or pedestrian-involved crashes
- Current availability and/or suitability of right-of-way
- Likelihood of attracting large numbers of users
- Connectivity with the regional bikeway system
- Links to other transportation modes
- Cost effectiveness

The City will also seek to implement bikeways based on opportunity, such as when streets are resurfaced, or other street projects are taking place.

The following tables identify all the projects grouped according to their priority category. The projects are not ranked within each priority category. Each project also includes its estimated cost, which, as noted above, is prepared to a higher level of detail for short-term projects to facilitate their implementation.

TABLE 9.2 *Short-term proposed bikeways and estimated cost.*

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
223rd St.	Los Angeles County Limit	Avalon Blvd.	2	BBL	1.36	$81,600
223rd St.	Avalon Blvd.	Wilmington Ave.	2	BBL	1.23	$73,800
223rd St.	Wilmington Ave.	Fire Station signal	2	CBBL	0.22	$22,000
223rd St.	Fire Station signal	BP Campus Dr.	2	BL	0.30	$15,000
223rd St.	BP Campus Dr.	Los Angeles City limit	2	RDBBL	0.27	$32,400
Avalon Blvd.	Victoria St.	University Dr.	2	CBL	0.60	$45,000
Avalon Blvd.	University Dr.	Del Amo Blvd.	2	CBBL	0.74	$74,000
Avalon Blvd.	Del Amo Blvd.	South side of Dominguez Channel Bridge	2	CBL	0.56	$42,000
Avalon Blvd.	South side of Dominguez Channel Bridge	End of median south of I-405 ramps	2	CBBL	0.14	$14,000
Avalon Blvd.	End of median south of I-405 ramps	Carson St.	2	RDCBBL	0.43	$68,800
Avalon Blvd.	Carson St.	Sepulveda Blvd.	2	CBBL	1.62	$162,000
Avalon Blvd.	Sepulveda Blvd.	Los Angeles City limit	2	BBL	0.25	$15,000
Carson St.	Los Angeles County Limit	Avalon Blvd.	2	BRBS	1.36	$47,600
Carson St.	Avalon Blvd.	I-405	2	BRBS	0.43	$15,050
Carson St.	I-405	Wilmington Ave.	2	CBL	0.96	$72,000
Carson St.	Wilmington Ave.	West of Alameda Corridor Bridge	2	CBBL	0.57	$57,000
Carson St.	West of Alameda Corridor Bridge	Alameda St. access ramps, east of Alameda St.	2	CBL	0.32	$24,000

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
Carson St.	Alameda St. access ramps	Harbor View Ave.	2	RDBBL	0.12	$14,400
Carson St.	Harbor View Ave.	Santa Fe Ave.	2	RDBBL	0.28	$33,600
Central Ave.	Albertoni St.	University Dr.	1	CT	1.04	$104,000
Central Ave.	Greenleaf Blvd.	Walnut St.	2	BBL	0.34	$20,400
Central Ave.	Walnut St.	Artesia Blvd.	2	BBL	0.10	$6,000
Central Ave.	Artesia Blvd.	Albertoni St.	2	CBL	0.08	$6,000
Central Ave.	Albertoni St.	University Dr.	2	CBBLO	1.04	$52,000
Central Ave.	University Dr.	Del Amo Blvd.	2	BBL	0.75	$45,000
Central Ave.	Albertoni St.	University Dr.		Bike Signal		$300,000
Del Amo Blvd.	Los Angeles County Limit	Main St.	2	CBBL	0.28	$28,000
Del Amo Blvd.	Main St.	Avalon Blvd.	2	CBBL	0.90	$90,000
Del Amo Blvd.	Avalon Blvd.	Wilmington Ave.	2	BBL	1.78	$106,800
Del Amo Blvd.	Wilmington Ave.	Reeves Ave.	2	BBL	0.39	$23,400
Del Amo Blvd.	Wilmington Ave.	Reeves Ave.	2	CBLO	0.39	$14,040
Del Amo Blvd.	Reeves Ave.	Alameda Corridor bridge west	2	CBBL	0.24	$24,000
Del Amo Blvd.	Alameda Corridor bridge west	Alameda Corridor bridge east	2	CBBL	0.28	$28,000
Del Amo Blvd.	RXR east of Alameda access road	Santa Fe Ave.	2	BBL	0.17	$10,200
Del Amo Blvd.	Alameda Corridor bridge east	RXR east of Alameda access road	3	BRBS	0.22	$7,700
Del Amo Blvd.	Santa Fe Ave.	I-710	3	BRBS	0.35	$12,250
Figueroa St.	Alondra Blvd.	Del Amo Blvd.	2	RDBBL	2.75	$330,000
Figueroa St.	Del Amo Blvd.	223rd St.	2	CBL	1.52	$114,000
Figueroa St.	223rd St.	Lomita Blvd.	2	RDBBL	1.82	$218,400

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
Lomita Blvd.	Los Angeles City Limit	Figueroa St.	2	BBL	0.17	$10,200
Lomita Blvd.	Figueroa St.	Main St.	2	BBL	0.45	$27,000
Lomita Blvd.	Main St.	Los Angeles City Limit	2	BL	0.62	$31,000
Main St.	Alondra Blvd.	Victoria St.	2	BBL	1.39	$83,400
Main St.	Victoria St.	220th St.	2	BBL	2.69	$161,400
Main St.	220th St.	223rd St.	2	CBBL	0.26	$26,000
Main St.	223rd St.	Lomita Blvd.	2	CBL	1.77	$132,750
University Dr.	Avalon Blvd.	Central Ave.	1	CT	1.01	$101,000
University Dr.	Avalon Blvd.	Central Ave.	2	BBLO	1.01	$30,300
University Dr.	Central Ave.	Wilmington Ave.	2	CBL	0.79	$59,250
Victoria St.	Avalon Blvd.	Central Ave.	1	CT	1.00	$100,000
Victoria St.	Los Angeles City Limit	Main St.	2	CBL	0.40	$30,000
Victoria St.	Main St.	Avalon Blvd.	2	BBL	0.55	$33,000
Victoria St.	Avalon Blvd.	Central Ave.	2	CBL	1.00	$75,000
Victoria St.	Central Ave.	Compton City Limit	2	BBL	0.74	$44,400

TABLE 9.3 *Medium-term proposed bikeways and estimated cost*

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
213th St.	Avalon Blvd.	Selwyn Ave.	2	RDBBL	0.19	$22,800
213th St.	Selwyn Ave.	West side of Dominguez Channel	2	BL	0.12	$6,000
213th St.	West side of Dominguez Channel	Chico St.	2	BL	0.06	$3,000
213th St.	Chico St.	Thomas Dr.	2	BL	0.15	$7,500
213th St.	Thomas Dr.	Martin St.	2	BL	0.60	$30,000
213th St.	Main St.	Avalon Blvd.	3	BRBS	0.88	$30,800
213th St.	Martin St.	Wilmington Ave.	3	BRSD	0.35	$8,750
Albertoni St.	Avalon Blvd.	SR-91 eastbound off-ramp	1	CT	0.15	$15,000
Albertoni St.	SR-91 eastbound off-ramp	SR-91 eastbound on-ramp	1	CT	0.20	$20,000
Albertoni St.	SR-91 eastbound on-ramp	Lysander Dr.	1	CT	0.09	$9,000
Albertoni St.	Albertoni Dr.	Bitterlake St.	1	P	0.01	$10,000
Albertoni St.	Figueroa St.	Star of India Ln.	2	BL	0.73	$36,500
Albertoni St.	Star of India Ln.	Avalon Blvd.	2	BBL	0.17	$10,200
Albertoni St.	Avalon Blvd.	SR-91 eastbound off-ramp		Bike Signal		$100,000
Avalon Blvd.	Victoria St.	University Dr.	1	CT	0.60	$60,000
Avalon Blvd.	Alondra Blvd.	Walnut St.	2	RDBBL	0.70	$84,000
Avalon Blvd.	Walnut St.	Victoria St.	2	BBL	0.62	$37,200
Dolores St.	223rd St.	Sepulveda Blvd.	2	BL	1.12	$56,000
Dolores St.	213th St.	223rd St.	3	BRSD	0.77	$19,250
Dominguez Channel	Main St. (end of existing path)	223rd. St.	1	PBSL	3.02	$8,456,000

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
Dominguez Channel	223rd St.	Los Angeles City limit	1	PL	2.53	$3,542,000
Dominguez Channel	Main St. (end of existing path)	223rd. St.		R		$2,200,000
Dominguez Channel	223rd St.	Los Angeles City limit		R		$200,000
LADWP Corridor near I-405	213th St.	BNSF Railway Harbor Subdivision	1	PL	2.35	$3,290,000
LADWP Corridor near I-405	213th St.	BNSF Railway Harbor Subdivision		Bike Signal		$100,000
LADWP Corridor near South Bay Pavillion	Carson Plaza Dr.	Lenardo Dr.	1	PL	0.44	$616,000
LADWP Corridor near South Bay Pavillion	Dominguez Channel			BRDG		$300,000
Moneta Ave.	Carson St.	228th St.	3	BRSD	0.88	$22,000
Santa Fe Ave.	Del Amo Blvd.	Dominguez St.	2	CBBL	0.53	$53,000
Santa Fe Ave.	Dominguez St.	Carson St.	2	CBL	0.54	$40,500
Santa Fe Ave.	Carson St.	218th Pl.	2	CBBL	0.10	$10,000
Santa Fe Ave.	218th Pl.	Long Beach City Limit	3	BRBS	0.30	$10,500
Sepulveda Blvd.	Los Angeles County Limit	Figueroa St.	2	RDBBL	0.19	$22,800
Sepulveda Blvd.	Figueroa St.	Avalon Blvd.	2	CBL	1.17	$87,750
Sepulveda Blvd.	Avalon Blvd.	Wilmington Ave.	2	CBL	0.51	$38,250
Sepulveda Blvd.	Wilmington Ave.	Alameda St.	2	BBL	1.09	$65,400
Sepulveda Blvd.	Alameda St.	Los Angeles City limit	2	BBL	0.72	$43,200
Watson Center Rd.	Avalon Blvd.	Wilmington Ave.	2	BBL	1.02	$61,200
Wilmington Ave.	Compton City Limit	Del Amo Blvd.	2	CBL	1.46	$109,500
Wilmington Ave.	Del Amo Blvd.	213th St.	2	CBBL	0.81	$81,000
Wilmington Ave.	213th St.	220th St.	2	CBL	0.54	$40,500
Wilmington Ave.	223rd St.	Sepulveda Blvd.	2	CBBL	1.32	$132,000

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
Wilmington Ave.	Sepulveda Blvd.	BNSF Railroad crossing	2	CBL	0.46	$34,500
Wilmington Ave.	BNSF Railroad crossing	Los Angeles City limit	2	CBL	0.18	$13,500
Wilmington Ave.	220th St.	223rd St.	3	BRBS	0.27	$9,450

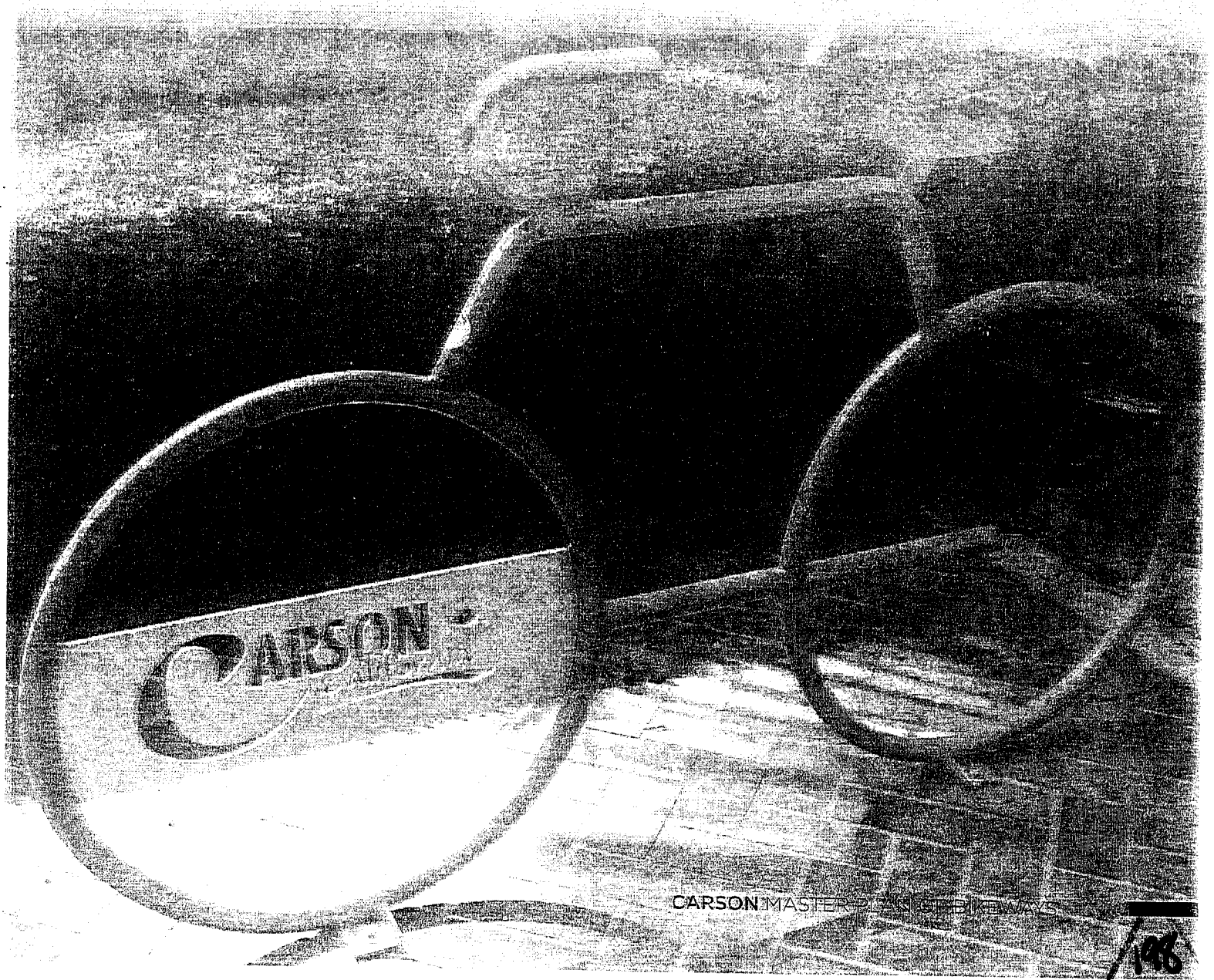
TABLE 9.4 *Long-term proposed bikeways and estimated costs*

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
192nd St.	Main St.	West of Victoria Park parking lot	2	BBL	0.38	$22,800
192nd St.	Towne Ave.	Avalon Blvd.	2	RDBBL	0.11	$13,200
214th St.	Los Angeles County Limit	Main St.	2	BRSD	0.49	$12,250
220th St. - Lucerne St.	Figueroa St.	223rd St.	3	BRSD	2.22	$55,500
228th St.	Los Angeles County Limit	Avalon Blvd.	3	BRSD	1.35	$33,750
Alondra Blvd.	Los Angeles City Limit	Compton City Limit	2	RDBBL	1.27	$152,400
Bitterlake St. - Amantha Ave. - Radbard St.	Lysander Dr.	Central Ave.	3	BRSD	0.68	$17,000
BNSF Railway Harbor Subdivision	Wilmington Drain	Wilmington Ave.	1	PL	1.78	$2,492,000
Bonita St.	223rd St.	Watson Center Dr.	2	BBL	0.28	$16,800
Bonita St.	Carson St.	223rd. St.	3	BRSD	0.51	$12,750
Broadway	Alondra Blvd.	Griffith St.	2	BL	1.77	$88,500
Broadway	Griffith St.	Main St.	2	BL	0.28	$14,000
Campaign Dr.	University Dr.	Turmont St.	3	BRSD	0.44	$11,000
Civic Plaza Dr.	Roundabout at Mechants Bank of California building	Carson St.	2	BL	0.08	$4,000
Civic Plaza Dr.	Desford St.	Roundabout at Mechants Bank of California building	3	BRSD	0.18	$4,500
Compton Creek	Del Amo Blvd.	I-710 (Long Beach city limit)	1	PL	0.24	$336,000
Galway Ave. - Denwall Dr.	Turmont St.	Leapwood Ave.	3	BRSD	0.31	$7,750

BIKEWAY NAME	FROM	TO	CLASS	CODE	LENGTH (MILES)	TOTAL COST
Gardena Blvd.	Los Angeles City Limit	Broadway	2	RDBBL	0.26	$31,200
Gardena Blvd.	Broadway	Main St.	2	RDBBL	0.14	$16,800
Gardena Blvd.	Main St.	Avalon Blvd.	2	RDBBL	0.65	$78,000
Leapwood Ave. - Chico St.	Dovlen Pl.	Dominguez St.	2	BL	0.28	$14,000
Leapwood Ave. - Chico St.	Dominguez St.	213th St.	2	BBL	0.35	$21,000
Leapwood Ave. - Chico St.	Denwall Dr.	Del Amo Blvd.	3	BRSD	0.05	$1,250
New Stamps Rd. - Lenardo Dr.	New Stamps Rd.	Avalon Blvd.	1	PL	0.34	$476,000
New Stamps Rd. - Lenardo Dr.	Del Amo Blvd.	Lenardo Dr.	2	BBL	0.68	$40,800
Selwyn Ave. - Desford St.	213th St.	Civic Plaza Dr.	3	BRSD	0.18	$4,500
Turmont St. - Craigjon Ave. - Cashdon St.	Avalon Blvd.	Wilmington Ave.	3	BRSD	1.97	$49,250
Turmont Wash	Dominguez Channel	Central Ave.	1	PL	1.26	$1,764,000
Vera St.	213th St.	Carson St.	2	BL	0.26	$13,000
Vera St.	Carson St.	Dominguez Channel	3	BRSD	0.26	$6,500
Vera St.				BRDG		$300,000
Wardlow Rd.	Los Angeles City Limit	Long Beach city limit	2	BL	0.13	$6,500
Wilmington Drain	Sepulveda Blvd. west of Figueroa St.	Lomita Blvd. west of I-110	1	PL	0.63	$882,000

CHAPTER 10

DESIGN GUIDELINES



OVERVIEW

This chapter describes general design guidelines for the facilities identified in this plan. The City will need to follow standard manuals such as the California Manual on Uniform Traffic Control Devices, California Highway Design Manual, American Association of State Highway and Transportation Officials' "A Policy on Geometric Design of Highways and Streets," National Association of City Transportation Officials' Urban Bikeway Design Guide, and others. The City may have to amend its own street design guidelines in order to implement certain facilities. Carson should take precaution and research the newest bikeway design guidelines and engineering treatments prior to constructing a facility.

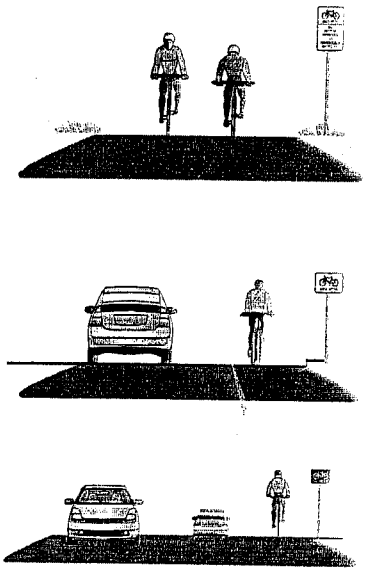
BIKEWAY GUIDELINES

DEFINITIONS

Bicycle

The American Association of State Highway and Transportation Officials' (AASHTO) (1999) definition of a bicycle is "every vehicle propelled solely by human power which any person may ride, having two tandem wheels, except scooters and similar devices. The term 'bicycle' also includes three- and four-wheeled human-powered vehicles, but not tricycles for children."

FIGURE 10.1 *Class I (top), Class II (middle), and Class III (bottom) bikeways*



Class I

Referred to as a bike path, shared-use path, or multi-purpose trail. Provides for bicycle travel on a paved right-of-way completely separated from any street or highway. Other users may also be found on this type of facility.

Class II

Referred to as a bike lane. Provides a striped lane for one-way bicycle travel on a street or highway.

Class III

Referred to as a bike route. Provides for shared use with pedestrian or motor vehicle traffic.

DESIGN

The following guidelines present the recommended minimum design standards and other recommended ancillary support items for shared use paths, bike lanes, and bike routes. Where possible, it may be desirable to exceed the minimum standards for shared use paths or bike lane widths, signage, lighting, and traffic signal detectors. These guidelines cover basic concepts. Caltrans' Highway Design Manual Chapter 1000 contains more detailed standards and guidance and should be followed. The City may also reference the AASHTO Guide for the Development of Bicycle Facilities where the HDM is silent.

Class I Bike Path Facilities Design Recommendations

1. All Class I bike paths should conform to the design guidelines set forth by Caltrans.
2. Class I bike paths should generally be designed as separated facilities away from parallel streets. They are commonly planned along rights-of-way such as waterways, utility corridors, railroads, and the like that offer continuous separated riding opportunities.
3. Both AASHTO and Caltrans recommend against using most sidewalks for bike paths. This is due to conflicts with driveways and intersections. Where sidewalks are used as bike paths, they should be placed in locations with few driveways and intersections, be properly separated from the roadway, and have carefully designed intersection crossings.
4. Bike paths should have a minimum of eight feet of pavement, with at least two feet of unpaved shoulders for pedestrians/runners, or a separate tread way where feasible. A pavement width of 12 feet is preferred.
5. Multi-use trails and unpaved facilities that are not funded with federal transportation dollars and that are not designated as Class I bike paths do not need to be designed to Caltrans standards.
6. Class I bike path crossings of roadways should be carefully engineered to accommodate safe and visible crossing for users. The design needs to consider the width of the roadway, whether it has a median, and the roadway's

average daily and peak-hour traffic volumes. Crossings of low-volume streets may require simple stop signs. Crossings of streets with Average Daily Traffic (ADT) of approximately 15,000 should be assessed for signalized crossing, flashing LED beacons, crossing islands, or other devices. Roundabouts can be a desirable treatment for a bike path intersecting with roadways where the bike path is not next to a parallel street.

7. Landscaping should generally consist of native vegetation that consumes little water and produces little debris.
8. Lighting should be provided where commuters will likely use the bike path in the late evening.
9. Barriers at path entrances to prevent motorized vehicles from entering, such as obstacle posts and gates, can obstruct bicyclists and may be considered only when other measures to prevent motor vehicles from entering have failed, and where the safety and other issues posed by unauthorized vehicles are more serious than the safety and access issues posed to path users. Signs and other design solutions are preferred.
10. Bike path construction should take into account vertical requirements and the impacts of maintenance and emergency vehicles on shoulders.

Cycletracks

Cycletracks, also known as protected bike lanes, are bikeways located on or adjacent to streets where bicycle traffic is separated from motor vehicle traffic by physical barriers. These barriers provide a sense of comfort and safety over and above that provided typical bike lanes. Where on-street parking exists, cycletracks are installed between the parking and the curb. Where no on-street parking exists they are located between the curb and travel lanes. They can be well suited to downtown areas where there are many people bicycling and walking, and where it is beneficial to get bicyclists off the sidewalk. They may also be used along some suburban streets with high-speed traffic. Streets selected for cycletracks should have minimal pedestrian crossings and driveways. They should also have minimal loading/unloading activity and other street activity. The cycletracks should be designed to minimize con-

flicts with these activities as well as with pedestrians and driveways.

Cycletracks are best suited for existing streets where surplus width is available; the combined width of the cycletrack and the barrier is more or less the width of a travel lane. The area to be used by bicycles should be of adequate width for street sweeping to ensure that debris will not accumulate. Cycletracks tend to work most effectively where there are few uncontrolled crossing points with unexpected traffic conflicts.

Cycletrack concerns include treatment at intersections, uncontrolled midblock driveways and crossings, wrong-way bicycle traffic, and difficulty accessing or exiting the facility at midblock locations. Left turns also present challenges. Early research shows that well-designed cycletracks attract many new cyclists and can be safer.

Overall Design Considerations

- The protective area should generally be a minimum of 3 feet wide. In some circumstances 2 feet is provided. Protective barriers may include posts/bollards, curbing, parking stops and landscaped islands.
- Parking near driveways and intersections should be prohibited to allow for good visibility.
- Where motorists cross the cycletrack to enter driveways the opening should be constrained so that they have to slow down and turn at a right angle.
- Coloring, yield markings and "Yield to Bikes" signs should be used in areas where motorists cross cycletracks.
- Cycletracks at intersections require deliberate design solutions (see Figure 10.2). Typically, this entails adding a separate signal phase that corresponds with motor vehicles travelling the same direction. The cycletracks will have a red phase when conflicting turning movements of vehicles in the travel lanes have a green, and vice versa.
- Cycletracks should be colored and stenciled through both signalized and unsignalized intersections to notify motorists that they are crossing a bikeway.

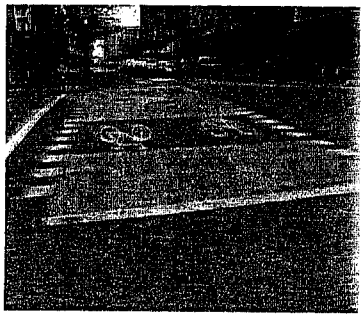


FIGURE 10.2 *Cycletrack intersection treatment.*

- Gaps should be installed in protective barriers to allow people in wheelchairs to cross them. These gaps should be placed where curb ramps allow passage to sidewalks.
- Cycletracks need to be carefully designed at bus stops. Passengers will need to cross the cycletracks. The bus stop may be located in the protected area so buses and bicyclists don't cross. This requires that the protected area be as wide as a bus (minimum of 8 feet). The protected area can be widened at the bus stops in parallel with on-street parking. Raising the cycletracks at the bus stop to sidewalk and bus stop level allow passengers to access the bus stop easily, and cues the cyclists to yield. This also accommodates people in wheelchairs.

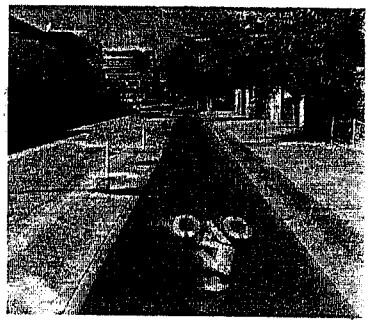


FIGURE 10.3 *One-way cycletrack.*

One-Way Cycletracks

In most circumstances, one-way cycletracks work best because they are much simpler to design at intersections (see Figure 10.3). They are designed similar to bike lanes, although they may be located between parked cars and the curb. On streets where no on-street parking exists, one-way cycletracks are situated between the curb and travel lanes with physical protection between the cycletracks and travel lanes. On streets with no on-street parking, one-way cycletracks and buffered bike lanes have very similar design and function. The buffered bike lanes have a painted barrier, and the cycletracks have a physical barrier. Thus, these treatments can be combined along a street, adding the physical protection where it is feasible, and reverting to the buffered bike lane in other sections. The bike lanes should be at least 5 feet wide, and a minimum of 6 feet is preferred. Where bicycle volumes are high, 7' allows cyclists to pass one another comfortably. Intersections can be designed like typical bike lanes: the physical protection is dropped, and on-street parking is prohibited on the intersection approach. Intersections may also be designed such that cyclists stay on the curbside and cross the intersection on the right of the travel lanes and turning vehicles. This design requires separate signal phasing. Using street sweepers that fit into one-way cycletracks presents one of the primary challenges. Most street sweepers are too wide but smaller ones can be purchased.

FIGURE 10.4 *Two-way cycletrack.*

Two-Way Cycletracks

Two-way cycletracks take up less space on the street cross section than one-way cycletracks since there is only one protective barrier. They are also wide enough for most street sweepers. These are the primary advantages. The riding space of two-way cycletracks should generally be at least 12 feet wide. Where they lead directly into a bike path or an intersecting cycletrack, transitioning from two-way cycletracks is seamless. However, where cycletracks terminate into bike lanes or common travel lanes, the transition requires cyclists to enter and exit from crosswalks if they are travelling opposite traffic. Two-way cycletracks present more potential conflict points at intersections than one-way cycletracks and must be designed with more care. They require separate signal phases at intersections. Figure 10.4 shows a two-way cycletrack.

FIGURE 10.5 *Raised cycletrack.*

Sidewalk-Level Cycletracks

Cycletracks that have curbs and are raised above the street level provide protection from midblock traffic (see Figure 10.5). At intersections they have the same issues, challenges and design solutions as one-way or two-way cycletracks.

Class II Bike Lane Facilities

Design Recommendations

The following guidelines should be used when designing Class II bikeway facilities. These guidelines are provided by the Caltrans Highway Design Manual Chapter 1000, the American Association of State Highway and Transportation Officials (AASHTO), the Manual on Uniform Traffic Control Devices (MUTCD), and the Caltrans Traffic Manual.

1. Class II Bike Lane facilities should conform to the minimum design standard of 5 feet in width in the direction of vehicle travel adjacent to the curb lane. Where space is available, a width of 6 to 8 feet is preferred, especially on busy arterial streets, on grades, and adjacent to parallel parking.
2. Under certain circumstances, bike lanes may be 4 feet in width. Situations where this is permitted include:

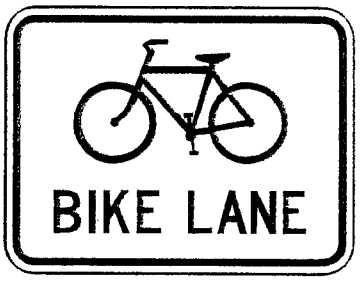


FIGURE 10.6 *California Bike Lane sign (R81).*

FIGURE 10.7 *Bike lane striping and stencil.*

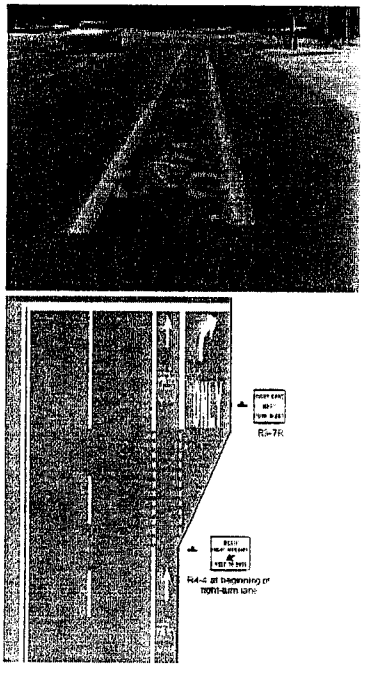


FIGURE 10.8 *Bike lane treatment at intersection, photo (top) and schematic (bottom).*

- » Bike lanes located between through traffic lanes and right turn pockets at intersection approaches (see Figure 10.8)
- » Where there is no parking, the gutter pan is no more than 12" wide, and the pavement is smooth and flush with the gutter pan
- » Where there is no curb and the pavement is smooth to the edge

3. "Bike Lane" signage, as shown in Figure 10.6, shall be posted after every significant intersection along the route of the bike lane facility. Directional signage may also accompany this sign to guide bicyclists along the route. If a bike lane exists where parking is prohibited, "no parking" signage may accompany bike lane signage.
4. Bike lanes should be striped with a solid white stripe of width at least 6 inches and may be dashed up to 200 feet before the approach to an intersection. This design of a dashed bike lane allows for its dual use as a right-turn pocket for motor vehicles.
5. Stencils shall also be used within the lane on the pavement that read "bike lane" and include a stencil of a bicycle with an arrow showing the direction of travel (see Figure 10.7).
6. Bike lanes with two stripes are more visible than those with one and are preferred. The second stripe would differentiate the bike lane from the parking lane where appropriate.
7. Where space permits, intersection treatments should include bike lane 'pockets' as shown in Figure 10.8.
8. Loop detectors that detect bicycles should be installed near the stop bar in the bike lane at all signalized intersections where bicycles are not reasonably accommodated. Signal timing and phasing should be set to accommodate bicycle acceleration speeds.

Colored Bicycle Lanes

Green bicycle lanes increase visibility for cyclists. The Federal Highway Administration and the California Traffic Control Device Committee have approved green bike lanes on an interim basis. Carson would need to notify the state if it chooses to

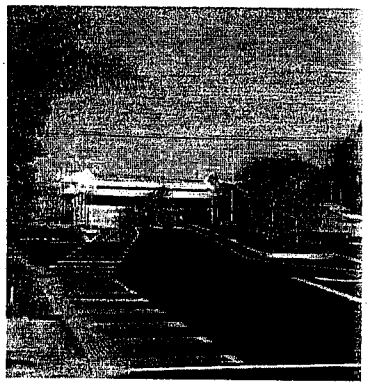


FIGURE 10.9 *Green bicycle lane*

use this treatment. Colored bike lanes should be painted a bright, chartreuse green as shown in Figure 10.9.

Green bicycle lanes are sometimes used as "conflict zone" treatments. They are short lanes that are used where right-turn pockets or driveways direct motorists through a bicycle lane to turn right. The green lane makes it obvious to motorists that they are crossing the bicycle lane and makes motorists more likely to be cautious and to look for bicycles. Green bicycle lanes can also be used as a continuous treatment spanning an extended length of a bike lane corridor.

Buffered Bike Lanes

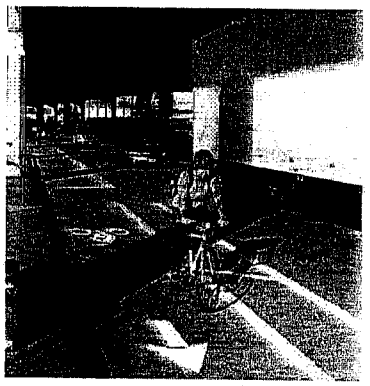


FIGURE 10.10 *Buffered bicycle lane*

Buffered bike lanes provide a painted divider between the bike lane and the travel lanes (see Figures 10.10 and 10.11). This additional space can improve the comfort of cyclists as they don't have to ride as close to motor vehicles. Buffered bike lanes can also be used to narrow travel lanes, which slows traffic. An additional buffer may be used between parked cars and bike lanes to direct cyclists to ride outside of the door zone of the parked cars. Buffered bike lanes are most appropriate on wide, busy streets. They can be used on streets where physically separating the bike lanes with cycle tracks is undesirable for cost, operational, or maintenance reasons.

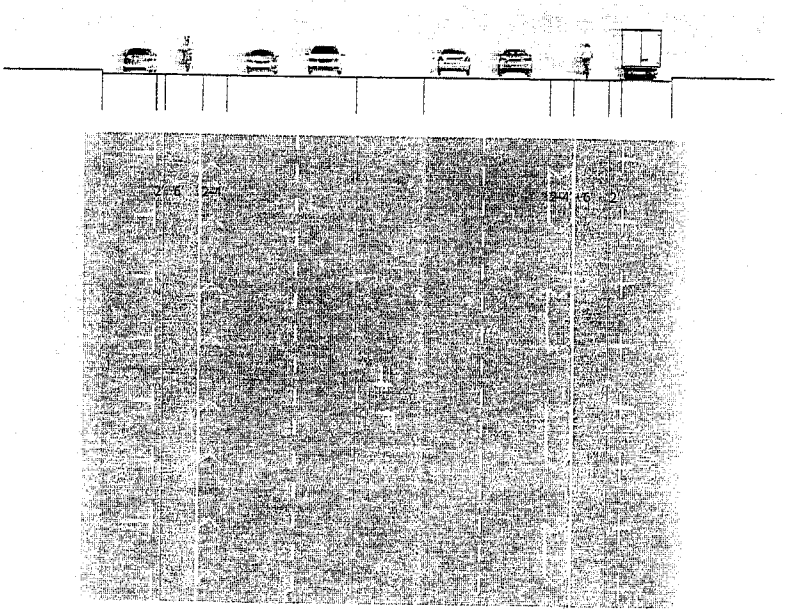


FIGURE 10.11 *Buffered bicycle lane schematic*

Class III Bike Routes

Bike routes have typically been designated as simple signed routes along street corridors, usually local streets and collectors. With proper route signage, design, and maintenance, bike routes can be effective in guiding bicyclists along a route suited for bicycling without having enough roadway space to provide a dedicated Class II bike lane. Class III Bike Routes can be designed in a manner that encourages bicycle usage, convenience, and safety. There are a variety of other improvements that can enhance the safety and attraction of streets for bicyclists. Bike routes can become more useful when coupled with such techniques as the following:

- Route, directional, and distance signage
- Wide curb lanes
- "Sharrow" stencils painted in the traffic lane along the appropriate path of where a bicyclist would ride in the lane (see Figures 10.13 and 10.14 and discussion below)
- Accelerated pavement maintenance schedules
- Traffic signals timed and coordinated for cyclists (where appropriate)
- Traffic calming measures.

FIGURE 10.12 *Bike Route sign (D11-1).*

Proper "Bike Route" signage, as shown in Figure 10.12, should be posted after every intersection along the route of the bikeway. This will inform bicyclists that the bikeway facility continues and will alert motorists to the presence of bicyclists along the route. Directional signage may accompany this sign as well to guide bicyclists along the route.

Sharrows

This Plan recommends using the sharrow stencil (Figure 10.13) as a way to enhance the visibility and safety of Class III bike routes. Sharrows (also known as shared lane markings) indicate to cyclists the proper position to ride within the travel lane and assist with wayfinding. They also alert motorists that the travel lane is to be shared with bicyclists.

California MUTCD, Section 9C.103(CA) Shared Roadway Bicycle Markings states: "The shared roadway bicycle marking shall only be used on a roadway (Class III Bikeway (Bike Route) or Shared Roadway (No Bikeway Designation))." When used on streets with on-street parking, sharrows are to be placed such that the centers of the markings are a minimum of 11 feet from the curb face or edge of paved shoulder. On streets without on-street parking that have an outside travel lane that is less than 14 feet wide, the centers of the sharrows should be at least 4 feet from the face of the curb.

On two-lane roadways, these minimum distances allow vehicles to pass bicyclists on the left within the same lane without encroaching into the opposite lane of traffic. (On multi-lane roadways, motorists must change lanes to pass a cyclist.) On multi-lane roadways with on-street parking, installing shar-

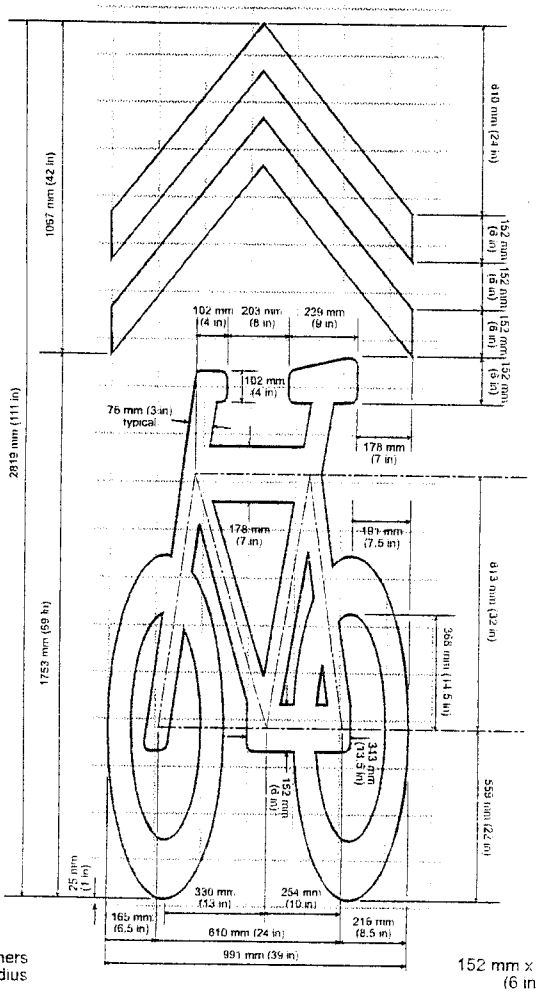


FIGURE 10.13 *Sharrow stencil*

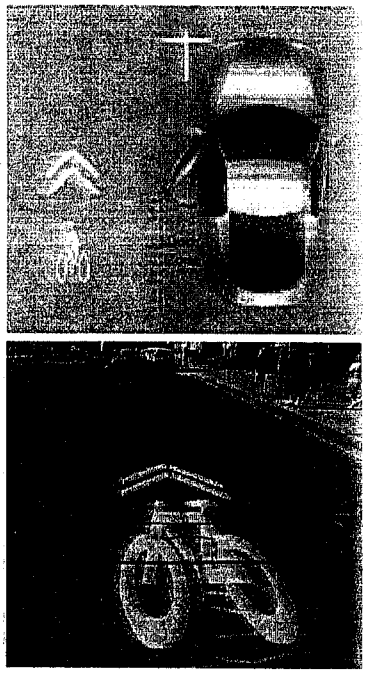


FIGURE 10.14 *Sharrow placement graphic (top) and photo (bottom)*

rows more than 11 feet from the curb will also move the bicyclist farther from the "door zone" (see Figure 10.14 [top]).

Sharrow markings should be placed in straight lines to allow the bicyclist to travel in a straight line. This often means the sharrow markings are in the center of the lane, greater than the minimum guide of 4 or 11 feet from the curb. Sharrow markings should always be placed outside the "door zone" where on-street parking is provided.

Sharrows should be placed immediately after an intersection and spaced no more than 250 feet apart—which translates to roughly one or two sharrows every block, with more frequent markings on long blocks. Placing the sharrows between tire tracks, as shown in Figure 10.14, increases the life of the markings and decreases long-term maintenance costs.

Type B Sharrows

The Cities of Long Beach and San Francisco are presently experimenting with green coloring of travel lanes with sharrows, which Ryan Snyder Associates has termed type B sharrows (see Figures 10.15 and 10.16). The wide green stripe used in Long Beach and green-backed sharrows in San Francisco send a strong signal to cyclists as to where they should ride. They also communicate to motorists that bicyclists are legitimate users of the entire travel lane. Although no standards are established, multi-lane streets with narrow curb lanes are likely the most appropriate for type B sharrows. This treatment has not yet been approved as part of the California Manual on Uniform Traffic Control Devices (CA MUTCD). Until it is approved,

FIGURE 10.15 *Long Beach green sharrow lane*

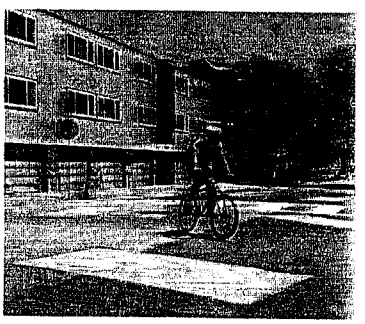


FIGURE 10.16 *San Francisco green-backed sharrow*

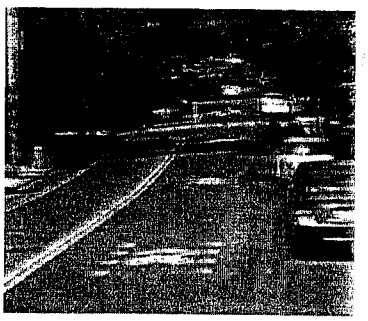


FIGURE 10.17 *Brookline, MA Sharrow markings*

the City would have to use this treatment under a sanctioned experimental process. Brookline, Massachusetts uses another form of type B sharrow, which consists of large sharrows placed close together with an additional outer marking (see Figure 10.17).

FREEWAY ON- AND OFF-RAMP CROSSINGS

FREEWAY INTERCHANGES

Interchanges are not always designed to carry bicyclists safely and comfortably across a freeway. The California Highway Design Manual (HDM) classifies freeway interchanges into 13 types, and the guide, "Complete Intersections: A Guide to Reconstructing Intersections and Interchanges for Bicyclists and Pedestrians," published by Caltrans in 2010, categorizes which of these types accommodate bicyclists and pedestrians. Interchange configurations where ramps are at a near right-angle provide the best accommodation because vehicles are forced to slow down before turning.

Short-term Treatments

In the short-term, striping and signage can improve conditions for bicyclists crossing the 91, 110, 405, and 710 freeways. Figure 10.18 shows two options that improve safety and comfort at free-flow ramp intersections.

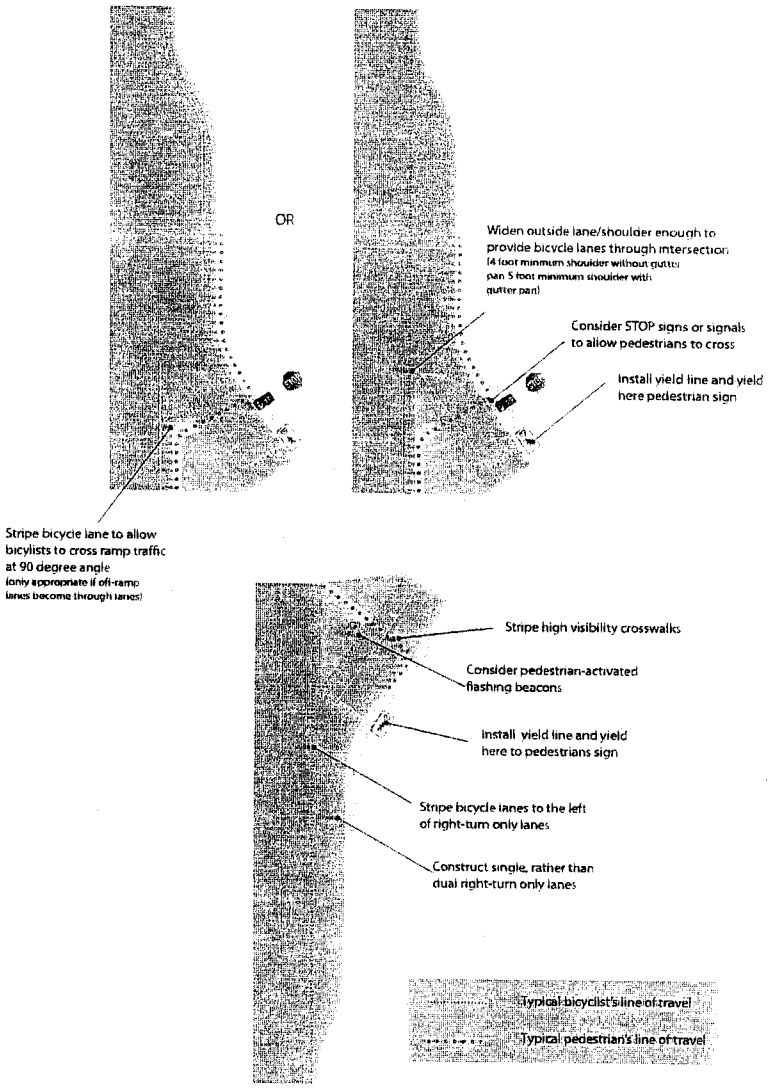
Long-term Treatments

In the long-term, an interchange can be reconstructed to eliminate free flow lanes and reconfigure intersections so that on and off ramps meet the crossroad at or near 90 degrees. Complete Intersections indicates that there are six interchange types that are best suited to accommodate pedestrian and bicyclists. These are shown in Figure 10.19.

SIGNAGE AND MARKINGS

Bikeway signage should conform to the signage standards identified in the Manual on Uniform Traffic Control Devices (MUTCD, 2009) and the California MUTCD 2010. These documents give specific information on the type and location of signage for the primary bikeway system. Table 10.1 on the next page provides guidance on some of the most important signs.

FIGURE 10.18 *Signage and striping treatments for free-flow ramp intersections (Source: Complete Intersections, Caltrans 2010)*



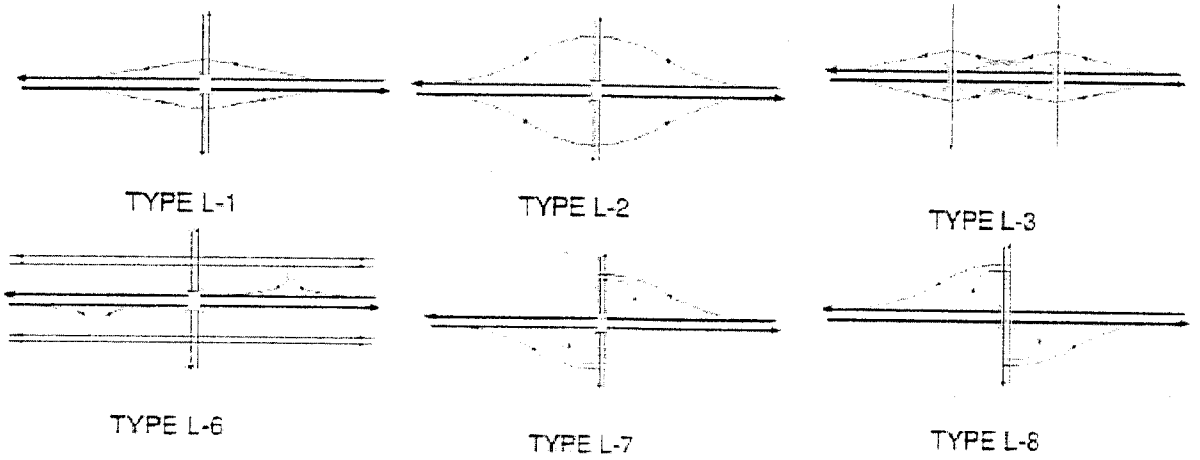


FIGURE 10.19 *Interchanges that best accommodate pedestrians and bicyclists (Source: Figure 502.2, Caltrans Highway Design Manual)*

WAYFINDING SIGNAGE

A numbered bike route network may be devised as a convenient way for bicyclists to navigate through the City, analogous to the way in which the numbered highway system guides motorists efficiently through the roadway network. This could be used on all classes of bikeways. Figure 10.20 shows a numbered bikeway sign.

Figure 10.21 shows a supplemental "Share the Road" sign.

Carson should launch a wayfinding system to guide bicyclists to their destinations. Glendale, CA recently began installing wayfinding signs along their network, as Figure 10.22 shows. Signs will be typically placed at decision points along routes within the City's bicycle network, which may include the intersection of two or more bikeways and at key locations leading to and along bikeways. Similiarly, Los Angeles recently began marking street signs with bicycles if the street is a bicycle friendly street (see Figure 10.23).

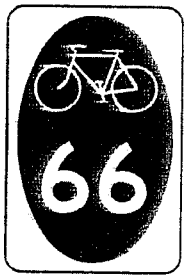
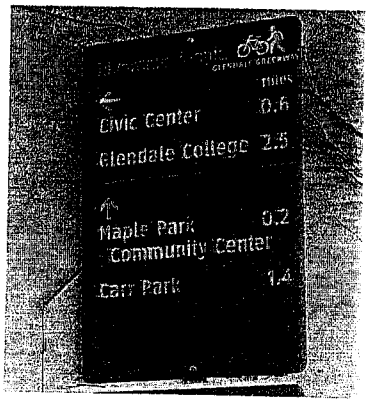


FIGURE 10.20 *Numbered Bike Route sign (M1-5).*

FIGURE 10.21 *Share the Road sign (W16-1, bottom) with Bike Route sign (D11-1, top).*

DIRECTIONAL SIGNAGE

It is important to provide information to cyclists where bike routes turn, or where bikeways intersect. This can be done with both signs and pavement markings as shown in Figure 10.24. Carson can enhance typical Class III routes with directional signage and pavement markings. These markings allow the cyclist to understand how the route continues, especially if it is one that may be less direct.



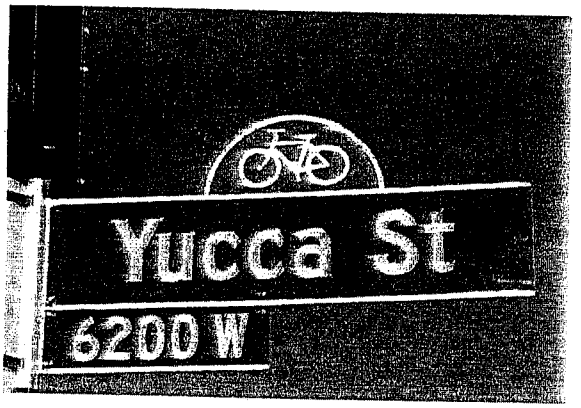


FIGURE 10.22 (LEFT) *Glendale wayfinding sign.*

FIGURE 10.23 (RIGHT) *Los Angeles Bicycle Friendly Street sign.*

TABLE 10.1 *Recommended bikeway signage and markings*

SIGNAGE	LOCATION	COLOR	CA MUTCD DESIGNATION	MUTCD DESIGNATION
Bicycle Crossing	For motorists at a bikeway crossing	B on Y	N/A	W11-15 with W11-15P (optional)
Bike Lane	At the far side of significant arterial intersections	B on W	R81	R3-17
Stop Ahead	Where a stop sign is obscured	B, R on Y	W3-1	W3-1
Signal Ahead	Where signal is obscured	B, R, G	W3-3	W3-3
Pedestrian Crossing	Where a pedestrian walkway crosses a bikeway	B on Y	W11-2	W11-2
Directional Signs	At intersections where access to major destinations is available	W on G	G7 G8	D1-1b, D1-2b, D1-3b, D1-1c, D1-2c, D1-3c
Right Lane Must Turn Right: Begin Right Turn Here, Yield to Bikes	Where a bike lane ends before an intersection	B on W	N/A R4-4	R3-7 R4-4
Share the Road	Where there is need to warn motorists to watch for bicyclists along the highway	B on Y	W16-1 with W11-1	W16-1P with W11-1
Bicycles May Use Full Lane	Where travel lanes are too narrow for bicyclists and motor vehicles to travel side by side	B on W	R4-11	R4-11

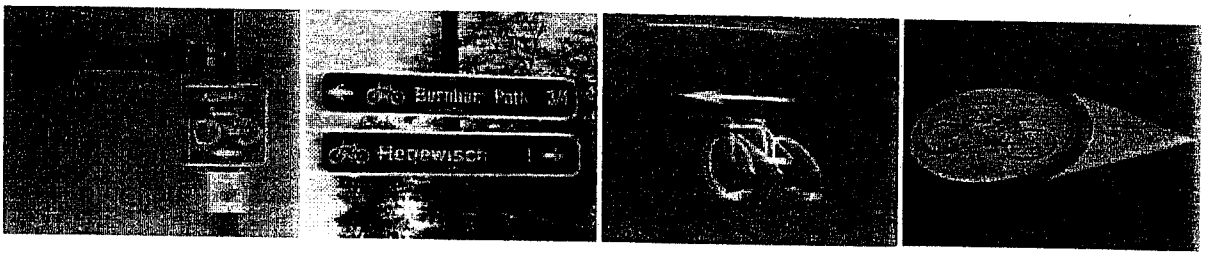


FIGURE 10.24 *Examples of directional signage (left two images) and pavement markings (right two images).*

BICYCLE PARKING

Bicycle parking is a critical component of the network and facilitates bicycle travel, especially for commuting and utilitarian purposes. The provision of bicycle parking at every destination ensures that bicyclists have a place to safely secure their mode of travel. Elements of proper bicycle parking accommodation are outlined below:

1. Bike racks provide short-term parking. Bicycle racks should offer adequate support for the bicycles and should be easy to lock to. Figures 10.25 and 10.26 display a common inverted-U design that accomplishes this. Figure 10.27 depicts a multi-bicycle rack that also works well. Figure 10.28 shows an innovative concept in which the bike rack itself looks like a bicycle.
2. Inverted-U racks placed next to each other (as shown in Figure 10.26) should be placed at least 36 inches apart (48 inches is recommended), so bicycles can be loaded on both sides of the rack.
3. Long-term parking should be provided for those needing all day storage or enhanced safety. Bicycle lockers offer good long-term storage, as shown in Figure 10.29. Bicycle lockers should be approximately 6' x 2' x 4', and should consider the needs of folding and recumbent

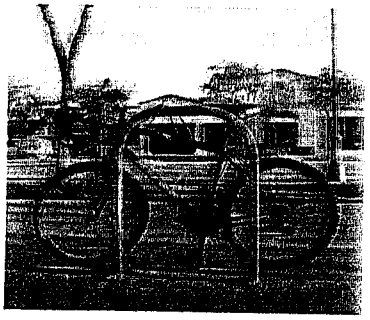


FIGURE 10.25 *Inverted-U bicycle rack.*

FIGURE 10.26 *Multiple inverted-U racks.*

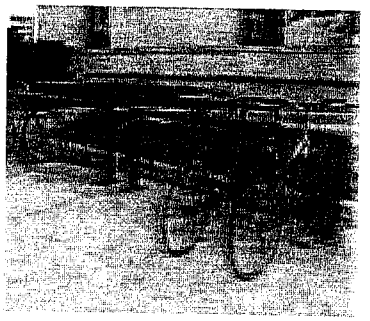


FIGURE 10.27 *High-quality multi-bicycle rack.*

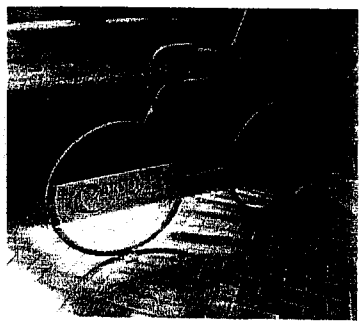


FIGURE 10.28 *"Bike" bike rack in Carson.*

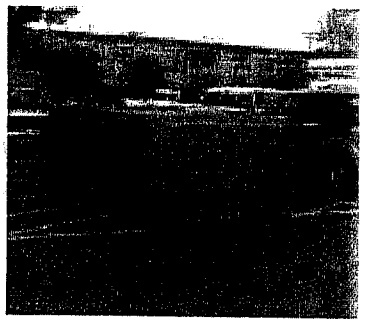


FIGURE 10.29 *Bicycle lockers*

FIGURE 10.30 *Automated bicycle parking.*

FIGURE 10.31 *California Bike Parking sign (R81C).*

bicycles. Attendant and automated parking also serves long-term uses as shown in Figure 10.30.

4. Bicycle parking should be clearly identified by signage, such as that shown in Figure 10.31. Signage shall also identify the location of racks and lockers at the entrance to shopping centers, buildings, and other establishments where parking is not provided in an obvious location, such as near a front door.
5. Bicycle parking should be located close to the front door of buildings and retail establishments in order to provide for the convenience, visibility, and safety of those who park their bicycles. The City should consider the "wheels to heels" transition. Every bicyclist must become a pedestrian when entering a building; the City should place bicycle parking in locations that facilitate this process, and discourage sidewalk riding in pedestrian-oriented districts.
6. At transit stations and in dense housing complexes, two-tier racks can be used (see Figure 10.32). These racks allow bicycles to be loaded on the top or bottom, with a lever that swings to the ground to allow for top rack loading. Individual racks are also staggered in height such that bicycle handlebars will not hit each other. The racks are placed very closely together (approximately 16" apart).
7. Figure 10.33 shows staggered, wall-mounted bicycle racks suitable for small offices, commercial areas, and apartment complexes. Extra precaution should be taken for security including locked entry to the storage area and locks on the racks themselves. If staggered in height, bicycles can be placed 16" apart. Figure 10.33 does not include a locking mechanism, which is recommended.
8. Bicycle lockers should have informational signage, placards, or stickers placed on or immediately adjacent to them identifying the procedure for how to use a locker. This information at a minimum should include the following:
   - Contact information to obtain a locker at City Hall or other administrating establishment
   - Cost (if any) for locker use
   - Terms of use

FIGURE 10.32 *Two-tier bike racks.*

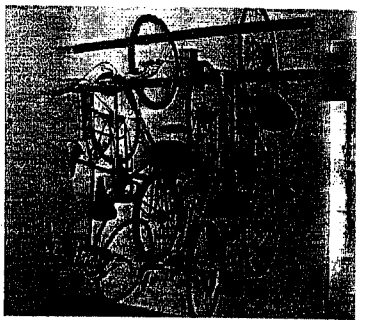


FIGURE 10.33 *Wall-mounted bike rack (without lock).*

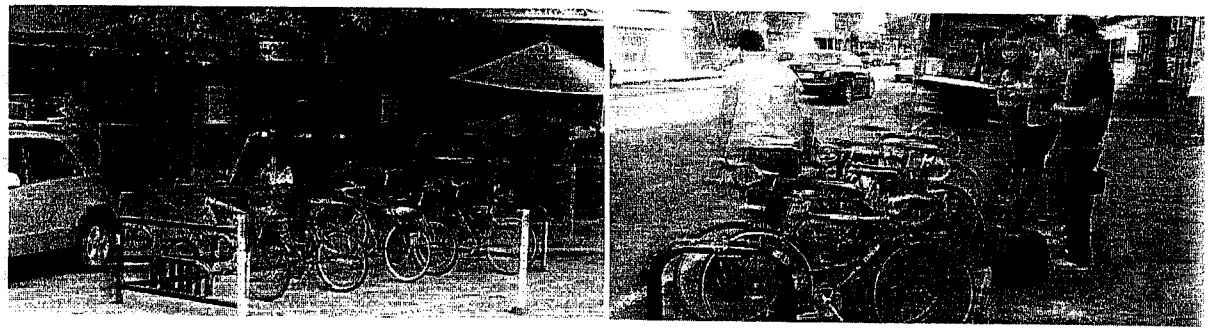


FIGURE 10.34 *Bike corrals in Long Beach (left) and Los Angeles (right).*

» Emergency contact information

9. Bicycle lockers should be labeled explicitly as such and shall not be used for other types of storage.
10. Bicycle racks and storage lockers should be bolted tightly to the ground in a manner that prevents tampering.
11. Figure 10.34 shows bike corrals, which are created when a local jurisdiction replaces on-street auto-parking spaces with rows of bicycle racks. They should be used where bicycle parking is in high demand.

ADDITIONAL TREATMENTS AND CONSIDERATIONS

ROAD DIETS

A "road diet" describes the reallocation of pavement space by removing one or more lanes of travel to add other types of facilities. Typical road diets change streets with four lanes (two lanes of travel in each direction) to two lanes with a center two-way-left-turn lane and bicycle lanes. Some road diets may be necessary to create a specified on-street bicycle facility. Road diets can be implemented during street re-pavings or re-surfacings. Not only do they allow for the installation of bicycle lanes, but they often present an opportunity to improve the pedestrian environment as well. They also provide a traffic

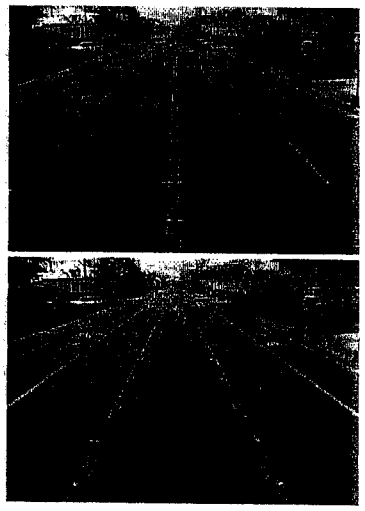


FIGURE 10.35 *Road diet before (top) and after (bottom).*

calming effect. The City will need to conduct outreach and notification for any suggested road diets. Road diets will also require council approval. Figure 10.35 shows a typical road diet.

DRAINAGE GRATES

Care must be taken to ensure that drainage grates are bicycle-safe. If not, a bicycle wheel may fall into the slots of the grate, causing the cyclist to tumble. Replacing existing grates or welding thin metal straps across the grate perpendicular to the direction of travel is required to make them bicycle safe. These should be checked periodically to ensure that the straps remain in place. Grates with bars perpendicular to the roadway must not be placed at curb cuts, because wheelchairs could also get caught in the slot. Figure 10.36 shows the appropriate types of drainage grates that should be used.

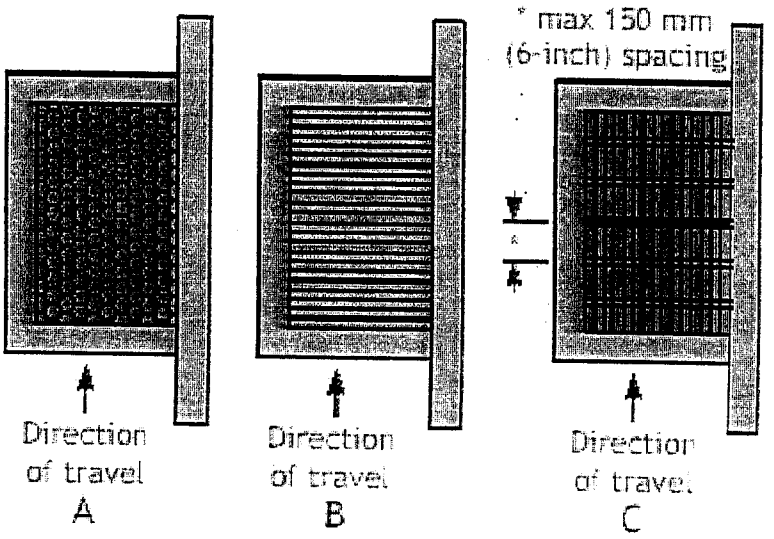


FIGURE 10.36 *Proper drainage grate design*

LOOP DETECTORS

Loop detectors at signalized intersections should be designed to detect when a bicycle rides or stops over them. Loop detectors at the signalized intersections of minor streets (minor arterials or collectors) should have priority when retrofitting existing detectors where the minor approaches do not call a green phase during every signal cycle. Eventually, all signalized intersections should provide loops or other detection devices.

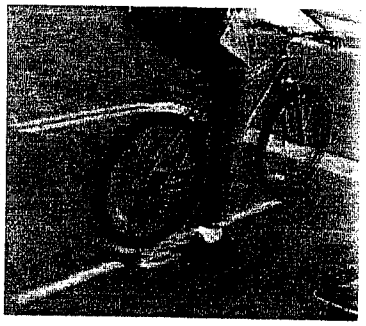


FIGURE 10.37 *Bicycle loop detector marking*

The State of California passed a law that became effective in 2009 requiring local jurisdictions to add bicycle-sensitive loop detectors to all new signals and those that are replaced. The general specifications are that a detection area of 6' by 6' be created behind the limit line, and that bicyclists be given enough time to travel through the intersection with the clearance time calculated using a speed of 14.7 feet per second plus 6 seconds for start-up. As Figure 10.37 shows, painting the loop detectors and adding a bicycle stencil can help to notify cyclists as to where they should position themselves to trip the detectors.

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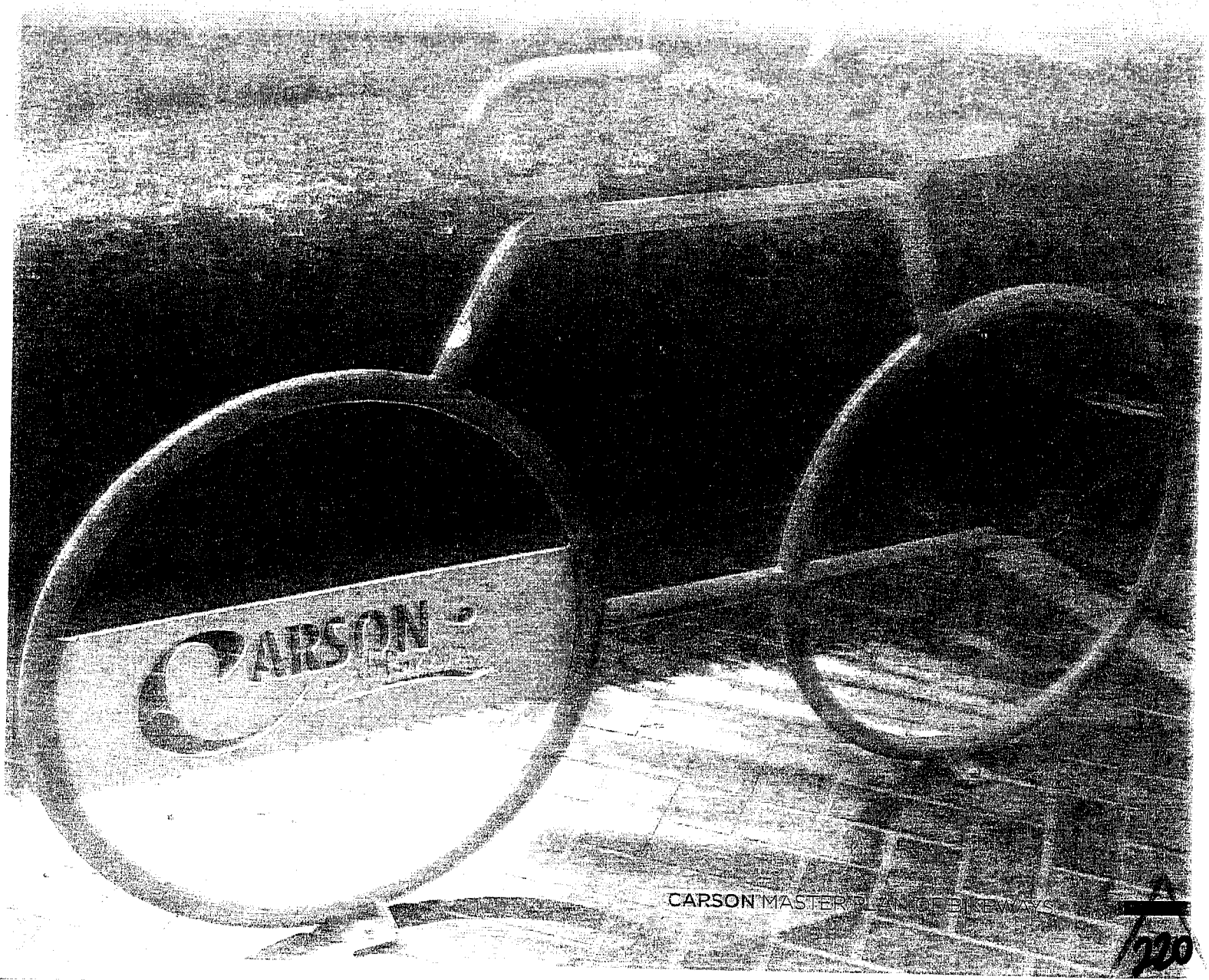
APPENDIX A

PUBLIC OUTREACH DETAIL



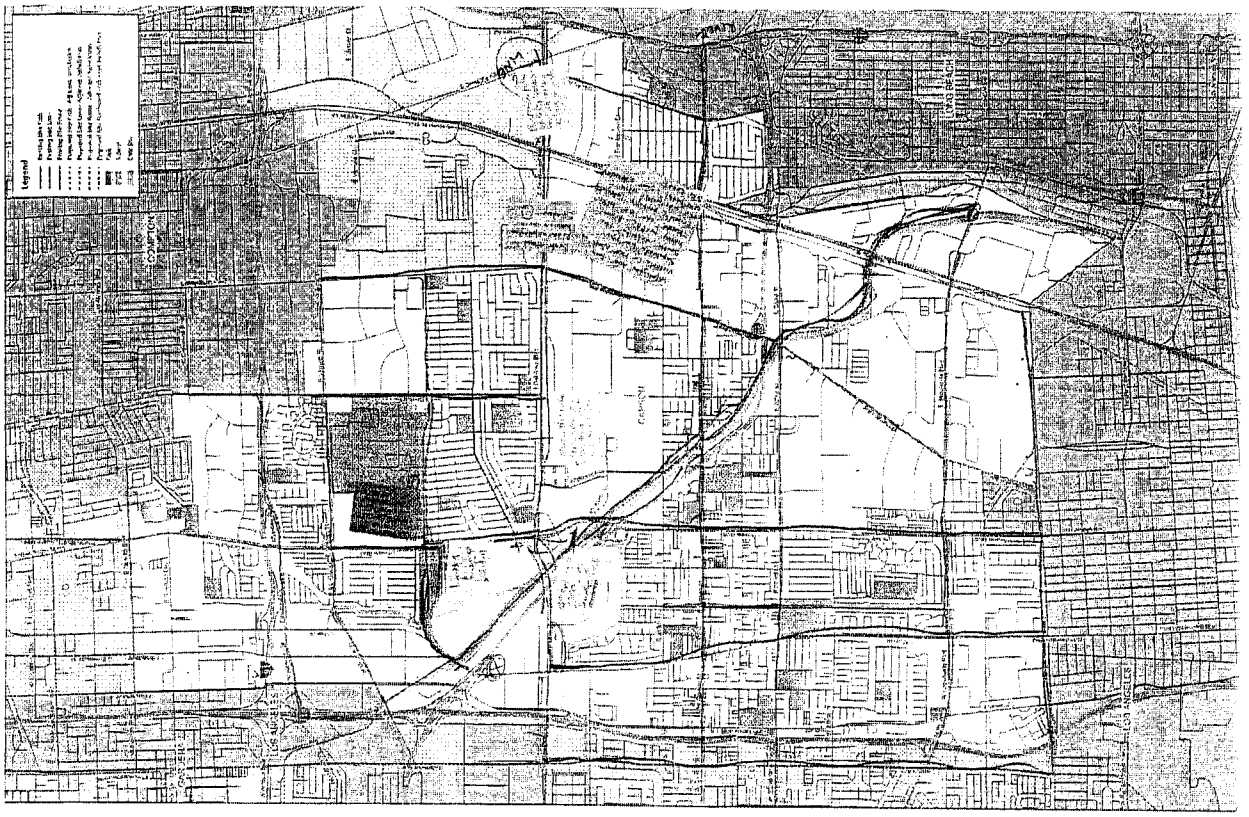
OVERVIEW

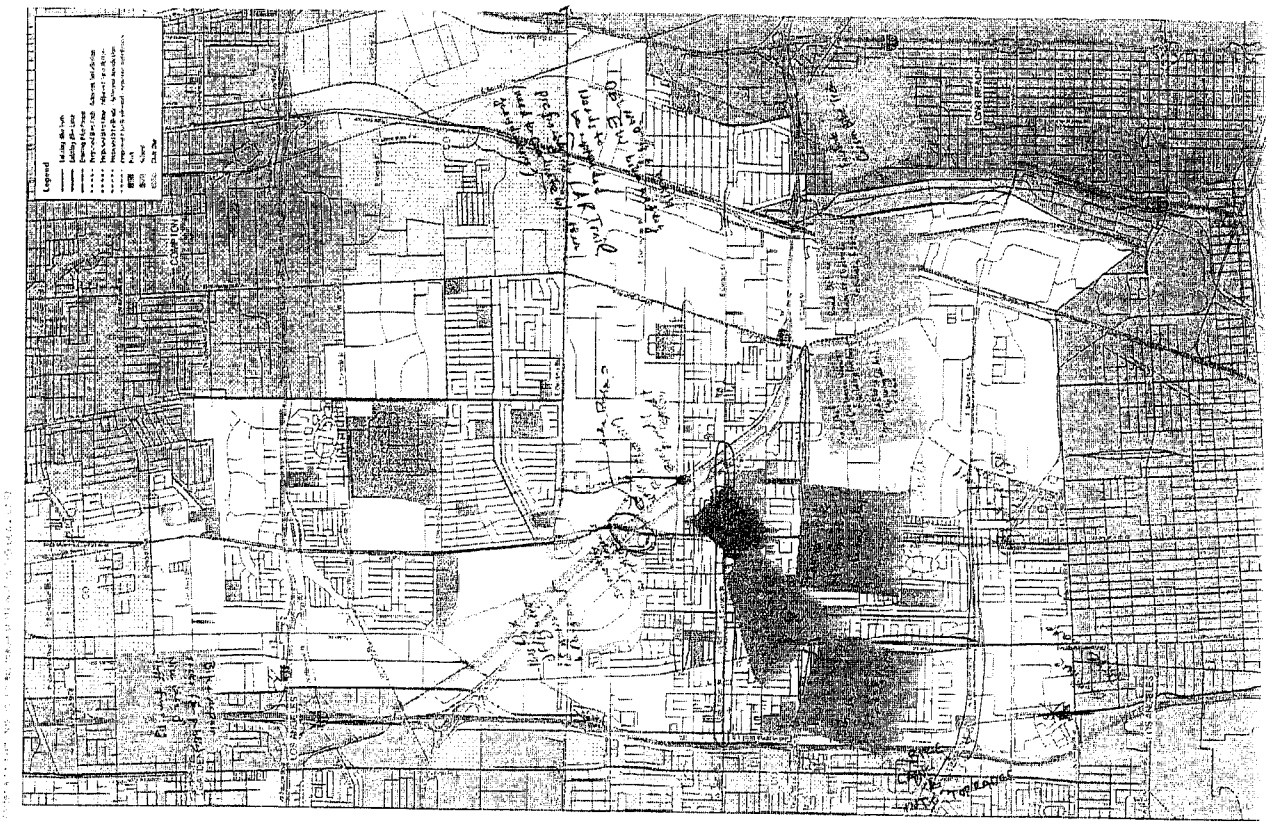
This appendix contains the full results of the public outreach effort.

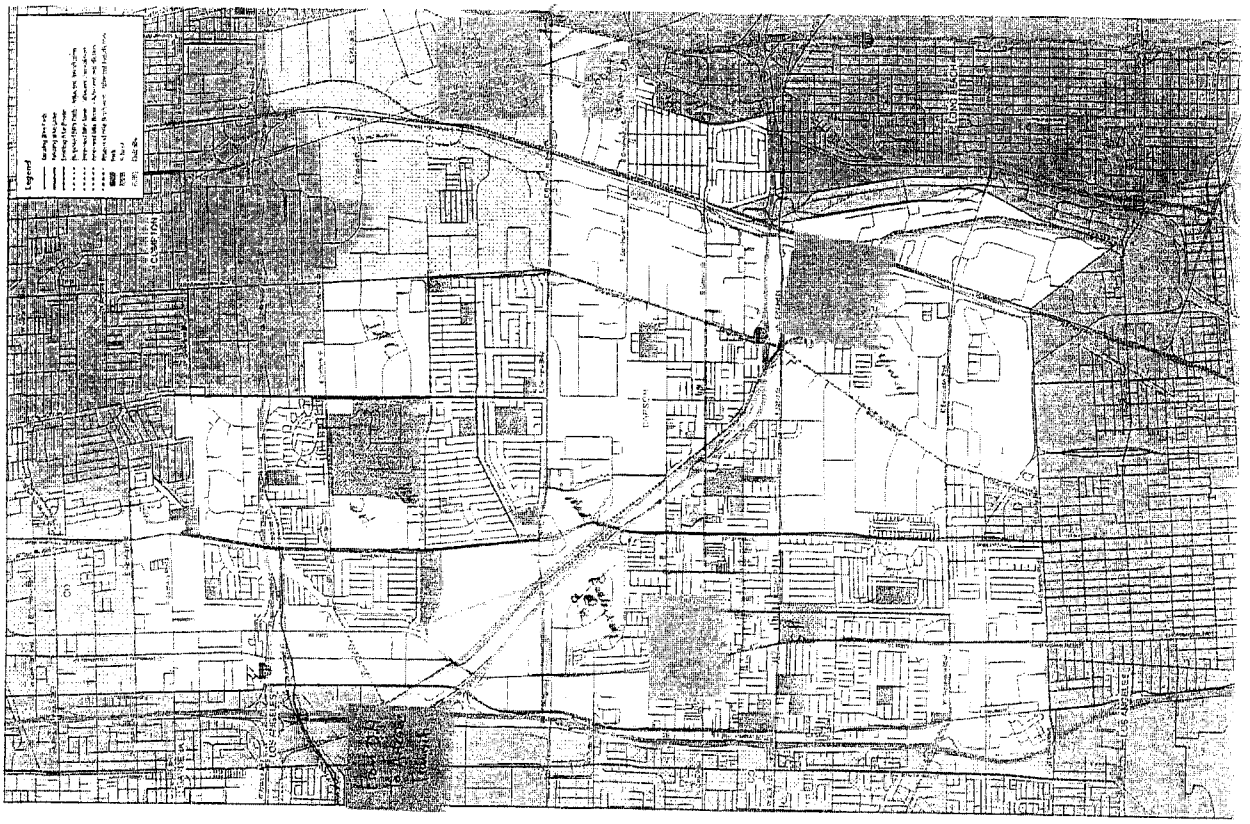
MAP RESULTS FROM WORKSHOP 1

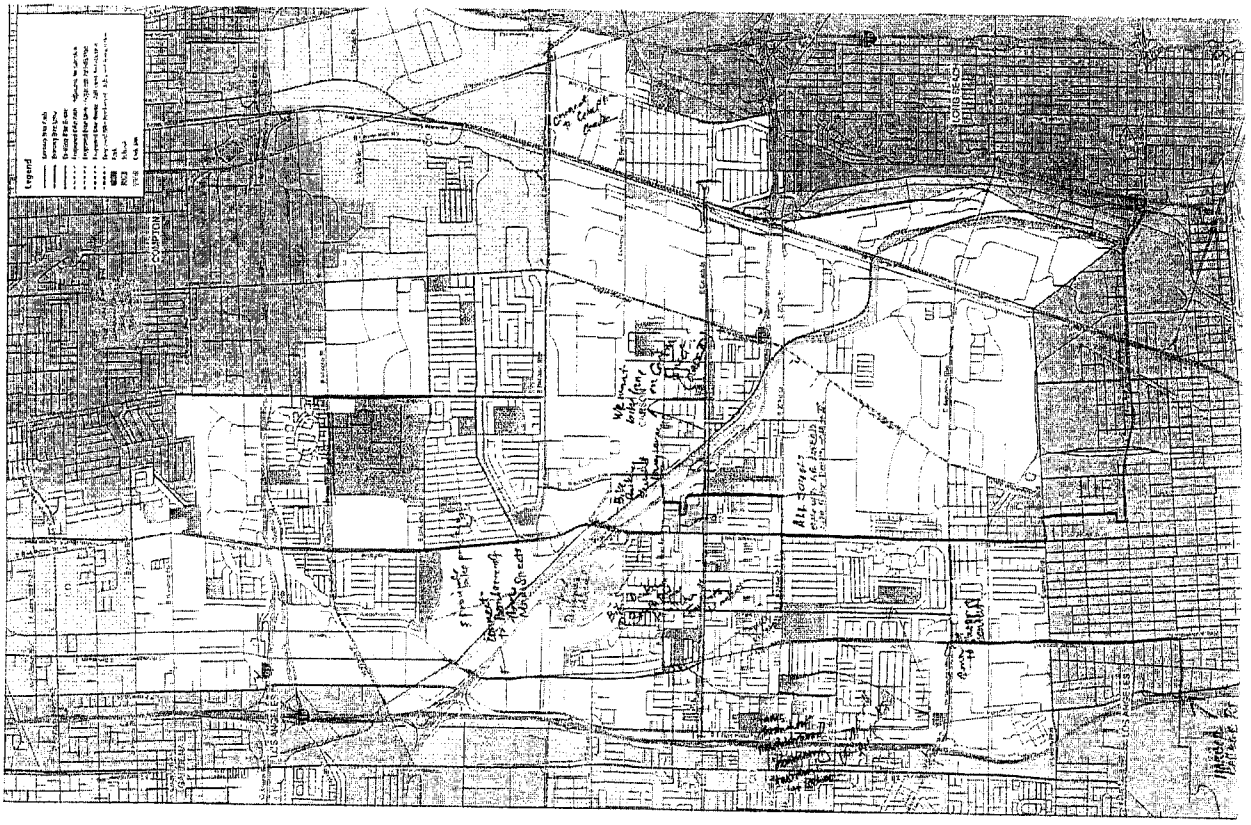
The following are pictures of the maps that attendees drew on at Workshop 1 to indicate where they would like to see bicycle facilities and to identify difficult and dangerous streets.

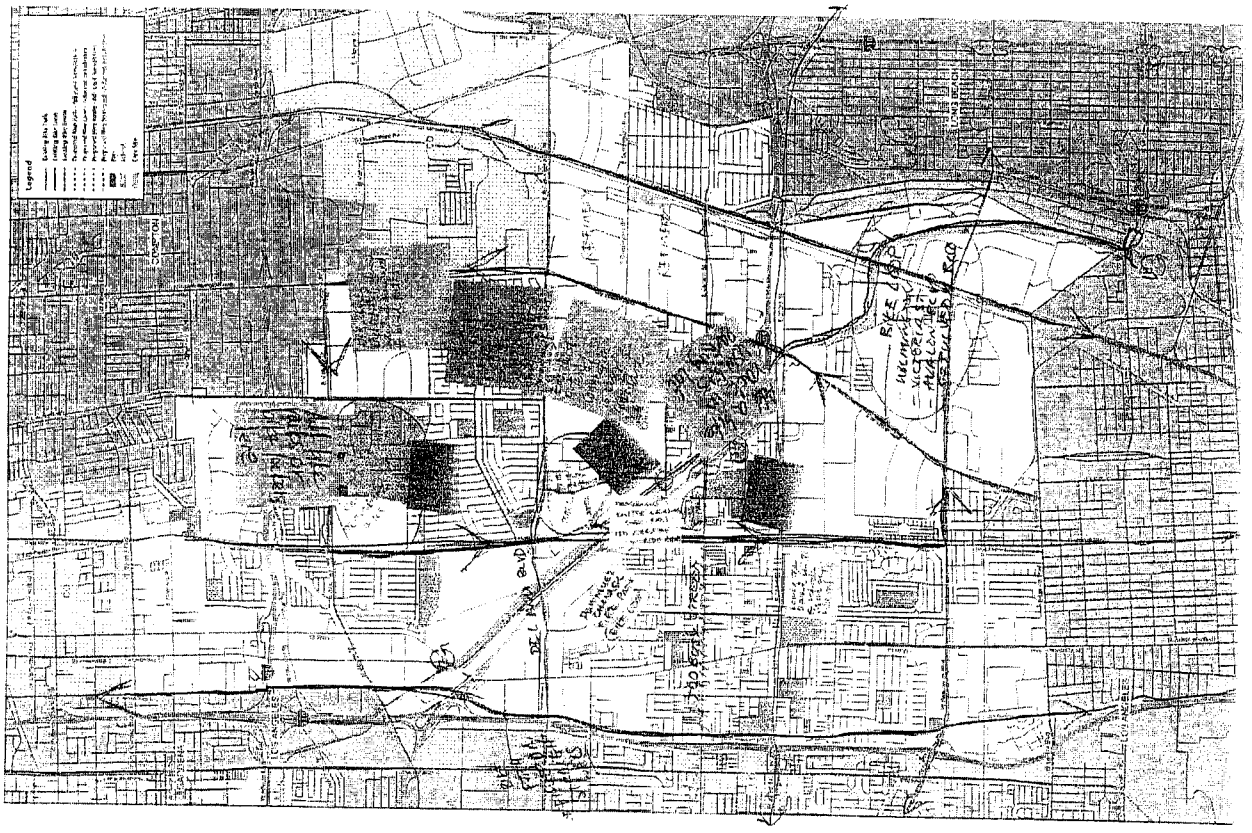
A-2








Legend
COMPTON
LONG BEACH



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RESULTS OF PRIORITIZATION EXERCISES

At Workshop 2, a large poster board listed all the proposed projects in the draft bikeway network. Attendees were given twelve dots, six green to place on their highest priority projects, and six yellow to place on their next-highest priority projects. They could place more than one dot on any one project. Along similar lines, the brief online survey distributed after Workshop 2 asked respondents to choose their three highest priority projects and then to choose their three next-most-important projects. Finally, at the Tour de Carson event, attendees could place dots on a map of proposed bikeways in Carson to indicate the projects they thought were the most important. Table A.1 shows the results of these exercises.

TABLE A.1 *Results of prioritization exercises.*

BIKEWAY PROJECT	GREEN DOTS AT WORKSHOP 2	YELLOW DOTS AT WORKSHOP 2	HIGHEST PRIORITY CHOICES IN SURVEY	2ND HIGHEST PRIORITY CHOICES IN SURVEY	DOTS PLACED AT TOUR DE CARSON	TOTAL
Carson Street	5	0	10	4	13	32
Dominguez Channel - North of 220th Street	4	1	3	1	22	31
Del Amo Boulevard - East of of Central Avenue	4	0	2	3	20	29
Victoria Street	7	2	2	5	12	28
Dominguez Channel - South of 220th Street	2	2	3	2	14	23
223rd Street	5	1	5	2	9	22
Avalon Boulevard - South of Del Amo Boulevard	4	1	8	1	8	22
University Drive	6	3	7	2	2	20
Central Avenue	0	0	3	1	16	20
Wilmington Avenue - South of Del Amo Boulevard	1	4	4	4	6	19
Figueroa Street - South of Del Amo Boulevard	3	4	1	1	6	15
213th Street	1	4	3	3	4	15
Del Amo Boulevard - West of of Central Avenue	2	1	3	2	6	14
Sepulveda Boulevard	0	3	3	4	4	14
Albertoni Street	0	1	3	3	7	14

BIKEWAY PROJECT	GREEN DOTS AT WORKSHOP 2	YELLOW DOTS AT WORKSHOP 2	HIGHEST PRIORITY CHOICES IN SURVEY	2ND-HIGHEST PRIORITY CHOICES IN SURVEY	DOTS PLACED AT TOUR DE CARSON	TOTAL
Main Street - South of Del Amo Boulevard	2	2	1	6	2	13
Avalon Boulevard—North of Del Amo Boulevard	0	0	4	2	6	12
Wardlow Road	0	2	2	1	4	9
Figueroa Street—North of Del Amo Boulevard	1	1	0	0	6	8
Moneta Avenue	4	0	0	1	2	7
Santa Fe Avenue	1	1	2	1	2	7
LADWP Utility Corridor near Southbay Pavillion	1	2	2	0	1	6
Lomita Boulevard	2	1	1	1	0	5
Dolores Street	2	1	0	0	2	5
228th Street	1	0	1	0	3	5
220th Street/Lucerne Street	0	4	1	0	0	5
Watson Center Road	0	2	1	2	0	5
Interstate 405 Right-Of-Way/ LADWP Utility Corridor	2	1	0	1	0	4
Turmont Wash	1	2	0	1	0	4
BNSF Railway Harbor Subdivision	1	1	0	2	0	4
Wilmington Avenue - North of Del Amo Boulevard	0	1	2	0	1	4
Vera Street	2	0	0	0	1	3
Wilmington Drain	1	2	0	0	0	3
Civic Plaza Drive	1	0	1	0	0	2
Main Street—North of Del Amo Boulevard	0	2	0	0	0	2
Bonita Street	0	2	0	0	0	2
Turmont Street/Craigjon Avenue/ Casndan Street	0	0	0	2	0	2
Broadway	0	0	0	1	1	2
Loop Road—Lenardo Dr	1	0	0	0	0	1
Alondra Boulevard	0	1	0	0	0	1

BIKEWAY PROJECT	GREEN DOTS AT WORKSHOP 2	YELLOW DOTS AT WORKSHOP 2	HIGHEST PRIORITY CHOICES IN SURVEY	2ND-HIGHEST PRIORITY CHOICES IN SURVEY	DOTS PLACED AT TOUR DE CARSON	TOTAL
Gardena Boulevard	0	1	0	0	0	1
192nd Street	0	1	0	0	0	1
Leapwood Avenue/Chico Street	0	1	0	0	0	1
Bitterlake Street/Amantha Avenue/Radbard Street	0	0	0	0	0	0
214th Street	0	0	0	0	0	0
Campaign Drive	0	0	0	0	0	0
Galway Avenue/Denwall Drive	0	0	0	0	0	0
Selwyn Avenue/Desford Street	0	0	0	0	0	0

RESULTS OF ROADWAY PREFERENCES EXERCISES

At Workshop 2, a large poster board displayed the questions, "Do you support using "road diets," which reduce the number of auto lanes on a street to add bike lanes?" and "Do you support using 10-foot travel lanes on streets to add bike lanes?" Attendees were given two dots, one to use for the question regarding road diets, and another to use for the question regarding travel lane width. They placed the dot in a "Yes" column or a "No" column. Along similar lines, the brief online survey distributed after Workshop 2 asked respondents to answer yes or no to the same two questions. Finally, at the Tour de Carson event, attendees placed stickers on a board identical to the one used at Workshop 2 to indicate their yes or no answer to these questions. The results are shown in Table A.2 below.

TABLE A.2 *Do you support the use of road diets?*

EVENT:	WORKSHOP 2		ONLINE SURVEY		TOUR DE CARSON	
ANSWER:	YES	NO	YES	NO	YES	NO
Do you support the use of road diets?	8	0	18	2	44	2
Do you support the use of 10-foot lanes?	10	0	19	1	48	0

OTHER RESULTS FROM THE ONLINE PRIORITIZATION SURVEY

ADDITIONAL COMMENTS ON THE DRAFT BIKEWAY NETWORK

The survey allowed for open-ended comments on the draft bikeway network. The following responses are provided verbatim:

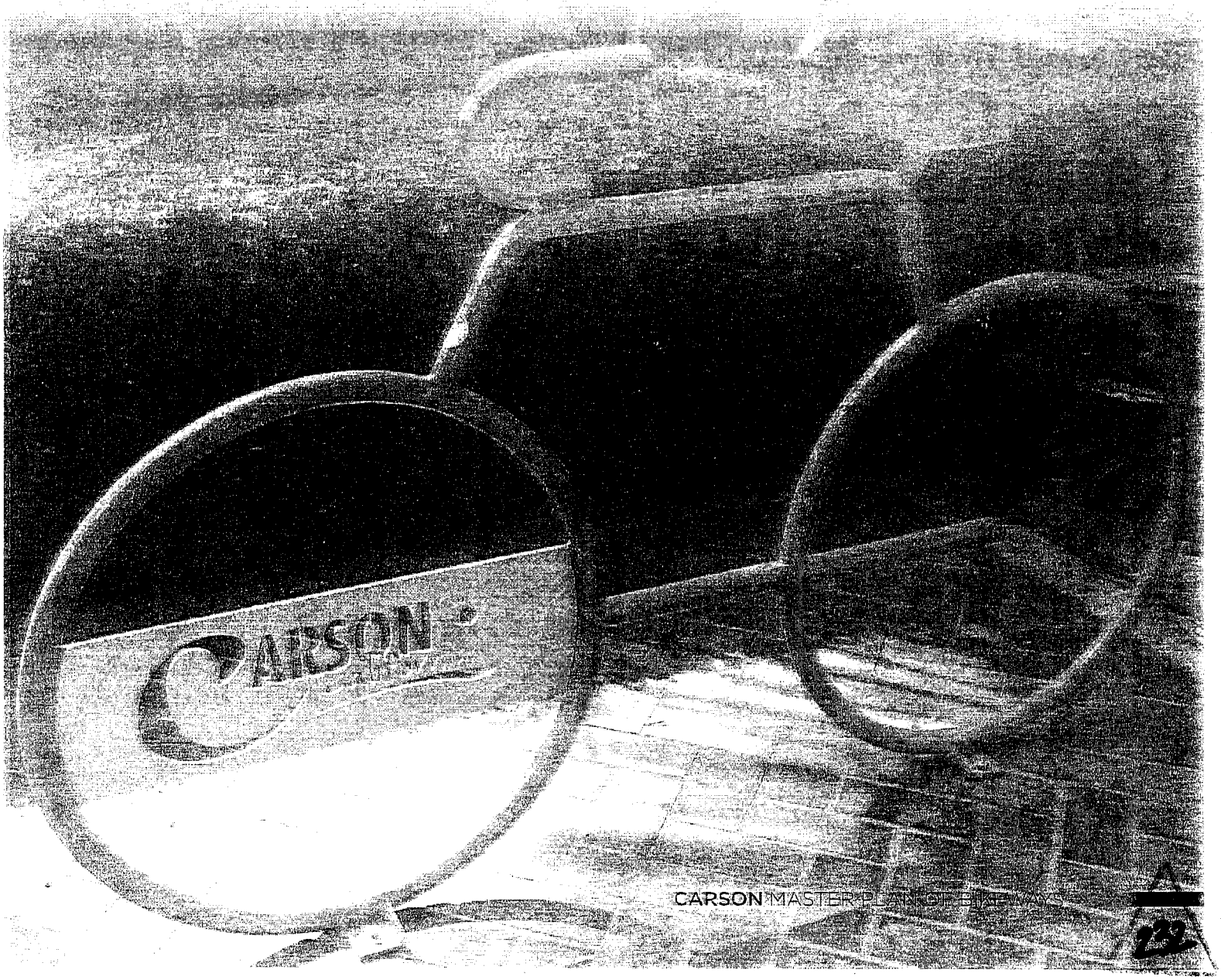
- On the newly built connector bridge, built to connect Del Amo Blvd from Maple Ave to Crenshaw Blvd, which currently prohibits bicycles and pedestrians, they should permit bicycles by adding in a bike lane on both directions on the bridge.
- This is a good start!
- This survey does not allow for those not in favor of supporting the "Comprehensive Master Plan of Bikeways". This is unfair, and objectionable!
- Bikeways selected based on the condition of the street.
- A color coded map could have been helpful
- Bikeways are really needed.
- I bike to work in carson from long beach almost daily. Sepulveda, Wardlow/223, and Wilmington between 223 and Sepulveda are probably the most dangerous roads to bike in the city. Truck traffic, pot holes, and road debris make the ride very unsafe. Unfortunately for a bike, there really is no other option.

PARTICIPANT STAKEHOLDER STATUS

The final questions on the survey asked participants to identify what kind of stakeholder they are in Carson (resident v. employee, etc.) The majority of the participants indicated that they are a resident of Carson. The majority also ride their bicycles in Carson currently.

APPENDIX B

BICYCLE COUNT METHODOLOGY



COUNT METHOD-OLOGY

The City, LACBC, and consultant team developed the counting method used to count bicyclists in October, 2012. We decided to deviate from the methodology used in 2010. Although this somewhat limits the accuracy of comparisons between volumes in 2010 and 2012, the 2012 methodology will be more robust going forward and more compatible with screenline or automatic counts.

The count forms from 2012 and 2010 are displayed on the following pages.

B-2

2012: TWO SCREENLINES

For the 2012 count, counters marked crossings of two imaginary screenlines. A crossing in either direction over either of the screenlines would be recorded with a single tally mark. This means that a westbound bicyclist making a right turn at the intersection would be counted twice, while an eastbound bicyclist making a right turn would not be counted at all. The placement of the screenlines on the north and east leg of the intersection was an arbitrary convention.

The 2010 definition of what would be counted as a "child" was someone who was perceived to be under 13 years of age. This definition was carried over in the 2012 counts.

The choice of a screenline count was influenced by concurrent work being conducted for the Southern California Association of Governments to establish a standard bike count methodology and data format for Los Angeles County. Ryan Snyder Associates was the prime consultant on that project.

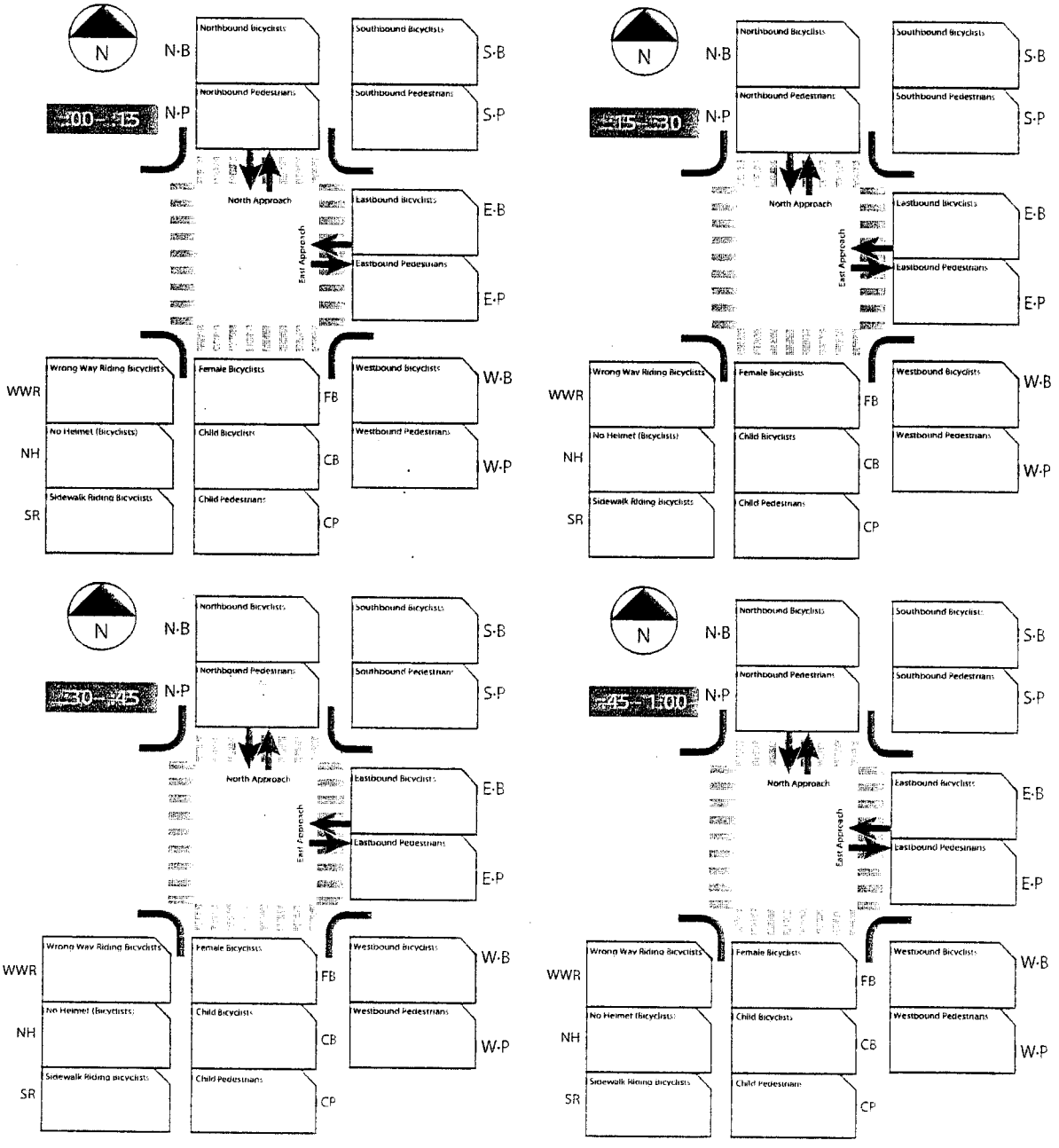
2010: INTERSECTION—ENTERING

In 2010, volunteer counters marked any bicyclist that entered the intersection. They did not record where bicyclists entered.

BICYCLE AND PEDESTRIAN COUNT FORM - Page 1

- Count all crossings of imagined screenlines on the north and east approaches.
  Make additional marks as necessary to indicate wrong way riding, female, no helmet, etc.

Name
Weather
Location
Street: North–South ↕ / East–West ↔
Date
Time: Start / End



B-3

Form used in October 2012 Carson bicycle counts (pages 1 of 3, where pages 2 and 3 are similar to page 1).

South Bay Bicycle Counts

Name: Sharan Sing
Date: Thursday November 4, 2010
Time: 3:00 p.m. - 6:00 p.m.
Location: Carson Street / Avalon Blvd (1)
City: Carson

Time Period Starting:	Male	Female	Child (under 13)	No Helmet	Sidewalk	Wrong Way (on street)
3:00 - 3:15	2			2	1	
3:15 - 3:30	5			1	3	
3:30 - 3:45	3			1	4	
3:45 - 4:00	2			1	2	
4:00 - 4:15	3			4	3	
4:15 - 4:30	2			2	1	
4:30 - 4:45	4			5	4	
4:45 - 5:00	5			5	4	
5:00 - 5:15	3	1	5	8	8	
5:15 - 5:30	7		2	6	9	
5:30 - 5:45	1			1	1	
5:45 - 6:00	1			1	1	
Totals	33	1	6	33	35	0

Notes: Heavy Construction on (NW) corner.
Alot of Pedestrian Traffic
Weather = Extremely Warm.
(3) three Bus shelters.
No bike lanes are provided.

Form used in November 2010 Carson bicycle counts

LIMITATIONS ON LOCATION-SPECIFIC COMPARISONS

Because of the difference in counting method between 2012 and 2010, differences in observed volumes at a given intersection may derive from turning movement volumes at that location, rather than changes in the overall number of bicyclists there. Because turning bicyclists could be counted either once, twice, or not at all depending on the direction of their turn, locations with heavy turning volumes in a particular direction could see a substantial change in volumes from 2010 to 2012.

Across multiple locations, these differences are less significant.