

**Pacific Coast Highway
Parking Study**

City of Malibu



Prepared for:
City of Malibu

Prepared by:
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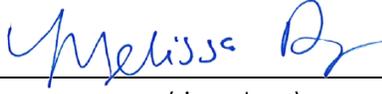
May 4, 2017

Sign-off Sheet

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1.0 INTRODUCTION

Pacific Coast Highway (PCH) is a designated California State Highway (also known as Route 1 or State Route 1) that runs generally north/south along the State's coastline. Although in the Malibu study area the roadway runs mostly east/west, for the purpose of this study to remain consistent with Caltrans, PCH will be referred to as a north/south highway, and the traffic on PCH will be referred to as northbound and southbound. It travels from north to south, mostly west to east, for 21 miles along the base of hills, along beaches, and through the coastal sage scrub environment of the City of Malibu. Although the directions on the highway itself are referred to as north or south, the different areas of the City of Malibu will be referred to as west or east. The City is located near the northern edge of Los Angeles County, but about one mile of unincorporated highway is located between the City Limit (PM 61.613) and the Ventura County Line (PM 62.867). Though Malibu is a small City of approximately 13,000 people, it hosts approximately 15 million visitors annually¹ who travel to experience the City's scenic coastline, beaches, recreational trails, and open space.

Pacific Coast Highway, widely known in the Southern California region as PCH, is owned, operated, and maintained by the California Department of Transportation (Caltrans). The highway spans the length of the City and serves as the local main street and residential corridor and is the sole north/south artery for residents and tourists. There are no frontage roads to provide parallel alternative routes for slower local vehicle traffic or bike and pedestrian users. It is also a major recreation corridor for bicyclists and pedestrians, as well as a 45 to 55 miles per hour (mph) regional and State highway. Despite its 45 to 55 mph speed limit and diverse users, PCH is constrained by limited right-of-way (ROW) between the Pacific Ocean Coastline and the Santa Monica Mountains, as well as by private property and existing developments.

Due to its proximity to the beaches and recreation areas of the Santa Monica Mountains, there is a high demand for visitor parking along many portions of PCH. This demand peaks considerably during the summer when warmer weather brings more locals and visitors alike to the beaches. Other portions of the highway provide desired parking for local residents and businesses. In the 1970s, voters established the California Coastal Zone Conservation Act and created a Commission to regulate the Coastal Zone and public access to beaches and coastal uses. The California Coastal Commission (CCC) possesses authority to regulate parking within the Coastal Zone for the purpose of beach access and acts to preserve public parking. As a result, public parking along PCH is highly valued as a form of protected coastal access. Access to the Coastal Zone and beaches would be reduced significantly if parking was unilaterally prohibited for any reason.

¹ ABC 7 News "Cracking Down on Illegal No-Parking Signs in Malibu" 11/10/2011.

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Parking is generally allowed and largely unrestricted along much of the frontages of PCH. The combination of regularly utilized on-street parking, nonstandard highway lane and shoulder widths, and traffic volumes averaging over 40,000 vehicles daily in some sections have combined to produce safety issues for motorists, bicyclists and pedestrians.

Private vehicle access does not represent the sole means of coastal access in the City of Malibu. The Los Angeles County Metropolitan Transportation Authority (Metro) operates local Bus Route 534 providing transit service between Trancas Canyon Road and Downtown Santa Monica with stops at many Malibu destinations including major beaches and recreation areas. In addition, PCH is a designated bike route and is a popular route for bicyclists. Pedestrians are also common alongside PCH though sidewalks occur infrequently outside of the Civic Center/Pier Area. With an increasing statewide, regional, and local interest in planning for all users, these alternative modes of transportation must be considered in planning for coastal access and the allocation of limited highway ROW.

Caltrans maintains a database of collisions on its highways, and summarizes the frequency of collisions on a facility (highway) based on the amount of traffic that uses it. In this way, collision rates on highways throughout the State can be compared. Based on Caltrans Traffic Accident Surveillance and Analysis System (TASAS) data, the collision rate for the entire length of PCH in Malibu (approximately 21 miles) is 1.24 accidents per million vehicle miles. The statewide average is 1.46 accidents per million vehicle miles for comparable facilities. The 2015 PCH Safety Study found that this average includes areas with a very low frequency of collisions (such as the west end of the City) and areas (such as the Central Malibu area) with a higher rate than the statewide average. Though the aggregate PCH collision rate is lower than the State average for comparable facilities, City, regional, and Caltrans officials are committed to further enhancing safety along the scenic and residential highway. The conflict of diverse highway users, contrasting land uses and conditions along the highway shoulder, speed limits over 45 mph, and frequent parallel parking maneuvers along the route continue to contribute to collisions along PCH within the City of Malibu each year, as they have since before Malibu's incorporation in 1991. Serious collisions can also result in major disruptions to local and regional circulation and cause significant travel delays, due to the lack of alternative routes along PCH in Malibu.

The City of Malibu, in conjunction with Caltrans, received a Caltrans Sustainable Transportation Planning Grant administered by the Southern California Association of Governments (SCAG) to conduct a full analysis and prepare a study to address parking needs and management strategies for the length of PCH within Malibu. Stantec Consulting Services Inc. (Stantec) was retained to conduct the study, analyze conditions impacting the supply, safety, accessibility, and circulation of parking along PCH, and make recommendations to optimize parking based on the above factors. These recommendations will form the basis of this Parking Study that will serve the needs of the diverse range of PCH users throughout the City of Malibu.



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The Existing Conditions Chapter (Chapter 3.0) describes the existing parking conditions, regulations, and relevant conditions along the highway, its shoulders, and off-street parking lots that primarily serve public recreation facilities along PCH in the study area. The 21-mile study area along PCH between the east and west Malibu City Limits is shown in **Figure 1-1**.

Data collected for this study was compiled into a Geographic Information System (GIS) for documentation and analysis. The GIS system provides a greater amount of information and detail than the report narratives. Many of the report figures were generated using this GIS data.

The Safety and Mobility Assessment Chapter (Chapter 4.0) describes and analyzes collisions along the highway, and the Parking Recommendations Chapter (Chapter 5.0) outlines the recommended improvements.

This report summarizes and illustrates the overall Malibu PCH corridor. Detailed maps were also created as a part of this project, showing the information at a much larger scale. The 66 pages of maps are included in the **appendices** and depict detailed information for each portion of PCH.

This map was prepared using a variety of sources, including GIS data and field verifications. This map was completed for a planning study and is not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.



Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J Lung & Associates, Stantec, and California Department of Transportation (Caltrans).



Figure 1-1
Study Area Location

2.0 PARKING STANDARDS, REGULATIONS, AND PRECEDENTS

As a State highway that is owned, operated, and maintained by Caltrans, State standards, requirements, or policies for on-street parking, pedestrian improvements, and safety improvements supersede those of all other jurisdictions even though PCH travels through the City of Malibu and the County of Los Angeles in the study area. However, PCH is also subject to a variety of overlapping jurisdictions, such as the California Coastal Commission, with different standards, requirements, or policies for on- and off-street parking, pedestrian improvements, and safety improvements. As the City continues to explore parking and safety improvements to the highway and the immediate vicinity, relevant standards and precedents must be taken into consideration.

The following sections summarize existing parking data and information available from the City of Malibu, such as from the City's General Plan, Local Coastal Program, Municipal Code, Los Angeles Sheriff Department, and the Volunteers on Patrol Program, and how it relates to parking along PCH. In addition to these documents, further research was conducted to locate additional relevant documents illustrating associated parking policies and design standards. These sources include the Malibu General Plan, the Malibu Local Coastal Program, the Malibu Municipal Code, the California Coastal Commission (CCC) Strategic Plan, the Los Angeles County General Plan, the Los Angeles Department of Beaches and Harbors, the Caltrans Highway Design Manual (HDM), the American Association of State Highway Transportation Officials (AASHTO) Greenbook, Manual on Uniform Traffic Control Devices (MUTCD), Americans with Disabilities Act (ADA), the California Vehicle Code (CVC), and "2016 Metro Transit Service Policies & Standards." Most of these are living documents which are subject to updates, and the information presented here is current as of January 2017.

2.1 MALIBU GENERAL PLAN

The Circulation and Infrastructure Element of the Malibu General Plan states in Section 4.2.4 that on-street parking is allowed at various locations within the City of Malibu along PCH. Parking is allowed either on one or both sides of PCH which is the major route of access to the Malibu beaches and facilities along the coast. The General Plan specifies that the Local Coastal Plan must include sufficient parking for visitors. According to the General Plan, "*[e]xcept for a short segment of PCH just east of Big Rock Drive, on-street parking is allowed on either side of PCH from the eastern boundary of the City of Malibu to Corral Canyon Road. Parking is not allowed on either side of PCH between Busch Drive and Morning View Drive, and also in the vicinity of Trancas Canyon Road. Also, on-street parking is not allowed on the ocean side of PCH for a small segment just east of Encinal Canyon Road, and is restricted on the ocean side of PCH at Zuma Beach.*"

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One of the stated objectives of the General Plan is adequate off-street parking (C Objective 1.3). Sufficient off-street parking shall be required of new development (C Policy 1.3.1), and alternative parking opportunities for recreational uses shall be developed (C Policy 1.3.2).

The General Plan states that PCH is a designated bike route (Section 4.2.1). A stated objective of the General Plan is an effective transportation system that is multi-modal (C Objective 1.2), and the City shall encourage the use of alternative modes of transportation (C Policy 1.2.2).

Some of the existing conditions in the field regarding parking restrictions appear to conflict with Section 4.2.4 of the General Plan. Given the age of the General Plan and that it is based on information more than 20 years old, the City should consider an update to the Circulation and Infrastructure Element upon completion of this parking study. Although the General Plan is dated 1995, and some of the information reflected is out of date, it shows that parking along PCH is and has been an important issue for the City.

2.2 MALIBU LOCAL COASTAL PROGRAM

Local Coastal programs serve to guide development in the coastal zone, in partnership with the Coastal Commission. They contain ground rules for future development and protection of coastal resources. They typically cover many issues, and parking is one. Specific to PCH, the Malibu Local Coastal Plan (LCP) Land Use Plan states that *"restrictions on or elimination of existing on-street public parking on Pacific Coast Highway and adjacent side-streets shall not be permitted unless a comparable number of replacement parking spaces are provided in the immediate vicinity and it is demonstrated that such restrictions or elimination will not adversely impact public access to the shoreline"* (Section 7.12).

The Malibu LCP Local Implementation Plan (LIP) has provisions to ensure that adequate off-street parking is provided for new developments to minimize impacts to public street parking available for coastal access and recreation (Section 3.14.1 (B)). It also states that adequate parking should also be provided to serve coastal access and recreation uses to the extent feasible. The Malibu LCP also states that in the coastal area *"existing parking areas serving recreational uses shall not be displaced unless a comparable replacement area is provided"* (Section 3.14.1 (C)). The Malibu LCP LIP also prohibits *"restrictions on public parking, which would impede or restrict public access to beaches, trails, or parklands . . . except where such restrictions are needed to protect public safety and where no other feasible alternative exists to provide public safety"* (Section 3.14.1 (D)). These restrictions include but are not limited to:

- Posting of No Parking signs
- Painting red curbs
- Physical barriers
- Imposition of maximum parking time periods
- Preferential parking programs

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If feasible, an equivalent number of public parking spaces shall be provided nearby as mitigation for impacts to coastal access and recreation (Section 3.14.1(D)). The LIP acknowledges that public safety is a valid reason to restrict parking.

Parking standards detailing off-street parking space requirements for different land uses are also provided in Section 3.14.3 of the Malibu LCP LIP. It states under Section 3.14.3 (Specific Parking Requirements) that parking shall be provided as outlined per land use, a residential parking stall shall be a minimum of 18 feet long by 10 feet wide. It continues under Section 3.14.5(D)(7) (Development Standards) that off-street parking stalls shall be at least 20 feet long by 9 feet wide for a parking area with six or more spaces regardless of use. Both standards apply to new development, and neither existing development nor parking along a highway is addressed.

The LCP LIP also states that increases in parking fees which affect the intensity of use at existing public beaches or parks shall be subject to a Coastal Development Permit (Section 12.10(B)).

2.3 MALIBU MUNICIPAL CODE

The Malibu Municipal Code Specific Parking Requirements outlines off-street parking standards for each specific land use (Section 17.48.030). The land uses provided include (A) residential, (B) visitor-serving commercial uses, (C) educational and cultural uses, (D) places of assemble and recreational uses, (E) medical and health uses, (F) office uses, (G) business and commercial uses, and (H) manufacturing uses. Even with these off-street parking requirements, the City requires that a minimum of two off-street parking spaces be provided for each new development. Section 17.48.030 of the Code also states that the minimum size for an off-street residential parking space is 18 feet long by 10 feet wide, and Section 17.48.050(7) states the minimum size for an off-street parking space is 20 feet long by 9 feet wide in a parking area with six or more spaces. Developments can provide compact off-street stalls, up to 20 percent of the total required spaces, which are a minimum of 15.5 feet long by 8 feet wide (Section 17.48.050(7)).

These codes apply to new development in the City, but many older residential and commercial properties do not meet the standards, nor are they required to meet them. For example, some of the older homes along PCH do not provide two on-site unenclosed and two enclosed parking spaces.

The Malibu Municipal Code refers to the Traffic Code of the Los Angeles County Code as the adopted traffic code for the City of Malibu (Section 10.04.010). The Malibu Municipal Code, through the Los Angeles County Traffic Code, provides details about:

- Authorization to prohibit on-street parking during all or certain hours of the day (LA County Code Sections 15.64.010 and 15.64.26)
- Authority to restrict parking of vehicles with a height of 6 feet or more within 100 feet of an intersection (LA County Code Section 15.64.261)
- Removal of unofficial signs which are imitations of official traffic signs (LA County Code Section 15.20.210)



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- The violation category for the removal or damage of any official traffic sign (LA County Code Section 15.20.220)
- Removal of any vehicle which has been parked or left standing upon a highway for 72 or more consecutive hours (LA County Code Section 15.64.200)
- Parking restriction of any vehicle on any highway, street, or alley to 30 minutes between the hours of 2 AM and 4 AM (LA County Code Section 15.64.060)
- Establishing tow-away zones (LA County Code Section 15.64.510)
- Prohibiting the use of any vehicle parked on any highway as living accommodations or lodging purposes (LA County Code Section 16.86.020)
- Restricting parking through signs or markings at established bus loading zones (LA County Code Section 15.64.110)
- Allowing parking of vehicles within an intersection if such parking will not constitute a traffic hazard or impede the free flow of traffic (LA County Code Section 15.64.330).

Section 15.64.080 of the LA County Traffic Code specifies that time restrictions may be applied to State highways with the approval by the Department of Transportation of the State of California (Caltrans).

Sections 15.64.450 and 15.64.460 of the LA County Code allow placing and maintaining parking meters and the designation of their hours of operation on State highways with the approval of Caltrans.

Neither the Malibu Municipal Code nor the LA County Traffic Code specify a minimum shoulder width for on-street parking.

2.4 LOS ANGELES COUNTY SHERIFF'S DEPARTMENT/MALIBU VOLUNTEERS ON PATROL PROGRAM

The City of Malibu contracts with the Los Angeles County Sheriff's Department to provide necessary services, including parking enforcement. The Sheriff is the primary enforcement agency on PCH in Malibu. They supplement the standard patrol team with the "Beach Team," consisting of additional sheriff patrols, in the summer to assist with the influx of visitors.

The Volunteers on Patrol (VOP) Program was created by the Los Angeles Sheriff's Department to allow civilian volunteers that meet their minimum requirements (i.e. age, background check, training, driver's license) to help the Sheriff's Department in certain duties. The volunteers receive training to assist the Sheriff's Department in acting as their "eyes and ears." Since these volunteers are not law enforcement officers, their tasks mostly include traffic control and parking enforcement. The Malibu VOP Team helps by issuing parking citations in the City. They began issuing handwritten notices in 2014, and in 2015 began using an electronic system, which has increased the number of tickets issued.

Table 2.1 summarizes the number of parking violation citations issued by the Sheriff's Department and Malibu VOP Team since 2011. These totals include all parking tickets issued throughout the entire City, not just along PCH.



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Table 2-1 Annual Parking Violation Citations in Malibu – 2011 through 2015

LA Sheriff/VOP	2011	2012	2013	2014	2015
Citations	6,527	7,001	8,942	10,910	10,325

2.5 CALIFORNIA COASTAL COMMISSION STRATEGIC PLAN

One of the many goals the California Coastal Commission (CCC) aims to achieve in their strategic plan is to maximize public access to California beaches and coastal recreation areas. Other goals include preserving scenic and coastal resources, protecting public access to those resources, and promoting active transportation, such as biking. The CCC recognizes that threats to public access are present and continue to arise. Lack of adequate public parking or restrictions such as preferential residential parking programs are all potential harms to public access. The CCC focuses on protecting existing public access to California's coastline as demand for coastal recreation and tourism continues to grow.

2.6 LOS ANGELES COUNTY GENERAL PLAN

The Los Angeles County General Plan states *"The County regulates on-street parking in certain high-traffic areas through restricted parking zones enforced by the Sheriff's Department and California Highway Patrol. In addition, the Los Angeles County Department of Regional Planning regulates parking for new developments by requiring an adequate number of spaces to meet anticipated demand."* There is no discussion of parking needs for existing developments or for on-street parking.

Section 15.08.150 defines the roadway as *"that portion of a highway between the regularly established curb lines or, when no curbs exist, that portion improved, designated, and ordinarily used for vehicular travel and parking."* Bus loading zone is defined as *"the space adjacent to the curb or edge of a roadway reserved for the exclusive use of buses during the loading or unloading of passengers"* (Section 15.08.050).

The Los Angeles County General Plan does not discuss on-street parking minimum parking space size.

2.7 COUNTY OF LOS ANGELES DEPARTMENT OF BEACHES AND HARBORS

The Department of Beaches and Harbors manages 34 parking lots at beach locations in Los Angeles County according to information obtained from their website. Within Malibu, they manage the Nicholas Canyon Beach Lot, Zuma County Beach Lot, Dan Blocker County Beach Lot, Point Dume State Beach Lot, Malibu Surfrider Beach Lot, and the Topanga Beach Lot, which is beyond the City limits. Each of these lots requires a fee, which is used to clean and sanitize the

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beaches and to insure that facilities are properly maintained. Free parking is available for vehicles displaying a legal disabled placard or license plate on non-holiday weekdays at any of these lots. They do not have their own standards for parking space sizes.

2.8 CALTRANS HIGHWAY DESIGN MANUAL

The Caltrans Highway Design Manual (HDM) specifies in Section 62.1(9) that the shoulder of a roadway may accommodate on-street parking as well as bicyclists and pedestrians.

The HDM states in Section 402.3 On-Street Parking that *“on-street parking generally decreases through traffic capacity, impedes traffic flow, and increases crash potential. Where the primary service of the arterial is the movement of vehicles, it may be desirable to prohibit on-street parking on State highways in urban and suburban expressways and rural arterial sections. However, within urban and suburban areas and in rural communities located on State highways, on-street parking should be considered in order to accommodate existing land uses. Where adequate off-street parking facilities are not available, the designer should consider on-street parking, so that the proposed highway improvement will be compatible with the land use.”*

HDM Table 302.1 provides the mandatory standard widths for paved shoulders on highways. For conventional four-lane highways such as PCH, the minimum right shoulder width is 8 feet, although 10 feet is preferred where on-street parking is allowed. If a Class II bike lane is provided, the minimum shoulder width is 8 feet plus the minimum width for the bike lane. Where the posted speed is greater than 40 mph, Section 301.2(1) specifies that the minimum Class II bike lane width adjacent to on-street parking should be 6 feet. Furthermore, on-street parking shall comply with Caltrans Design Information Bulletin DIB 82-05 regarding accessible parking requirements. The dimensions for the design of on-street accessible parking are shown in Caltrans Standard Plans Accessible Parking On-Street A90B. Standard Plans A90B notes that accessible on-street parking space size should be no smaller than the dimensions of other parking spaces specified by local jurisdictions, but shall not be less than 20 feet in length and 8 feet wide.

The HDM does not designate an on-street parking space minimum size, and instead recommends that on-street parking comply with DIB 82-05 and the AASHTO Green Book as discussed in Section 2.9. DIB 82-05 provides guidance on “Pedestrian Accessibility Guidelines for Highway Projects.” DIB 82-05 Section 4.3.17 indicates that parking dimensions for off-street Americans with Disabilities Act (ADA) accessible stalls should be a minimum of 9 feet wide and 18 feet long. Suggested dimensions for on-street accessible parking spaces are not provided.

The HDM Section 903.4 also provides standards for roadside safety rest area parking, to be provided off-street. The manual requires one dedicated parking space for use by the California Highway Patrol (CHP) that is clearly visible to the public and includes formulas for determining the number of spaces to be provided based on the mainline daily traffic volume. The stall standards for roadside safety rest areas provide minimum stall widths and aisle widths depending on the vehicle type (HDM Table 903.5). However, these minimum stall widths do not apply to on-street parking.



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Regarding bus zones, HDM Section 303.4 Curb Extensions defines busbays as “*an indentation in the curb which allows a bus to stop completely outside of vehicular and bicycle lanes.*” Busbays may be created by restricting on-street parking. HDM Section 108.2(c) Bus Loading Facilities – Conventional Highway Application states that the transit authority having jurisdiction over the transit facility, in this case LA Metro, would provide the detailed design requirements of the bus loading zone.

On-street parking can affect sight distance at intersections. Sight distance considerations are discussed in HDM Chapter 200 Geometric Design and Structure Standards. The details of applying sight distance at intersections, known as the corner sight distance, can be found in Chapter 400 Intersections at Grade, Section 405.1, Table 405.1A, and Figure 405.7. Application of the corner sight distance requirements should be applied at unsignalized intersections between public streets per Section 405.1(2)(b). Stopping sight distance requirements given in Table 201.1 should be provided at intersections between private roads or rural driveways and public streets per Section 405.1(2)(c). Furthermore, corner sight distance should be applied at signalized intersections whenever possible. Where restrictive conditions exist such as high costs due to ROW acquisition, building removal, extensive excavation, or immitigatable environmental impacts (Section 405.1(2)(a)), the minimum sight distance at signalized and unsignalized intersections equal to the stopping sight distance given in Table 201.1 should be provided. However, application of corner sight distance requirements is not applied to urban driveways.

In addition to the guidelines in the HDM, Caltrans produces other documents to guide the development of highway projects, such as Design Information Bulletins and Deputy Directives. Caltrans Deputy Directive DD-64-R2 (signed 2008, renewed 2014) addresses the need for “complete streets” in the planning, operation, and maintaining of State highways. Caltrans recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system.

2.9 AMERICAN ASSOCIATION OF STATE HIGHWAY TRANSPORTATION OFFICIALS GREEN BOOK

In American Association of State Highway Transportation Officials (AASHTO), A Policy on Geometric Design of Highways and Streets (The Green Book), Chapter 4: Cross-Section Elements states in Section 4.20 On-Street Parking that it has been shown that most vehicles will parallel park within 6 to 12 inches of the curb face, and an average vehicle will occupy approximately 7 feet of actual street space. Therefore, per AASHTO, the desirable minimum width of a parking lane is 8 feet. However, to provide better clearance from the traveled way and to accommodate use of the parking lane during peak periods as a through-travel lane, a parking lane width of 10 to 12 feet may be desirable, and that on arterials the elimination of parking should be considered to reduce the potential for collisions (Section 4.20). This width is also sufficient to accommodate delivery vehicles and, on a bicycle route, allows a bicyclist to maneuver around an open door of a parked motor vehicle. AASHTO does not provide guidance on roadways without curbs.



2.10 STATE OF CALIFORNIA DEPARTMENT OF TRANSPORTATION MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES

The following regulatory standards were extracted from the US Department of Transportation Federal Highway Administration (FHWA) Manual on Uniform Traffic Control Devices (MUTCD) Chapter 2B Regulatory Signs, Barricades, and Gates. The regulations below reflect related parking standards to this study, but additional parking options and guidance are available in the MUTCD.

- Where parking is prohibited at all times or at specific times, the basic design for parking signs shall have a red legend and border on a white background (Parking Prohibition signs), except that the R8-4 (Emergency Parking Only) and R8-7 (Emergency Stopping Only) signs and the alternate design for the R7-201 aP (Tow Away Zone) plaque shall have a black legend and border on a white background, and the R8-3 (No Parking – symbol) sign shall have a black legend and border and a red circle and slash on a white background (Section 2B.47(03)).
- Where only limited-time parking or parking in a particular manner are permitted, the signs shall have a green legend and border on a white background (Permissive Parking signs) (Section 2B.47(04)).
- When signs with arrows are used to indicate the extent of the restricted zones, the signs should be set at an angle of not less than 30 degrees or more than 45 degrees with the line of traffic flow in order to be visible to approaching traffic (Section 2B.48(01)).

The California State MUTCD (CAMUTCD) is based on the National MUTCD but tailored to the State of California's needs. It includes information on parking spaces and parking restrictions. Parking restrictions should be provided at all intersections for "*one stall length on each side measured from the crosswalk or end of curb return*" and indicates that a clearance of six feet from the curb return should be provided at alleys and driveways (CAMUTCD Section 3B.19(12)). In addition, "*parking should be prohibited for a minimum of 30 feet on the near side and one stall length on the far side*" at signalized intersections (CAMUTCD Section 3B.19(13) and Figure 3B-21 (CA)).

When parking spaces are marked on the roadway shoulder, the minimum parallel parking standards are shown as 8 feet wide and 20 feet long (CAMUTCD Figure 3B-21). To allow space to maneuver between parking stalls, 24 feet is recommended for stalls in a row (CAMUTCD Figure 3B-21). Angle or diagonal parking is not permitted on State highways (CAMUTCD Section 3B.19(17)).

CAMUTCD Section 3B.19(07) Policy of Parking Restrictions provides the option for local authorities to establish parking meter zones by ordinance with reference to CVC Section 22508. On State highways, the ordinances shall be approved by Caltrans (CAMUTCD Section 3B.19(08)), and the installation of parking meters shall be covered by an encroachment permit (CAMUTCD Section 3B.19(14)). The desirable dimensions of parking meter stalls are 8 feet by 24 feet with a minimum length of 20 feet (CAMUTCD Section 3B.19(11)).

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CAMUTCD Section 3B.18(09a) Crosswalk Markings discusses the installation and design of uncontrolled crosswalks, and states that if the speed limit exceeds 40 mph, the roadway has four or more lanes of travel, and the average daily traffic (ADT) volume is 12,000 vehicles per day or greater, adequate visibility should be provided by parking prohibitions (CAMUTCD Figure 3B-17(CA)). The amount of adequate visibility that should be provided at uncontrolled crosswalks is not specified.

CAMUTCD Chapter 2 Signs discusses and provides guidance on the types and placement of signs on the highway. For areas where parking is restricted, R7 series signs are used (see CAMUTCD Figure 2B-24).

Where curb markings are used to convey parking restrictions, the color of the curb marking shall conform to CVC 21458—red indicates no stopping, standing, or parking except a bus may stop in a red zone marked as a bus loading zone (CAMUTCD Section 3B.23 (15)(a)(1)). When red curb markings are used without signs to prohibit parking, the words “No Parking” should be marked on the curb (CAMUTCD Section 3B.23 (03)). CAMUTCD does not specify white pavement hatching as an appropriate marking to convey parking restrictions.

2.11 AMERICANS WITH DISABILITIES ACT

The ADA currently does not have guidelines for on-street metered or stenciled parking stalls, but they are working on draft guidelines. The ADA requires a minimum number of required off-street accessible parking spaces depending on the total number of parking spaces provided in an off-street parking facility. Accessible parking spaces should also be located on the shortest accessible route from parking to an entrance. These apply to off-street parking.

Off-street parking spaces shall be a minimum of 96 inches (8 feet) wide and van parking spaces shall be a minimum of 132 inches (11 feet) wide. The parking spaces shall be clearly marked to define the width. Access aisles serving car and van parking spaces shall be a minimum of 60 inches (5 feet) and must be marked as a no parking space. Parking spaces and access aisles should be at the same level. Parking space identification signs shall include the International Symbol of Accessibility. The method and color of marking are not specified by these requirements but should address State or local laws or regulations.

2.12 CALIFORNIA VEHICLE CODE

Division 11 of the California Vehicle Code (CVC) contains Rules of the Road, and Division 11 Chapter 9 pertains to Stopping, Standing, and Parking. CVC Section 22500 lists the locations where vehicles are prohibited from stopping or parking, including the following locations:

- (e)(1) In front of a public or private driveway, except that a bus engaged as a common carrier, school bus, or a taxicab may stop to load or unload passengers when authorized by local authorities pursuant to an ordinance.
- (e)(2) In unincorporated territory, where the entrance of a private road or driveway is not delineated by an opening in a curb or by other curb construction, so much of the



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surface of the ground as is paved, surfaced, or otherwise plainly marked by vehicle use as a private road or driveway entrance, shall constitute a driveway.

- (i) Alongside curb space authorized for the loading and unloading of passengers of a bus engaged as a common carrier in local transportation when indicated by a sign or red paint on the curb erected or painted by local authorities pursuant to an ordinance.

CVC Section 22502 specifies that where curbs, barriers, or a buffered (Class IV) bike lane do not exist, parallel parking along the right shoulder is required unless otherwise indicated.

CVC Section 22505 allows Caltrans to prohibit stopping or parking of vehicles on State highways in areas where in its opinion stopping or parking is dangerous to those using the highway or would unduly interfere with the free movement of traffic. CVC Section 22506 gives authority to local agencies to prohibit or restrict parking on State highways within their jurisdiction with approval from Caltrans. CVC Sections 21112 through 22658 refer to the authorities for the various parking signs. Red curb markings indicate no stopping, standing, or parking, whether the vehicle is occupied or not, except that buses may stop in a red zone marked as a bus loading zone (CVC 21458).

CVC Section 22514 also states that vehicles are not allowed to stop or park within 15 feet of a fire hydrant except as follows:

- (a) If the vehicle is attended by a licensed driver who is seated in the front seat and who can immediately move such vehicle in case of necessity.
- (b) If the local authority adopts an ordinance or resolution reducing that distance. If the distance is less than 10 feet total length when measured along the curb or edge of the street, the distance shall be indicated by signs or markings.
- (c) If the vehicle is owned or operated by a fire department and is clearly marked as a fire department vehicle.

Although the CVC does not specifically restrict parking on shoulders of a certain minimum width, it does state that vehicles must not block the travel lane. This can be difficult to enforce. In order for a vehicle to be cited, it must be touching or over the shoulder stripe. Because the vehicle is cited for "blocking the travel lane," the officer must stay with the vehicle until a tow truck arrives to remove the obstruction from the travel lane. This may inhibit the issuance of citations. Furthermore, CVC Section 22517 states that no person shall open the door of a vehicle on the side of moving traffic unless it is safe to do so and does not interfere with the movement of traffic.

Local authorities are permitted to establish parking meter zones per CVC Section 22508, restrict parking during specified times per CVC Section 22507.7, or restrict oversize vehicles per CVC Section 22507.

2.13 LOS ANGELES METRO/BUS ZONES

Metro operates a local bus route providing transit service along PCH in Malibu. Metro Route 534 travels between Trancas Canyon Road and Downtown Santa Monica. Route 534 travels primarily along PCH within the City of Malibu except where the route detours inland onto Civic Center Way in the Malibu Civic Center/Pier Area and into the Point Dume area on the ocean side of PCH. When both directions of service are taken into account, Route 534 makes 36 stops along PCH in the City of Malibu (18 stops in each direction).

Metro has established guidelines for optimal bus stop curb lengths in Section 3.2B of "2016 Metro Transit Service Policies & Standards." As shown in **Appendix D** of the Metro policy document, for a 40-foot bus, the optimal No Parking curb length is 90 feet if the bus stop is on the far side of an intersection, 100 feet if the bus stop is on the near side of an intersection, or 150 feet if the bus stop is mid-block. The guidelines indicate that the desired street lane width for bus operations should be 12 feet or more but do not specify the width of the desired bus zone width; however, per HDM Figure 404.5E, the width of a 40-foot bus is typically 8.5 feet for design purposes. These are standards that Metro has established to ensure that buses can navigate safely and serve bus stops.

Parking is generally prohibited at bus stops in the study area through a combination of red curbs, pavement markings (stenciling) and No Parking signs. The length of parking restrictions at each bus stop is different, and some bus stops are located on the far side of intersections and some are located on the near side. The notification of restrictions are not consistently applied at bus stops along the PCH corridor. In some cases, the words "Bus Zone" are stenciled onto the red curb in white, some locations combine red curb with white pavement hatching, while at other locations No Parking signs are the only warning that parking is restricted. For example, the bus zone near the Moonshadows restaurant has "No Parking Bus Zone" stenciled in white onto the highway shoulder pavement itself on the inland side of the highway as no curb exists in the area. However, if no painted curbs or No Parking signs are present, parking is not technically prohibited at bus stops under the CVC Section 22500.² Precise bus stop locations and the associated No Parking controls are included alongside other geographic study information in the PCH Existing Conditions Map in **Appendix A**.

2.14 MINIMUM PARKING SPACE STANDARD

Based upon the standards referenced above, a paved area of the right shoulder providing 8 feet of width is determined to be the minimum width for a parking space. Twenty-four feet is the length assumed for each equivalent parking space in a row, based upon the Caltrans

² California Vehicle Code Section 22500: "No person shall stop, park, or leave standing any vehicle whether attended or unattended, except when necessary to avoid conflict with other traffic or in compliance with the directions of a peace officer or official traffic control device, in any of the following places: (i) Except as provided under Section 22500.5, alongside curb space authorized for the loading and unloading of passengers of a bus engaged as a common carrier in local transportation when indicated by a sign or red paint on the curb erected or painted by local authorities pursuant to an ordinance."

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standards (CAMUTCD Figure 3B-21), while allowing for maneuvering space between stalls. Isolated areas of at least 20 feet in length are assumed to provide one equivalent space (CAMUTCD Figure 3B-21) since the motorist would not have to maneuver between other parked vehicles. **Figures 2-1 through 2-3** show the areas with an 8-foot minimum paved shoulder. It does not indicate where parking is prohibited by signs or red curbs, for intersections, or for other purposes.



Exhibit Source Path:

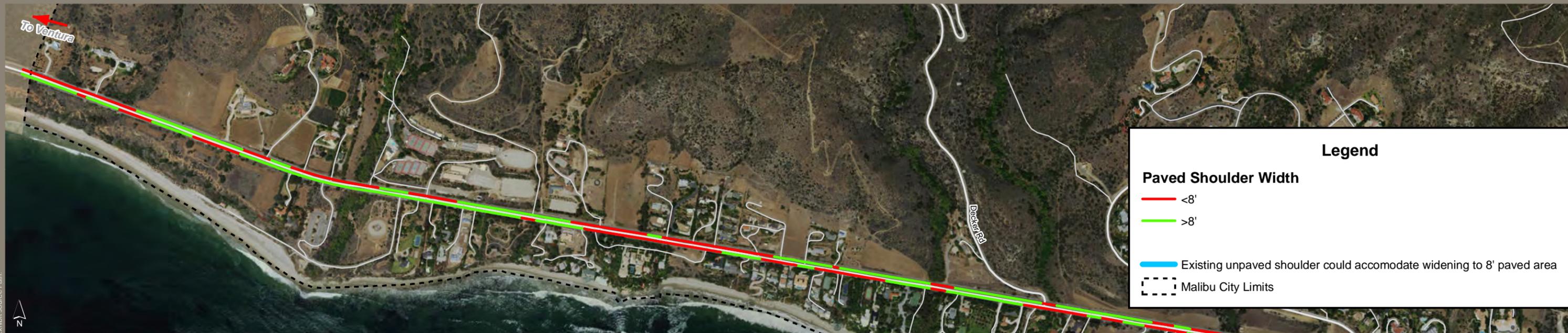
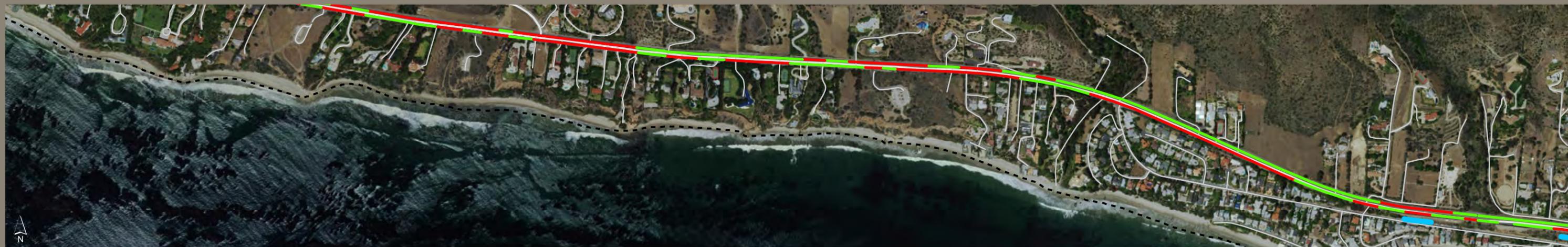
Geographic Information Systems

Data Sources: ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).



Figure 2-1
Existing Shoulder Widths (East Malibu)





Legend

Paved Shoulder Width

- < 8'
- > 8'

— Existing unpaved shoulder could accommodate widening to 8' paved area

- - - Malibu City Limits

Exhibit Source Path:

Geographic Information Systems

Data Sources: ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).

3.0 EXISTING CONDITIONS

The City of Malibu is a very linear city, stretching over 21 miles along the coast with a variable width of under 3 miles from the coastline inland. Despite its small size, the character of the City changes dramatically travelling from one end to the other. For example, the density of residential driveways and commercial uses is highest at the eastern end of the city while the western portions of Malibu generally feature less intense development and more dispersed, largely residential uses. Commercial uses do exist outside of eastern Malibu but they are generally concentrated into distinct shopping plazas, with examples at Heathercliff Road, Busch Drive, and Trancas Canyon Road rather than spread out along the highway as they are in eastern Malibu. Additionally, PCH arcs away from the coastline in Central Malibu at Pepperdine University and again as it traverses the Point Dume area, resulting in long stretches of uninterrupted highway in this area with fewer driveways and reduced demand for beach parking, except at Dan Blocker County Beach, Paradise Cove, mountain recreation areas, and State beaches.

3.1 DATA COLLECTION OVERVIEW

Data was collected using ESRI world imagery, observed in the field by Stantec, and was also provided to Stantec from stakeholder agencies including Caltrans and the City of Malibu. Field work included aerial photogrammetry (performed by subconsultant Robert J. Lung and Associates) and data collection on numerous days from December of 2015 to August of 2016. Aerial and topography data was collected by aerial survey in December of 2015. Field data collection included shoulder and curb measurements, photography, field confirmation of agency provided data, driving the corridor and recording video of peak summer shoulder parking usage, and geocoding of sign and curb locations using a mobile GIS application.

3.2 PROJECT AREAS

For the purposes of this Existing Conditions chapter, the City was divided into three geographic segments based on similar characteristics: East Malibu, Central Malibu, and West Malibu. These areas and their limits are shown in previously referenced **Figure 1-1** on **page 1.4**. The areas are defined and described generally in this section of the report. More detailed information about parking in each segment appears in subsequent report sections. A map of existing land use and zoning within the City of Malibu is included for reference in **Figure 3-1**.

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3.2.1 PCH in East Malibu: Eastern City Limit to Cross Creek Road



Figure 3-2 Looking North from 22664 Pacific Coast Highway in Malibu Civic Center/Pier Area

Within the east Malibu section, PCH runs north/south from the eastern City Limit to its intersection with Cross Creek Road. The east Malibu segment of PCH is characterized by a high number of residential and commercial driveways. These are located along both sides of the highway in the vicinity of the Malibu Civic Center/Pier Area. South of Las Flores Canyon Road, the majority of adjacent development is on the ocean side of the highway, generally consisting of low density single and multi-family homes with driveways and garages that require motorists to back into or out of the driveways into the flow of traffic along PCH. These residences are interspersed with a few commercial and recreational uses, including the Moonshadows Restaurant, and areas along Las Tunas State Beach where PCH travels directly along the coastline.

The inland side of the highway is primarily characterized by large and steep slopes that limit opportunities for development south of Las Flores Canyon Road. A limited number of residential properties are scattered along the inland side of the highway and feature challenging access to the highway. The large slopes in this area have historically been susceptible to movement and landslides. Sections along the inland side of PCH have been reinforced with fences or walls to reduce the impact of falling rocks on the travel lanes.

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North of Las Flores Canyon Road, development intensifies on the inland side of the highway. In addition, both sides of the highway are characterized by single and multi-family homes. The area consists of many low density retail, office, and hotel properties, as well as recreation destinations like the Malibu Pier, Surfrider Beach, Malibu Lagoon, and the Adamson House Museum.

Between the eastern City Limit and Cross Creek Road, PCH is characterized by a two-way left-turn lane and two through traffic lanes in each direction. Traffic volumes on roadways are expressed in two-way 24-hour volumes, which are determined by counting the number of vehicles passing a point on the road. PCH in the east Malibu area is currently carrying between 45,000 and 46,000 vehicles per day on summer weekdays and 47,000 vehicles per day on summer weekends.³ The summer volumes represent higher than average daily volumes. The traffic volumes in east Malibu are the highest on PCH within the City of Malibu. Signalized intersections in this segment include Big Rock Drive, Las Flores Canyon Road, Rambla Pacifico, Carbon Canyon Road, and Cross Creek Road. Four signalized crosswalks and one marked uncontrolled crosswalk also traverse PCH in the Malibu Civic Center/Pier/Central Malibu Area.

3.2.2 PCH in Central Malibu: Cross Creek Road to Busch Drive



Figure 3-3 Looking North on PCH from Puerco Canyon Road

In the central Malibu section of the study area, PCH runs north/south from Cross Creek Road to Busch Drive. The central Malibu segment of PCH is characterized by long stretches of highway adjacent to large lot single family estates, relatively undisturbed vegetation, public beaches, and open space. There are a few major commercial, civic, and recreation facilities such as

³ Pacific Coast Highway Safety Study: Final Report, 2015.

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Malibu Colony Plaza, Dan Blocker County Beach, Paradise Cove, and Geoffrey's. While a few homes and businesses have driveways that take direct access from PCH in this section, the majority of abutting properties take access indirectly from PCH via local streets. Others have long driveways to serve homes that are set back sufficiently from the highway to allow for turnaround space on-site. This combination of accesses results in far fewer driveways and potential conflict zones compared to the section to the east.

The coastline arcs southward away from the highway to form Point Dume north of Via Escondido Drive, reducing the pressure for beach parking on portions of PCH, especially where beaches are farther from the highway, and local public streets, such as Malibu Road, are closer to the coastline. However, mountain recreation destinations such as Escondido Canyon Park, Solstice Canyon Park, and Corral Canyon Park also attract numerous visitors who park on the shoulders of PCH when the limited off-street trailhead lots at Winding Way and adjacent to Malibu Seafood (25653 and 25623 PCH) reach capacity. Shoulder parking in the vicinity of Heathercliff Road is also regularly used to access the nearby shopping center and businesses. The parking fee at Paradise Cove parking lot may encourage shoulder parking along PCH in the vicinity, even though the highway is a quarter-mile distance from the beach.

Adjacent development is intermittent on both sides of the highway between Malibu Canyon Road and Latigo Canyon Road due to large expanses of open space in Malibu Bluffs Park, Corral Canyon Park, and Dan Blocker County Beach. However, these open space areas also serve as recreation destinations that attract significant parking demand, and little formal off-street parking exists in this area. North of Latigo Canyon Road, development exists on both sides of the highway with low density single and multi-family homes, and a number of low density retail, restaurant, and office properties clustered primarily around intersections.

Between Cross Creek Road and Busch Drive, PCH is characterized by two traffic lanes in each direction carrying between 31,000 and 34,300 vehicles daily on summer weekdays and between 37,000 and 41,000 vehicles daily on summer weekends.⁴ A raised landscaped median divides the highway from Cross Creek Road to Webb Way. There is a series of paved raised medians north of Webb Way extending to approximately 1,300 feet south of Corral Canyon Road. From Corral Canyon Road to the north, the median treatment varies between a striped median with rumble strips, a center turn lane, reflective paddles and raised medians. Signalized intersections in this segment include Cross Creek Road, Webb Way, Malibu Canyon Road, John Tyler Drive, Corral Canyon Road, Paradise Cove Road, Zumirez Drive, Kanan Dume Road, Heathercliff Road, and Busch Drive.

⁴ Pacific Coast Highway Safety Study: Final Report, 2015.

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3.2.3 PCH in West Malibu: Busch Drive to Western City Limit



Figure 3-4 Looking Northbound on PCH from Zuma Beach (south of Trancas Canyon Road)

In the west Malibu section of the study area, PCH runs north/south from Busch Drive to the western City Limit south of Mulholland Drive. The west Malibu segment of PCH is somewhat similar to the central Malibu section in that it is also characterized by long stretches adjacent to estate residential properties, vegetation and open space. It also provides access to several small and large popular beaches and associated parking. The section of PCH from Busch Drive to the western City Limit serves limited commercial properties, including small neighborhood shopping centers located at Busch Drive and at Trancas Canyon Road. Significant recreation destinations include Zuma County Beach, El Matador State Beach, La Piedra State Beach, El Pescador State Beach, and Nicholas Canyon County Beach. Like the central Malibu section, a few homes and businesses do have driveways directly onto PCH, but the majority of adjacent properties are served by consolidated access to PCH from local streets. This results in far fewer driveways and potential conflict zones relative to the eastern Malibu section. Adjacent private development is intermittent on both sides of the highway and is comprised primarily of low density single and multi-family homes with a few low density retail and restaurant properties clustered primarily around intersections.

Virtually all of the west Malibu section of PCH is relatively close to the coastline. The many public beaches along this span have the potential to create significant parking demand. This is

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demonstrated by the 1,834-space parking lot at Zuma County Beach (see **Figure 3-5** below and **Figure 3-6** on **page 3.8**). Despite the size of the parking lot at Zuma County Beach, the parking fee associated with the parking lot (\$3 - \$14) may lead visitors to park along the shoulder of PCH where parking is permitted and free of charge, often leaving the large lots empty or partially full even in the peak season.



Figure 3-5 Looking Southbound on PCH at Zuma Beach

Between Busch Drive and the western City Limit, PCH is characterized by two traffic lanes in each direction carrying approximately 21,000 vehicles per day on summer weekdays and 25,000 vehicles per day on summer weekends.⁵ A raised median divides the highway between the Zuma Beach access road and Morning View Drive, followed by reflective paddles north to approximately 900 feet north of Trancas Canyon Road. Raised medians divide the highway on either side of Trancas Canyon Road followed by a striped median for the remainder of PCH within the Malibu City Limit. Signalized intersections in this segment include Busch Drive, Morning View Drive, and Trancas Canyon Road. However, there are no traffic signals for almost 5 miles between Trancas Canyon Road and the City Limit.

⁵ Pacific Coast Highway Safety Study: Final Report, 2015.



Figure 3-6 Extensive Paved Parking Lot at Zuma Beach

3.3 PUBLIC OFF-STREET PARKING FACILITIES

Many of the beaches and recreation areas along PCH are served by off-street parking lots often combined with shoulder parking along the highway. These State, County, City, and privately operated lots differ considerably in their capacities and conditions. Some of them charge parking fees while others are free. Some of the off-street parking lots are paved and striped while others are more informal or unpaved. Table 1 on the next page summarizes the ownership, parking fee (where applicable), total parking supply, parking for Americans with Disabilities Act (ADA) users, and a cursory assessment of the potential for expansion at these off-street parking lots. The locations of these public access parking lots are shown in **Figure 3-7**.

In addition to these formal parking lots, wide shoulders currently serve as de facto parking lots. In these areas, vehicles can park farther away from PCH traffic, compared with other areas that only provide parallel parking alongside the travel lanes. In the Broad Beach area between Sea Cloud Lane and Lunita Road, wide dirt areas behind the paved shoulder provide space for vehicles to park several feet away from the travel lane. At Westward Beach where PCH arcs away from the coastline, parallel parking is allowed along the shoulder on Westward Beach Road far from PCH travel lanes. Another de facto parking lot is found at Las Tunas State Beach which provides a wide area for parking on the side of the highway where construction was recently completed.

Most of the formal lots are paved with asphalt concrete (AC). Motorists using parking lots at El Pescador, La Piedra, and El Matador State Beaches park on reinforced earthen surfaces, such as decomposed granite (DG).

This map was prepared using a variety of sources, including GIS data and field verifications. This map was completed for a planning study and is not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.



Geographic Information Systems



Figure 3-7
 Existing Public Access Parking Lots

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J Lung & Associates, Stantec, and California Department of Transportation (Caltrans)

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Most of the formal lots charge for parking. A notable exception is Malibu Bluffs Park, which is a City-owned facility that does not provide convenient beach access due to its location on a coastal bluff. However, it does provide access to park amenities, the Michael Landon Community Center, and hiking trails with ocean views that lead to Malibu Road beach access points. Malibu Bluffs Park parking lot is also used on the weekends by cyclists that park and ride on PCH.

The cost of parking varies considerably in the lots that charge for parking. Prices were highest at the privately operated lot at Paradise Cove. This may incentivize more use of parking on the shoulders of PCH where parking is free of charge. Parallel parking is also available at no cost along the shoulder of PCH adjacent to the paid lot at Zuma County Beach. In 2015 the City of Malibu completed a project which greatly expanded the paved shoulder to improve on-street parking adjacent to the Zuma Beach lot. It is common to see a nearly empty pay parking lot with the shoulder parking in the vicinity used by many patrons in the off-season. A similar phenomenon occurs adjacent to other beach parking lots like the Malibu Pier State-owned parking lot and the County parking lot at the Adamson House and Malibu Lagoon Museum and Surfrider Beach. While many motorists appear to avoid the pay parking areas during the off-season, both the paid lots and shoulder parking are much more heavily used on warm weekends and during most of the summer due to sheer demand and limited supply in some of the pay lots near the popular beaches.

Table 3-1 summarizes the off-street parking lots in the Malibu area.

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Table 3-1 Off-Street Parking Lots

Map ID	Parking Lot Name	Lot Type	Fee	Total Capacity	ADA Spaces	Surface	Available Land to Expand?
1	Leo Carrillo State Beach ^{1,2}	State	\$12-\$20	151	11	Asphalt	No
2	Nicolas Canyon Beach	County	\$3-\$10	154	2	Asphalt	Yes
3	El Pescador State Beach	State	\$10-\$15	25 ³	1	Dirt	Yes
4	La Piedra State Beach	State	\$10-\$15	30 ³	1	Dirt	Yes
5	El Matador State Beach	State	\$10-\$15	45 ³	1	Dirt	Yes
6	Broad Beach Dirt Shoulders	De facto ⁴	Free	86 ³	0	Dirt	No
7	Zuma County Beach	County	\$3-\$14	1,834	37	Asphalt	No
8	Westward Beach Road	De facto ⁴	Free	128 ³	4	Asphalt	Yes
9	Point Dume State Beach (Westward County Lot)	County	\$3-\$14	374	3	Asphalt	No
10	Point Dume State Beach (Cliffside Drive)	State	Free	11	2	Asphalt	Yes
11	Paradise Cove ⁵	Privately Operated	\$35-\$50	229 ⁶	Unknown ⁶	Asphalt	No
12	Winding Way	County ⁷	Free	14	Unknown ⁶	Asphalt	Yes
13	Dan Blocker (Corral Canyon) County Beach	County	\$.25/10 min	15	1	Asphalt	Yes
14	Santa Monica Mountains Recreation Area (Sara Wan Trailhead at Corral Canyon)	State	\$5 ⁸	14	1	Asphalt	Yes
15	Malibu Bluffs Park	City	Free	125 ⁹	4	Asphalt	No
16	Malibu Point Beach/Malibu Lagoon State Park	State	\$12-\$20	71 ³	4	Dirt	No
17	Adamson House and Malibu Lagoon Museum	County	\$3-\$14	78	5	Asphalt	No
18	Malibu Pier (State Lot) ⁵	Privately Operated ¹⁰	\$10 ¹¹	94	5	Asphalt	No
19	Las Tunas State Beach ¹	De facto ⁴	Free	15 ³	0	Dirt ¹	No
20	Topanga Beach ²	State	\$10	99	1	Asphalt	No
Total				3,592			

1. Parking areas at Las Tunas State Beach and Leo Carrillo State Beach were under construction at the time of report preparation so new parking capacity may differ from estimate provided, and surface material may also be different
2. Outside of City Limits but included in study
3. Unstriped dirt and shoulder lot capacity was estimated assuming 24 feet per vehicle parallel parking
4. De facto lots at Broad Beach and Las Tunas State Beach refer to wide areas adjacent the highway shoulder that function as parking lots, de facto lot at Westward Beach refers to shoulder parking along Westward Beach Road which provides parking far from PCH travel lanes
5. Parking fees at privately operated lots may encourage shoulder parking on PCH
6. Lot capacity was estimated from an aerial photo, and ADA spaces were difficult to discern
7. Was owned by the County but operated by the Santa Monica Mountains Conservancy. The County has recently transferred fee ownership of the lot to Mountains Recreation and Conservation Authority (MRCA)
8. Parking Fee referenced on numerous hiking reviews sites (Could not otherwise confirm fee at time of writing but reached out to Santa Monica Mountains Conservancy to confirm)
9. Includes 71 regular spaces and 4 ADA spaces in the lot itself and space for 50 cars to parallel park on Winter Mesa Dr.
10. The Malibu Pier Lot is State Owned but operated by a Private Vendor
11. Parking Fee displayed on Google Streetview imagery from June 2016 (Could not otherwise confirm at time of writing)



3.4 COASTAL ACCESS POINTS



Figure 3-8 Coastal Access Paths at 27420 and 22664 Pacific Coast Highway

While many of the major beaches in Malibu are served by dedicated adjacent or convenient parking lots, many other smaller beach areas are accessed by pedestrian access pathways and stairways in areas where right-of-way is more constrained. Many of these coastal accesses stem from development requirements within the Coastal Zone that require public access to beaches. Some of these coastal accesses run between private developments from PCH or adjacent streets to the public beach below. Because these coastal access points are often bounded by private property, mostly residential homes, little to no off-street parking is typically available except along the shoulders of PCH or the adjacent local street. This increases the demand for shoulder parking in the vicinity of coastal access points.

The City of Malibu provided information on existing and anticipated locations of beach access ways, based upon development requirements. The study team inspected each location and other sites to compile and inventory locations where public coastal access paths were found not to be associated with nearby parking lots.

Table 3-2 on the next page summarizes the existing conditions and accessibility of the public coastal access points along PCH. This includes all current locations as of the date of field work, in 2015. Public coastal access points are categorized as public-private beach access paths, county beaches, State beaches, and access from private parking lots.

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Table 3-2 Coastal Access Points

Map ID	Access Point	Type
1	Broad Beach Road at West Sea Level Drive	Public Access Path
2	Broad Beach Road at Bunnie Lane	Public Access Path
3	Broad Beach Road at East Sea Level Drive	Public Access Path
4	Btw. 31340-31346 Broad Beach Road	Public Access Path
5	Btw. 31138-31202 Broad Beach Road	Public Access Path
6	Btw. 27400-27420 PCH	Public Access Path
7	Btw. Malibu Cove Colony & Escondido Beach Drive	Public Access Path
8	Latigo Shore Drive/Seagull Way & PCH	Public Access Path
9	Btw. 25120-25124 Malibu Road	Public Access Path
10	Btw. 24714-24742 Malibu Road	Public Access Path
11	Btw. 24572-24604 Malibu Road	Public Access Path
12	Btw. 24434-24436 Malibu Road	Public Access Path
13	Btw. 24314-24320 Malibu Road	Public Access Path
14	Btw. 22664-22706 PCH	Public Access Path
15	Btw. 22446-22500 PCH	Public Access Path
16	Btw. 22126-22140 PCH	Public Access Path
17	Btw. 19958-20000PCH	Public Access Path
18	20356 PCH	Public Access Path
20	Nicholas Canyon County Beach	County Beach
21	Zuma County Beach	County Beach
22	Westward Beach Road ¹	County Beach
23	Point Dume County Beach (Westward County Lot)	County Beach
24	Dan Blocker (Corral Canyon) County Beach ²	County Beach
25	Surfrider Beach	County Beach
26	El Sol County Beach (APN 4473-020-900, 901, 902, 903)	County Beach
27	APN 4459-018-901	County Beach
28	25120.5 Malibu Road	County Beach
29	20516 PCH	State Beach
30	24308 Malibu Road	State Beach
31	Leo Carillo State Beach ³	State Beach
32	El Pescador State Beach	State Beach
33	La Piedra State Beach	State Beach
34	El Matador State Beach	State Beach
35	Point Dume County Beach (Cliffside Drive)	State Beach
36	Malibu Lagoon State Park	State Beach
37	Las Tunas State Beach	State Beach
38	Topanga Beach ³	State Beach
40	Paradise Cove ⁴	Access From Privately Operated Lot
41	Malibu Pier (State Lot) ⁵	Access From Privately Operated Lot

1. Shoulder Parking Only excluding four ADA spaces
2. Small paved off-street lot north of main beach access area lot and wide dirt shoulders
3. Outside of City Limits but included in study
4. Privately owned lot is accessible but parking fees encourage shoulder parking on PCH
5. The Malibu Pier Lot is State owned but operated by a Private Vendor

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County and State Beaches typically have dedicated off-street parking lots (see notes in table for exceptions) while public access paths rely on shoulder parking and bus access. Both locations at privately operated lots (Malibu Pier⁶ and Paradise Cove) have access to off-street lots but parking fees encourage visitors to seek free shoulder parking along PCH. The general locations of these public coastal access points are shown in **Figure 3-9**. The specific locations of the coastal access points relative to other geographic study information are shown in the PCH Parking Corridor Map in **Appendix A**.

3.5 SHOULDER PARKING AND RESTRICTIONS

On-street and shoulder parking regulation along PCH is governed by No Parking signs, painted curbs, and hatching/pavement marks/stenciling. Caltrans has recently used pavement markings like hatching/stenciling at the entrance to the beach parking lots at El Pescador State Beach, La Piedra State Beach, and El Matador State Beach. Generally, in the absence of signed or painted parking regulations, parking is not prohibited apart from standard regulations limiting parking at driveways, on bridges, adjacent fire hydrants along the shoulder, and within intersections and the travelway.

The study team conducted a full analysis of parking regulations throughout the study area. Signs indicating No Parking are more commonly used to convey parking restrictions outside of the Malibu Civic Center/Pier Area and in the vicinity of major beach destinations such as Zuma County Beach. The use of red painted curb is more common within the Malibu Civic Center/Pier Area where the highway is more likely to be bordered by a raised curb.

3.5.1 No Parking Signs

Parking regulations depicted by signs, curbs, or pavement markings along public highways in California must conform to the requirements of the CAMUTCD. Signs are regulated to conform by size, lettering, word, layout, color, shape, and other factors that make the signs unmistakably public. If signs posted by public agencies do not conform to the requirements of the MUTCD, they are highly likely to be unenforceable. For this reason, signs posted by public agencies have a standard appearance that is constant throughout the state. However, as these sign standards evolve over time, older signs may develop nonstandard appearances relative to newer MUTCD standards. Though these older signs are not necessarily illegitimate, they should be updated when feasible as motorists may not respect older signs that appear unfamiliar.

Standard parking regulation signs are designated by sign codes that indicate the type of regulation. For example, No Parking Any Time signs are known as R26 signs. Sign codes ranging

⁶ The Malibu Pier Lot is State Owned but operated by a private vendor.

This map was prepared using a variety of sources, including GIS data and field verifications. This map was completed for a planning study and is not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.

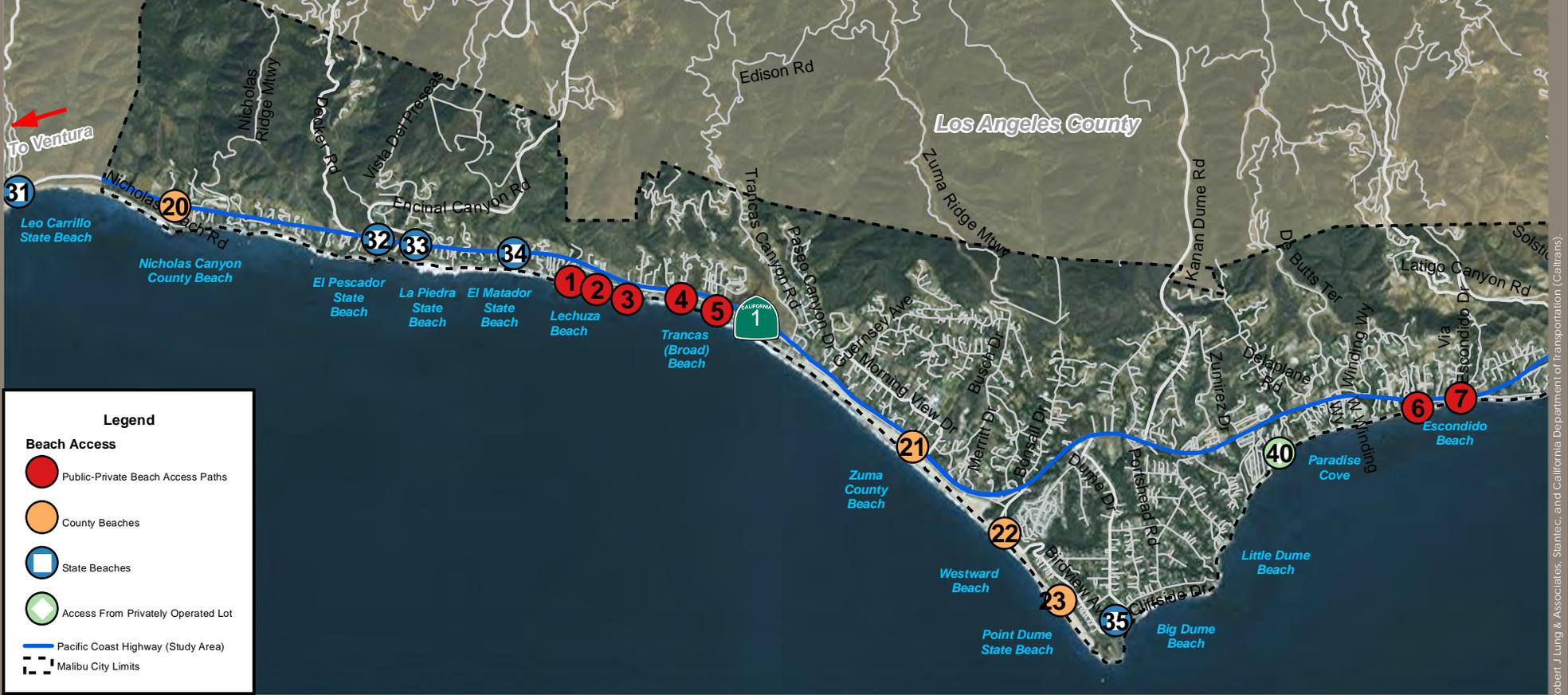


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J Lung & Associates, Stamlec, and California Department of Transportation (Caltrans).

Figure 3-9
 Existing Public Coastal Access

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from R28 to R30 generally refer to permanent, time of day prohibitions, or time limit parking regulations. **Table 3-5** on **page 3.20** provides a legend of the sign types along PCH in the City of Malibu with graphical samples of each sign type.

Caltrans provided Sign/Installation Orders to show where signs should be posted. They are working on an active comprehensive inventory showing the location of duly established No Parking signs along PCH. Until then, a list can be put together by combining the Sign/Installation Orders, permit installations and signs installed through Caltrans Capital Improvement Projects (CIP). All encroachment permits and CIPs were not reviewed for this parking study. Areas featuring standard signs are highly likely to be official. However, it would be possible for a third party to cause a sign to be posted using an official looking sign or a curb to be marked without the consent of the responsible agency (Caltrans). Under this condition, the posting would be considered unofficial, the traffic device would be subject to removal, and the regulation could potentially be unenforceable. For this reason, the study team inspected the location of all parking regulation signs found along the highway and deduced based on the appearance of the sign, the method of posting, the potential justification, traffic engineering principles, and other factors to conclude whether the regulation was likely to be official. This methodology is reasonable, but cannot guarantee the accuracy of the resulting conclusions.

A number of No Parking signs along PCH do not conform to current MUTCD design standards. While some of these signs may just predate the current MUTCD standards, others may be suspect and could have been installed illegally. This might be done by private citizens frustrated with visitors or tourists parking in front of their property, by merchants attempting to reduce parking near driveways or commercial signs, or by private citizens or merchants trying to mitigate line of sight issues around driveways. Caltrans makes an effort to remove signs that are installed illegally.

Signs not conforming to the MUTCD may be posted by property owners on their property to regulate parking on private property. These sign postings can be confused with public street postings, but they must indicate the details of the posting, the Vehicle Code or City Ordinance allowing posting, and the telephone number to retrieve towed vehicles. These signs can be posted by the owner on their property to regulate their private property, but are not proper for posting to regulate parking along the highway or its publicly owned shoulders and curbs. This is in part because private citizens or property owners are not authorized to regulate parking on public highways. This study only assesses signs within the public State right-of-way and does not examine signs that may be posted on private property.

The distribution of different No Parking sign types along PCH is summarized in **Table 3-3** on the next page. Though these sign types are considered distinct under MUTCD standards, there are only minor differences between them, such as the inclusion of directional arrows or time period restrictions, specific reasons for parking prohibition, tow away zones, etc. **Table 3-5** on **page 3.20** provides graphical samples of each No Parking sign type found along PCH.

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Table 3-3 Existing No Parking Sign Types

MUTCD Sign Type*	Number of Signs
Parallel Parking Only	8
R26	54
R26A	14
R26F	5
R26K	97
R26L	9
R26(S)	27
R27(S)	2
R27A(S)	5
R28	50
R28A	15
R28(S)	2
R30A	17
R7-107	3
Other**	10
Total	318
* See Table 3-5 for parking signs legend	
**Includes older but likely official signs, nonstandard, and potentially illegal signs	

Not all No Parking signs impose permanent and continuous regulations. For example, No Parking signs in the vicinity of Surfrider Beach limit overnight parking from 12 AM to 5 AM. They do not limit or restrict parking during the day when most visitors use the beach. Other No Parking signs can establish time limits that regulate parking during some or all portions of the day or week. **Figures 3-10 through 3-13 on page 3.18** depict examples of common No Parking signs along PCH.

Finally, even a sign that is authorized by Caltrans and matches MUTCD standards may not necessarily be effective at prohibiting parking. Older signs may appear unfamiliar to motorists inducing them to question their legitimacy as previously discussed. Other signs may be faded, damaged, obstructed by foliage, or vandalized to the point that they are barely legible to passing motorists.

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Figure 3-10 A Compliant No Parking Sign on Private Property (West Malibu)



Figure 3-11 MUTCD R30A Sign with the Malibu Pier in the Background



Figure 3-12 Standard MUTCD R26(S) Sign in Central Malibu

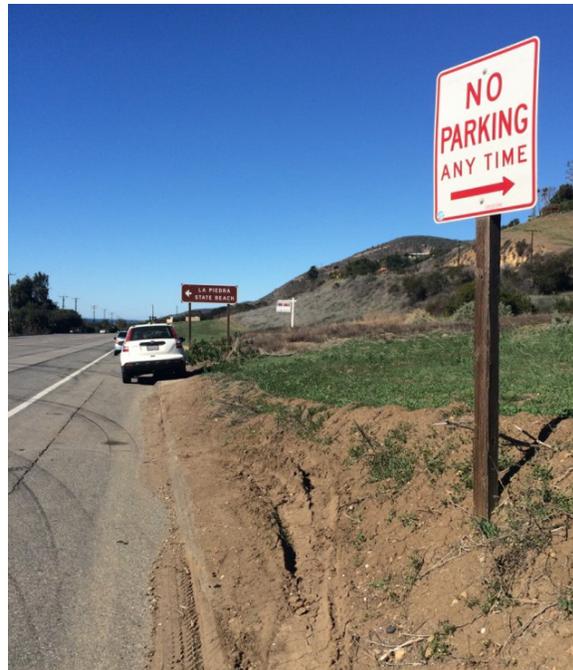


Figure 3-13 An MUTCD R28A Sign in West Malibu near La Piedra State Beach

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In addition to the signs that currently exist on PCH, a number of additional parking-related signs were documented in Caltrans Sign/Installation Orders but missing in the field. These signs may have been deliberately removed, damaged in accidents, obscured by vegetation, or superseded. Some of the potentially missing signs authorized by Caltrans and identified in this report have already been installed and some are slated to be installed, but all signs not originally confirmed in the field are reflected in **Table 3-4** and with the "-CT" designation in the PCH Parking Corridor Map in **Appendix A**.

Table 3-4 Caltrans Authorized Signs Potentially Missing in the Field

MUTCD Sign Type*	Number of Signs
R26-CT	53
R26A-CT	8
R26K-CT	7
R26(S)-CT	13
R27A(S)-CT	1
R28-CT	43
R28A-CT	24
Total	149
* See Table 3-5 for parking signs legend	

This report is working toward creation of a comprehensive sign inventory of PCH as Caltrans is responsible for the potentially missing signs. Some of the potentially missing signs may have been superseded and further field studies may be necessary to determine if they are actually needed. Areas where parking was historically prohibited are relevant to this study as they may represent areas where parking was prohibited to enhance safety by improving sight distance for merging vehicles, preventing parking where there would be minimal separation between parked cars and highway traffic, or mitigating other conditions where safety could be improved by limiting parking. **Table 3-4** above illustrates the type and distribution of signs expected from Caltrans work orders but may be missing in the field.

Table 3-5 on the next page illustrates the signs associated with each MUTCD No Parking sign type code found along PCH. **Figure 3-14** illustrates the general locations and clustering of existing and Caltrans authorized but potentially missing No Parking signs. The specific locations of No Parking signs and other geographic study information are shown in the PCH Parking Corridor Map in **Appendix A** along with the specific sign type and directionality of related parking restrictions.

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Table 3-5 No Parking Signs Map Legend

Sign Code	Sign Sample	Sign Code	Sign Sample	Sign Code	Sign Sample
R26 R26-B ↔		R26(S) R26(S)-L ←		R28(S) R28(S)-L ← (shown) R28(S)-B ↔	
R26A		R27/R27(S)		R30A R30A-B (Time period varies with field conditions*)	
R26F		R27A/R27A(S)		R7-107 R107-L ← R28-B ↔ R28-R → (shown)	
R26K R26K-L ← R26K-B ↔ R26K-R →		R28 R28-L ← (shown) R28-B ↔ R28-R →		BO (Bus Parking Only)** Note: Not a State sign	
R26L R26L-L ← R26L-B ↔ R26L-R →		R28A R28A-L ← (shown) R28A-B ↔ R28A-R →		PO (Parallel Parking Only - Tow Away)**	

Source: California MUTCD 2014 Sign Charts

Notes:

Direction of arrows included with signs vary with field conditions (L = left, B = both, R = right).

Exact design of signs in the field may vary with factors such as the age of the sign.

(S) indicates "Stopping" replaces "Parking" on sign.

* Time restriction on PCH in the study area is 12 AM to 5 AM

** Sign samples from photos taken in the field

This map was prepared using a variety of sources, including GIS data and field verifications. This map was completed for a planning study and is not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.



Legend

- Existing Signs
- Caltrans Authorized Missing Signs
- Pacific Coast Highway (Study Area)
- Malibu City Limits

Exhibit Source Path:

Geographic Information Systems

Stantec
 38 Technology Drive, Irvine, CA 92618
 Phone 949.923.6000 www.stantec.com



Figure 3-14
Caltrans Authorized but Potentially Missing No Parking Signs
 3.21

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stantec, and California Department of Transportation (Caltrans).

3.5.2 Curb Parking Restrictions



Figure 3-15 Red Curbs Improving Sight Distances around Driveways in Malibu Civic Center/Pier Area

In California, parking regulations can be established by official painted markings along raised curbs. Painted curbs in the section of PCH in the City of Malibu can be red, designating No Parking Any Time. Other painted curbs can include yellow freight loading zones, white bus/passenger loading zones, and green for time limit parking. Although Caltrans is responsible for curb painting along PCH, unauthorized persons can either paint and/or restripe curbs. Public agencies responsible for painting curbs red will normally use a high quality long-life traffic paint that regulates the precise color of the coating. Other red paints can be purchased and applied to curbs by unauthorized persons, but it is often possible to discern whether the coating is official by its appearance, quality, shade, and other factors.

In some places in the study area, red curbs appear to be deteriorated. Some red curbs appear to have been painted over with white or gray to allow parking in an area that was formerly red. These deteriorated red curb areas may have been painted over or may simply be faded due to age. Deteriorating curb paint conditions often make it hard to tell the authenticity of the restriction and records of exact curb paint locations are not regularly updated by Caltrans.

Figure 3-16 details the general locations and types of curb parking restrictions. **Table 3-6** details the types of curb parking restrictions and the approximate total length of each type in the study area. The specific locations of curb parking restrictions relative to other geographic study information are shown in the PCH Parking Corridor Map in **Appendix A**.

This map was prepared using a variety of sources, including GIS data and field verifications. This map was completed for a planning study and is not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.

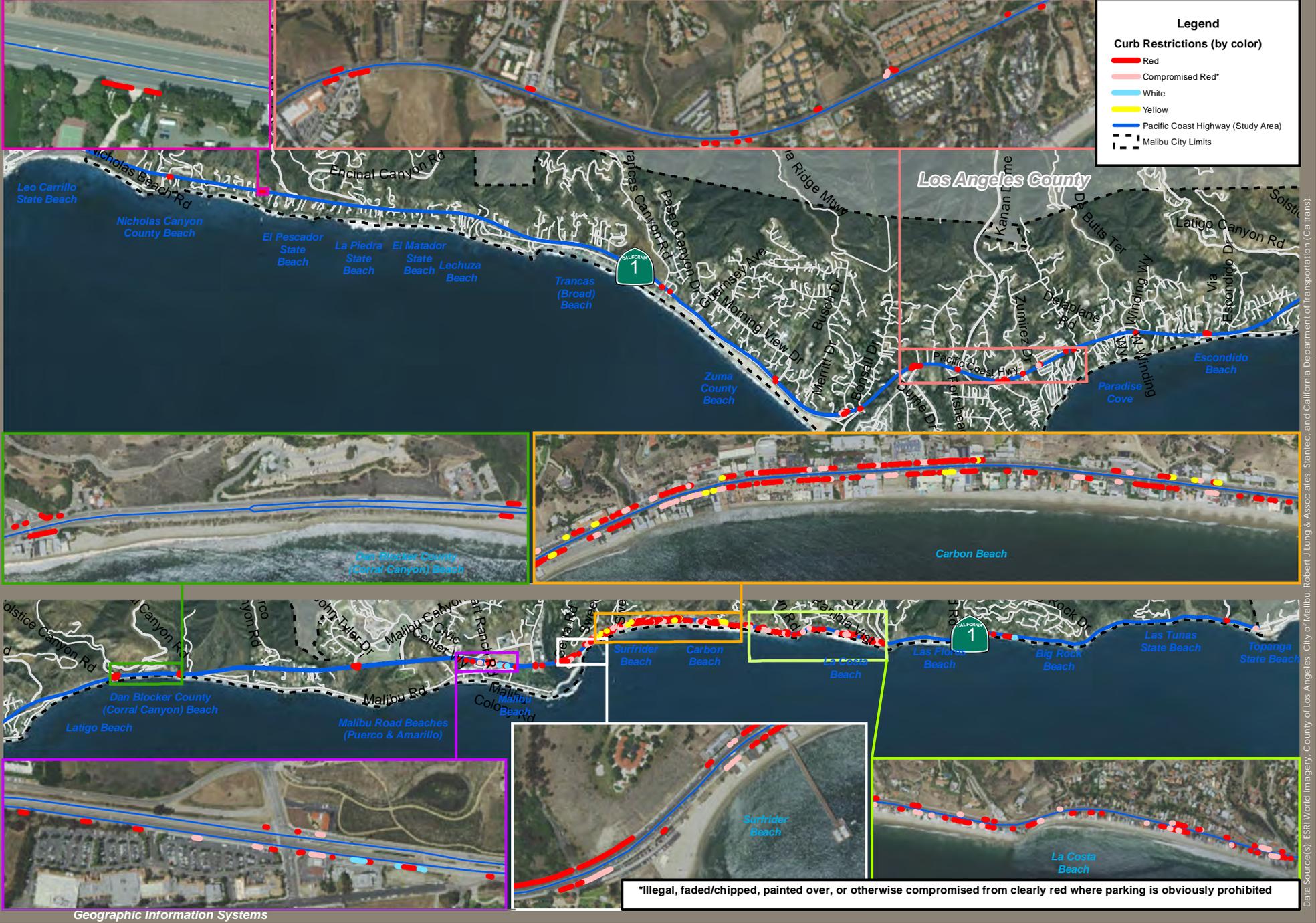


Exhibit Source Path:

Geographic Information Systems



Figure 3-16
Existing Curb Parking Restrictions

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert Jung & Associates, Stantec, and California Department of Transportation (Caltrans).

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Table 3-6 Curb Parking Restrictions by Color

Curb Color	Total Length (Feet)	Total Length (Miles)
Red	5,459	1.03
Compromised Red*	1,368	0.26
White	172	0.03
Yellow	392	0.07
Total	7,391	1.40

* refers to painted curb that appeared originally red but is severely faded/chipped, potentially painted over, or otherwise compromised from a clearly red condition where parking was obviously prohibited

3.5.3 Driveways, Intersection Street Entrances, and Sight Distances

In addition to formal parking prohibitions like No Parking signs and painted curbs, driveways and intersection street entrances also limit parking along the shoulder. Shoulder parking is generally prohibited where it would block access to public, private residential, or private commercial driveways. However, shoulder parking can also be restricted for an additional distance along the shoulder before and/or after intersections and driveways to improve the sight distances for motorists merging into highway traffic or to improve visibility at crosswalks. Some Malibu residents and visitors have complained to the City and/or Caltrans about poor sight distances when merging onto PCH from a variety of locations along the highway, and sight distances were a common reason for No Parking sign installation cited in Caltrans work orders reviewed by Stantec. The proper length of such sight distance parking restrictions is typically established by a formula based on the speed of adjacent traffic, but these formulas are not applied at driveways along State highways such as PCH. The details of stopping and corner sight distances can be found in the HDM (discussed in Chapter 2). These sight distance requirements have not consistently been applied along PCH in Malibu. Existing driveways and intersection street entrances are mapped in the PCH Existing Conditions Map in **Appendix A** along with other study information. Allowing for proper sight distance is important, as it aids the driver entering the roadway in seeing that the road is clear and avoid conflicts with oncoming vehicles. Proper sight distance at crosswalks is also important to provide safety for pedestrians.

In total, the study team determined there was approximately 23,735 feet (4.5 miles) of driveways and 4,592 feet (.87 miles) of street entrances interrupting the shoulder of PCH within the City of Malibu, and 58 percent were on the ocean side of the highway (southbound) versus 42 percent on the inland (northbound) side.

Table 3-7 details the breakdown of driveways and intersection street entrances by study area segment.

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Table 3-7 Driveways and Street Entrances by Study Area Segment

Study Area Segment	Driveway Length (Feet)	Driveway Length (Miles)	Street Entrance Length (Feet)	Street Entrance Length (Miles)
East Malibu (East City Limit to Cross Creek Road)	11,540	2.19	654	0.12
Central Malibu (Cross Creek Road to Busch Drive)	7,471	1.41	2,794	0.53
West Malibu (Busch Drive to West City Limit)	4,724	0.89	1,144	0.22

The number of driveways is likely to change over time as older properties are renovated and new properties are built requiring on-site parking. These properties would require applying for a permit if there are changes to the driveways.

3.5.4 Fire Hydrants

Fire hydrants and bus stops also affect shoulder parking. The CVC Section 22514 does not permit parking within 15 feet on both sides of a fire hydrant. There are approximately 210 fire hydrants along PCH in Malibu, at varying distances on both sides of the highway. Fire hydrants remove about one parking space per hydrant (i.e. 30-foot parking restriction). The locations of fire hydrants are mapped in the PCH Existing Conditions Map in **Appendix A** along with other study information.

3.5.5 Bus Stops

Metro Route 534 travels along PCH in Malibu. There are 18 bus stops on the inland (northbound) side of PCH in Malibu and 18 bus stops on the ocean (southbound) side. The amount of shoulder parking affected varies by bus stop, and the notification of restrictions at each bus stop are not consistently applied along the PCH corridor. Some bus stops use No Parking signs, some use red curb, and some use a combination of signs, red curb, and pavement hatching. Bus zones on PCH were discussed in more detail in **Section 2.13**.

3.6 SHOULDER WIDTHS

Most of PCH through Malibu is striped to provide a painted shoulder stripe to designate the right edge of the travel way. Where allowed, cars are expected to park to the right of the shoulder stripe while moving vehicles should stay to its left. According to Caltrans HDM as discussed in Chapter 2, the minimum paved width to allow for parking along the shoulder of a highway is 8 feet between the shoulder stripe and the edge of the pavement or the face of any adjacent curb, and the preferred paved width is 10 feet⁷. The standard width for the adjacent travel lane is 12 feet (HDM Section 301.1), resulting in a standard width of 20 feet from the lane line to the edge of the shoulder or the face of the curb, with the preferred width being 22 feet.

In many places, the highway lane is 11 feet along PCH, reducing separation between moving and parked vehicles. Eleven feet adjacent to an 8-foot shoulder is considered to be the minimum acceptable value under normal conditions where parking is allowed (HDM Table 302.1). However, this is not always sufficient to reduce the potential for collisions when vehicles cross the shoulder stripe, especially with 45 to 55 mph speeds and many domestic and foreign visitor drivers unfamiliar with local highway conditions. In fact, on-street parking is not normally found on highways of this speed in urban areas such as Malibu.

Lane and shoulder configuration also impacts roadway users apart from motorists. In addition to parked and moving vehicles, the shoulder and right lanes must also accommodate bicyclists, mail and other delivery services, trash collection, and pedestrians where the highway doesn't have dedicated sidewalks. Most of the length of PCH in Malibu does not have sidewalks on either side; therefore, consideration of pedestrians is also a factor. As a scenic coastal route and designated bike route, PCH regularly attracts bicyclists in the study area. Given the potential for "dooring" collisions with parked cars, the passage of the Three Feet for Safety Act in 2013⁸, and a statewide mandate to plan for complete streets⁹, bicyclists and other roadway users, including pedestrians, must now play a role in the allocation of limited highway ROW.

An important component of this study is to inventory existing shoulder widths to determine whether the minimum standard 8-foot parking width is met. If the shoulder is less than 8 feet wide, parking probably should already be prohibited. If not, it is more likely that parked vehicles would park atop or encroach beyond the shoulder stripe as there may not be adequate width for an average-size parked vehicle. This condition was found at various locations in the study area. In some cases, the limitation is very short in length or the width is only a few inches less than

⁷ Referenced in the Highway Design Manual (HDM) Section 302 and Table 302.1 and from the American Association of State Highway and Transportation Officials (AASHTO): A Policy on Geometric Design of Highways and Streets page 4-73.

⁸ AB-1371 (aka the Three Feet for Safety Act) required drivers to give bicyclists at least three feet of clearance when passing in the same direction, effective 9/16/2014.

⁹ Caltrans Deputy Directive DD-64-R2 (signed 2008, renewed 2014): "Caltrans provides for the needs of travelers of all ages and abilities in all planning, programming, design, construction, operations, and maintenance activities and products of the State highway system. Caltrans views all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in California and recognizes bicycle, pedestrian, and transit modes as integral elements of the transportation system."

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8 feet, but in other cases, the shoulder is clearly much less than the standard width for parking. The shoulder width inventory found that approximately 66 percent of the shoulder along PCH in the study area is greater than 8 feet wide.

Another analysis will be to determine if the 8-foot minimum standard is appropriate. The AASHTO Green Book states that a parking lane of 10 to 12 feet may be desirable, and that on arterials the elimination of parking should be considered to reduce the potential for collisions. The HDM also states a preference for 10-foot minimum shoulders if parking is allowed. Generally, parallel parking is not found on arterial roadways with speeds over 45 mph, and Caltrans generally does not provide parking on suburban and rural arterials. MUTCD Section 3B.19 states that diagonal parking stalls are not permitted on State highways.

It is normally possible to identify the edge of pavement along a shoulder, but in some areas there is level ground, often with dirt or gravel surfacing or with overgrown vegetation, behind the pavement edge. This ground can be used by parked vehicles to stay to the right of the travel way edge line. Typically in these cases, the left tires of the vehicle would be on the paved shoulder while the right tires are on the dirt or gravel. A vehicle parked in this manner would be unlikely to be cited if parking is not specifically prohibited. If these unimproved shoulder areas are within the State ROW or can be acquired, they can be improved to create a fully 8-foot paved parking area. These areas can provide the minimum 8-foot paved parking shoulder or more, where feasible.

Precise paved and unimproved shoulder measurements are included alongside highway dimensions and other geographic study information in the PCH Existing Conditions Map in **Appendix A**.

3.6.1 East Malibu: Eastern City Limit to Cross Creek Road

The paved shoulder varies in width considerably in this section from less than 1 foot wide to over 15 feet wide. Unpaved shoulder frequently extends beyond the paved shoulder in less developed parts of the span, providing parking farther away from the 45 mph traffic of the highway, though these areas are subject to erosion and degradation from severe weather events. These partially unpaved shoulders are also often uneven thus preventing drivers from utilizing the full shoulder width to distance themselves more from the edge line and moving traffic. PCH shoulder width in eastern Malibu is summarized in **Figure 3-17**, and detailed measurements are available in the PCH Existing Conditions Map in **Appendix A**.

Shoulder parking is permitted along much of this section, especially on the less developed inland side south of Las Flores Canyon Road. Frequent driveways, intersections, sight distance related parking restrictions, bus zones, and fire hydrants limit shoulder parking in more developed areas. Most of the ocean side has residential homes along the frontage.

East Malibu has the most driveways of the three study areas in Malibu (49 percent of the total length of driveways) due to the sheer number of residential homes fronting PCH directly. When

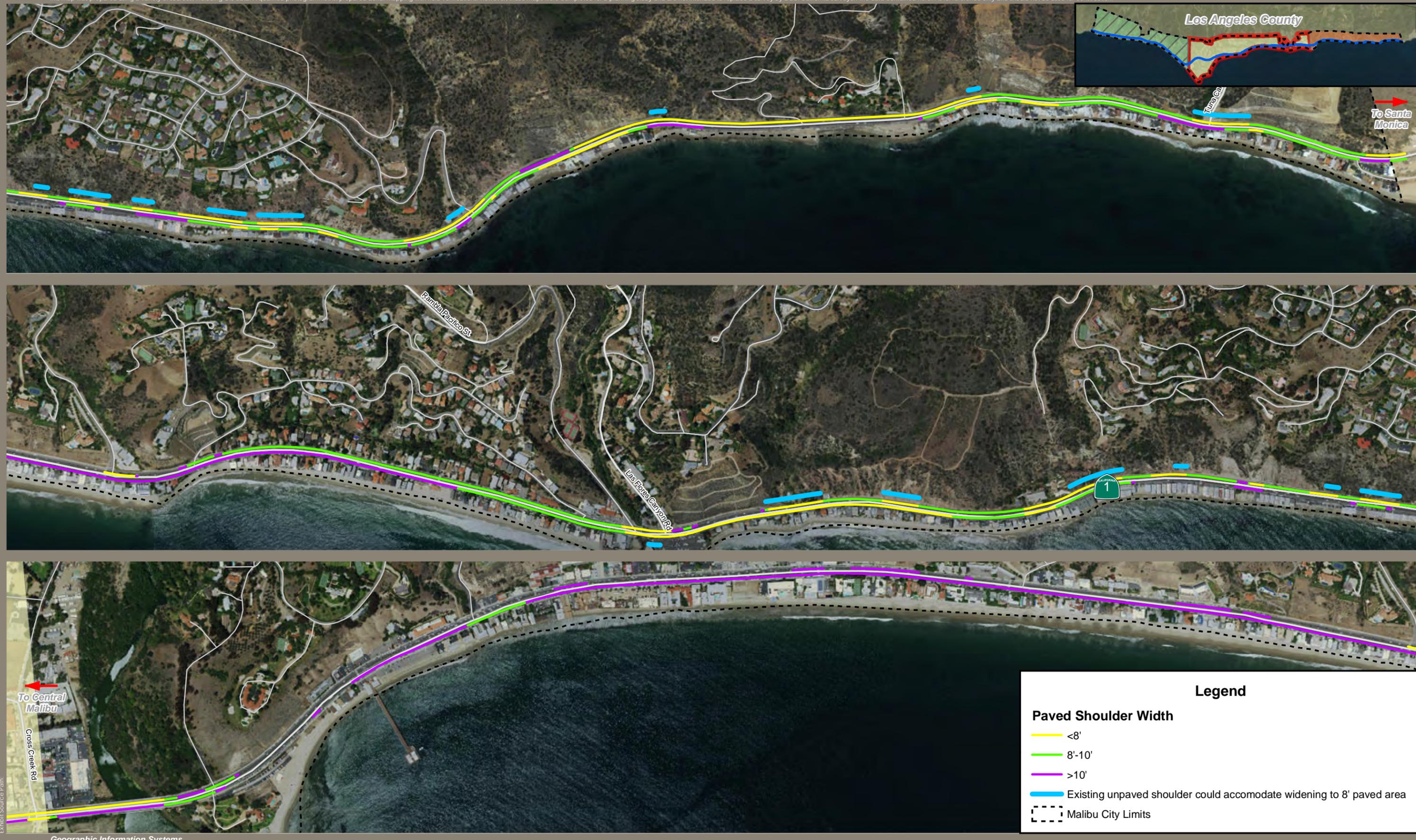


Exhibit Source Path:



Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).

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driveways and intersection street entrances are considered together there are approximately 12,194 feet (2.31 miles) of these shoulder interruptions in east Malibu, which is 43 percent of the study area driveway and intersection total.

Though newer homes are required to have garages and/or parking on their private property, many of the homes in this area were built before that requirement and rely on shoulder parking on PCH. This condition may be improved going forward with the redevelopment of properties in this area which would require the construction of off-street garages and/or driveways. Paid parking is also available off-street just south of the east City Limit at Topanga Beach and in the vicinity of the Malibu Pier. The legality of parking on the shoulder varies with adjacent conditions. It is regulated by No Parking signs and colored curbs in some areas, but parking is not currently signed as prohibited at all locations where the paved shoulder width is insufficient to park behind the shoulder edge line. **Figure 3-18** illustrates where shoulder parking is allowed along PCH in the east Malibu segment.

Some red curbs appear to have been illegally painted or painted over and a few likely illegal No Parking signs have been placed on the public ROW over the years, especially in front of private homes near the eastern City Limit. No Parking signs can be posted legally by property owners on their property to regulate parking on private property. However, this study only assesses signs within the public ROW.

Based upon the parking regulation inventory and shoulder width measurements, a large proportion of the highway shoulder is at least 8 feet wide, which is wide enough for most passenger cars to park fully to the right of the shoulder stripe, not including space for bicyclists, pedestrians or sometimes door clearances. However, as many of the homes in eastern Malibu in the vicinity of the eastern City Limit lack off-street driveways or garages, much of the available shoulder parking in that area is used for resident parking—especially on the ocean side. Based upon the length of unregulated shoulder and the typical length for a parking stall (8 feet x 24 feet), approximately 773 equivalent shoulder parking spaces are available along PCH in east Malibu (458 northbound and 315 southbound).¹⁰

¹⁰ Estimated by dividing the length of each continuous shoulder section where parking is allowed in feet by 24 feet (per the 8 feet paved width x 24 feet Caltrans standard stall size for spaces in a row MUTCD Figure 3B-21) or 20 feet for a single space, rounding down for a conservative estimate, and adding the segment totals together within each study area and direction. Areas with less than 8-foot paved shoulders were excluded.

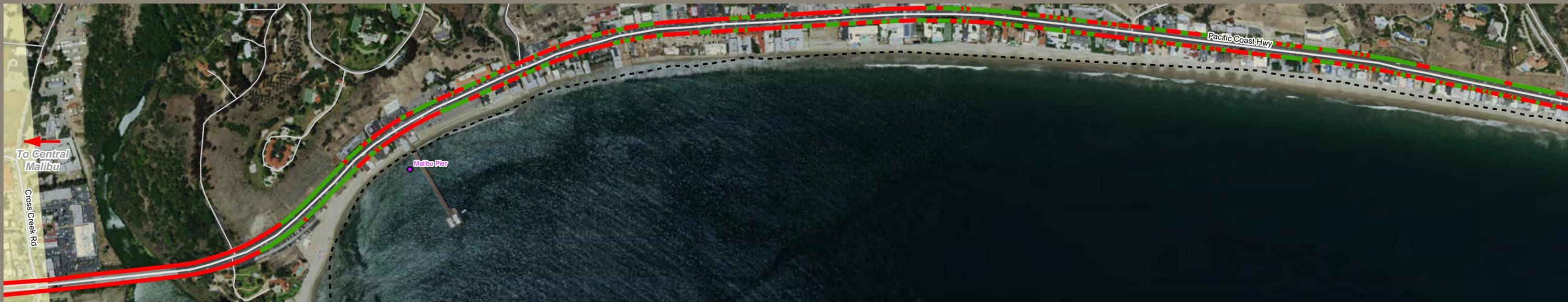
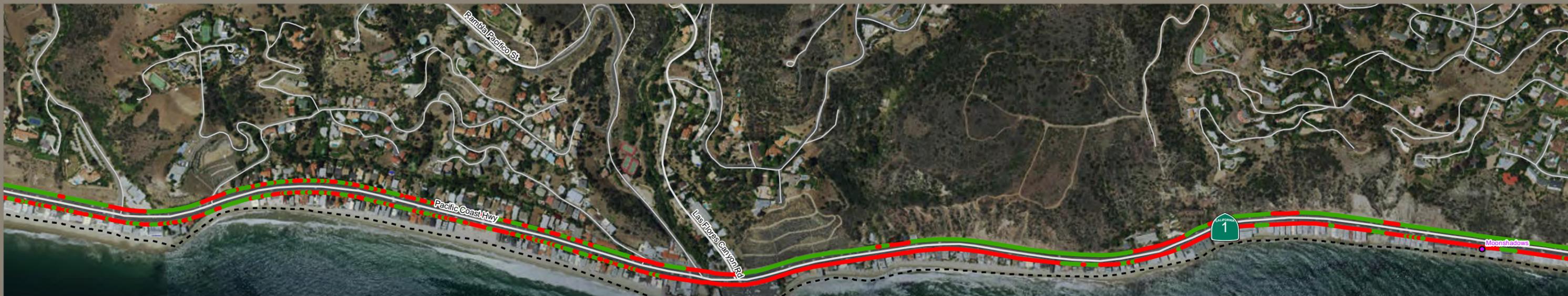
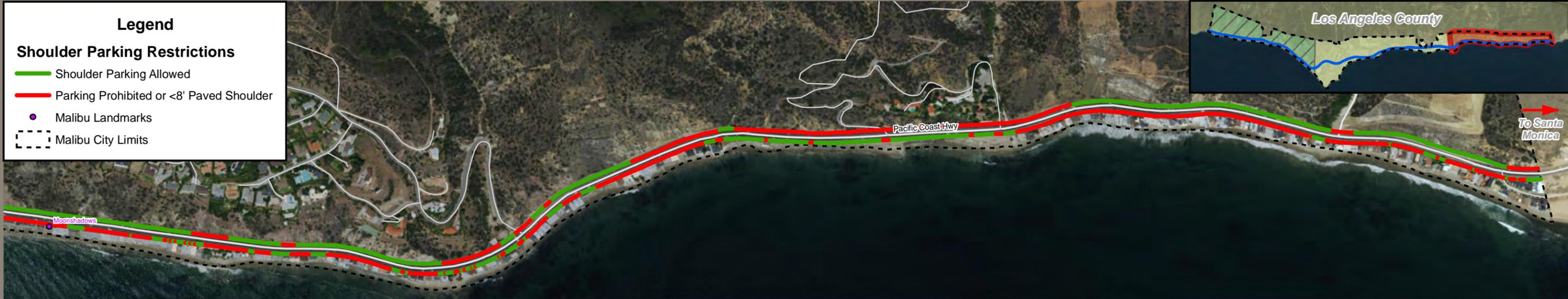


Exhibit Source Path:

Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).



Figure 3-18
Existing Parking Conditions (East Malibu)

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3.6.2 Central Malibu: Cross Creek Road to Busch Drive

The paved shoulder varies in width considerably in this section from as little as 2 feet wide to over 14 feet wide. Unpaved shoulder also frequently extends beyond the paved shoulder in this segment providing more shelter for parking farther away from the 45 to 50 mph traffic of the highway. PCH shoulder widths in central Malibu are summarized in **Figure 3-19**, and detailed measurements are available in the PCH Parking Corridor Map in **Appendix A**.

Shoulder parking is permitted along much of this span with interruptions primarily for driveways, intersections, fire hydrants, and bus stops. Limited off-street parking is also available in some areas, including the paved private lot at Paradise Cove, the paved lot and wide dirt shoulder at Dan Blocker County Beach, the Santa Monica Mountains Conservancy (SMMC) lots at Winding Way and Sara Wan Trailhead, the unpaved parking lot at Malibu Lagoon State Beach, and Malibu Bluffs Park. **Figure 3-20** illustrates where shoulder parking is allowed along PCH in the central Malibu segment.

Central Malibu has fewer driveways than east Malibu, but more than west Malibu (31 percent of the total length of driveways). When driveways and intersection street entrances are considered together, there are approximately 10,265 feet (1.94 miles) of these shoulder interruptions in central Malibu or 36 percent of the study area driveway and intersection total.

Approximately 1,344 equivalent shoulder parking spaces are available along the central Malibu portion of PCH (541 northbound and 803 southbound).¹¹ It should be noted however, that this amount of parking has not been observed to be fully utilized at any one time. Some areas are frequently and heavily used, depending on their proximity to public coastal access, commercial use or other recreational uses, while others do not experience any regular parking demand.

¹¹ Estimated by dividing the length of each continuous shoulder section where parking is allowed in feet by 24 feet (per the 8 feet paved width x 24 feet Caltrans standard stall size for spaces in a row MUTCD Figure 3B-21) or 20 feet for a single space, rounding down for a conservative estimate, and adding the segment totals together within each study area and direction. Areas with less than 8-foot paved shoulders were excluded.



Exhibit Source Path:

Geographic Information Systems

Data Sources: ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).



Figure 3-19
Existing Shoulder Conditions (Central Malibu)

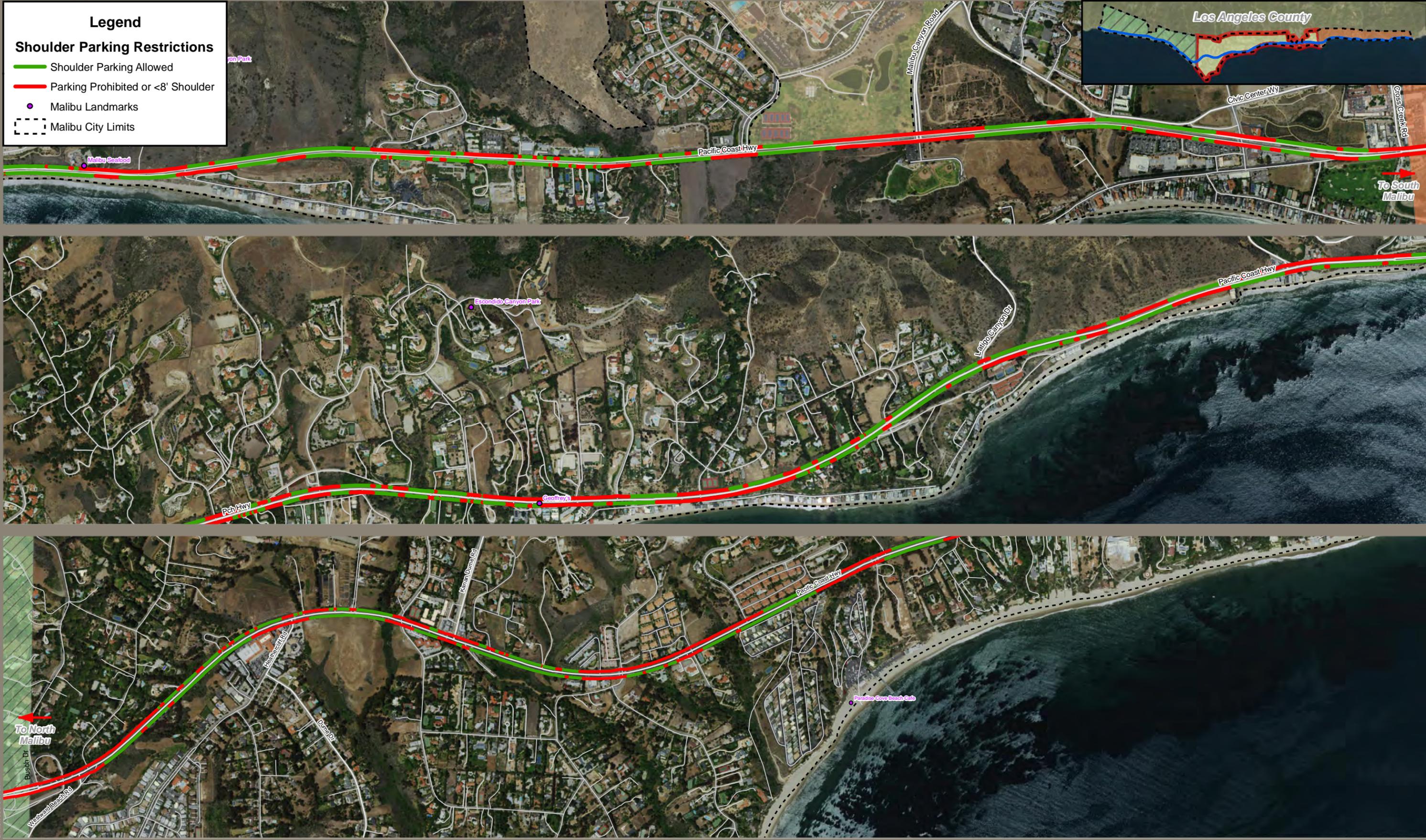


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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).



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3.6.3 West Malibu: Busch Drive to Western City Limit

The paved shoulder varies in width considerably in this section from less than 3 feet to over 11 feet wide. As in the previous segments, unpaved shoulder may extend beyond the paved shoulder in less developed areas providing more sheltered parking farther away from the 50 to 55 mph traffic of the highway, though these areas are subject to erosion and degradation from severe weather events or heavy use. PCH shoulder width in west Malibu is summarized in **Figure 3-21**, and detailed measurements are available in the PCH Existing Conditions Map in **Appendix A**.

Shoulder parking is generally permitted along much of this section of PCH with interruptions primarily for driveways, intersections, fire hydrants, and bus stops. The Zuma County Beach area is the primary exception. While parking is allowed on the ocean side of PCH adjacent to Zuma County Beach, it is largely prohibited on the inland side. **Figure 3-22** illustrates where shoulder parking is allowed along PCH in the west Malibu segment.

Off-street parking is also available in the large paved lot at Zuma County Beach, as well as in the smaller unpaved lots of El Matador, La Piedra, and El Pescador State Beaches and the paved parking lot at Nicholas Canyon County Beach near the western City Limit. Wide dirt shoulders between PCH and Broad Beach Road (West) also provide additional parking, where motorists often stop to view the ocean, which is more sheltered from the 50 to 55 mph travel speeds than typical shoulder parking on PCH. These can be found in two areas on the ocean side.

West Malibu has the fewest driveways of the study area segments (20 percent of the total length of driveways). When driveways and intersection street entrances are considered together there are approximately 5,868 feet (1.11 miles) of these shoulder interruptions in west Malibu, which represents 21 percent of the study area driveway and intersection total.

Approximately 912 equivalent shoulder parking spaces are theoretically available along the west Malibu portion of PCH (455 northbound and 457 southbound).¹² Many areas that permit legal parking experience light demand, even on days when the beaches are heavily used.

¹² Estimated by dividing the length of each continuous shoulder section where parking is allowed in feet by 24 feet (per the 8 feet paved width x 24 feet Caltrans standard stall size for spaces in a row MUTCD Figure 3B-21) or 20 feet for a single space, rounding down for a conservative estimate, and adding the segment totals together within each study area and direction. Areas with less than 8-foot paved shoulders were excluded.

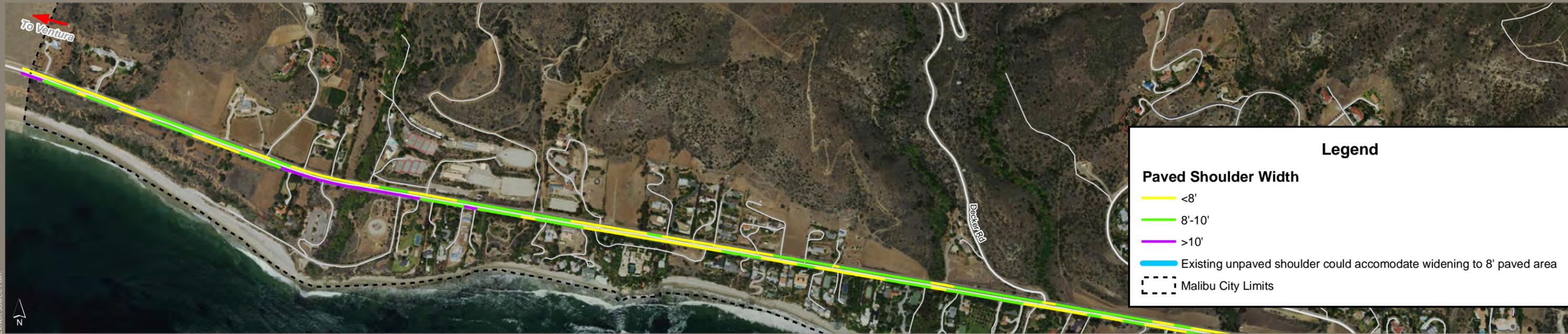
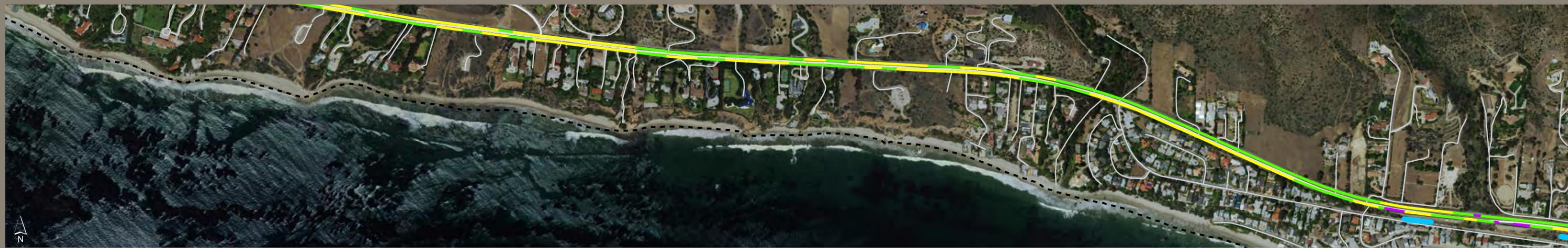


Exhibit Source Path:

Geographic Information Systems

Data Sources: ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).



Exhibit Source Path:

Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Stanlec, and California Department of Transportation (Caltrans).

4.0 SAFETY AND MOBILITY ASSESSMENT

4.1 BACKGROUND

The Pacific Coast Highway Safety Study¹³ approved by the City Council on June 22, 2015 identified collisions with parked cars to be a recurring factor in many collisions. That previous study reviewed collision data from 2012 through 2014. This current report analyzes parking-related collisions for the five-year period from 2011 through 2015. During this five-year analysis period there were a total of over 2,100 reported traffic collisions in the City of Malibu, of which 310 (approximately 15 percent) were parking-related collisions along PCH.

This chapter examines parking-related collisions along PCH in the City. Collisions are considered to be parking related if a parked vehicle is struck, if vehicles performing parking maneuvers are involved in the collision, or if parked vehicles are reported as being the cause of the collision as reported by the driver or officer preparing the collision report. Common parking-related collision types include the following:

- Moving vehicles reported as colliding with parked vehicles
- Vehicles maneuvering to enter or exit parking spaces striking or being struck by other vehicles, or vehicles colliding with other vehicles yielding to drivers performing parking maneuvers
- Parked vehicles referenced by the driver or the reporting officer as limiting the sight distance for vehicles exiting shoulder parking, side streets, or driveways
- Bicyclists involved in collisions with parked vehicles. Examples include:
 - “Dooring” of bicyclists (i.e., bicyclist being hit by the open door of a parked car)
 - Bicyclists striking parked vehicles
- Pedestrians standing or walking adjacent to parked vehicles being struck, either by the moving vehicle or the parked vehicle pushed into them by another vehicle, during a parking-related collision.

Collisions that do not directly involve parked vehicles or vehicles performing parking maneuvers along PCH were omitted from the analysis for this parking study. This parking analysis also does not address pedestrians which were struck while crossing PCH after parking along the shoulder or crossing back to their parked vehicle, or who were struck while walking in the roadway because of parked vehicles in the shoulder. There were 9 fatal pedestrian collisions over the five-year analysis period. If the reporting officer did not specify that a parked vehicle was directly involved, then pedestrian collisions are not included in this parking analysis. Pedestrian safety along PCH has been the subject of other recent studies performed by other agencies.

¹³ Pacific Coast Highway Safety Study: Final Report, 2015.

4.2 DATA COLLECTION AND VERIFICATION

A database was prepared for the 2015 PCH Safety Study showing the location and information from collision reports obtained from the Los Angeles County Sheriff's Department and supplemented by data from the Statewide Integrated Traffic Records System (SWITRS) for each reported collision. This database was checked for inconsistencies and geocoded to show each collision location more accurately along PCH, including calculation of the post mile based upon the distance listed from a known intersection or landmark. Two additional years of collision data (2011 and 2015) were added to this database for this parking analysis to assemble five years of collision data from January 2011 to December 2015.

The collisions with parking involved were extracted from the master collision database to produce a database consisting only of collisions involving parking for a five-year period from 2011 to 2015. This database was integrated into the Geographical Information Systems (GIS) reference system for the project, so that collisions involving parking could be readily shown on study area mapping and analysis tools. **Appendix B** includes detailed maps (66 pages) showing the general location of each collision involving parked vehicles during the five years analyzed.

Collisions in the database were analyzed to determine how parking may have contributed to each collision. They were classified under the categories aforementioned to indicate how parking may have been involved.

TASAS

Caltrans maintains a database of collisions on its highways, and summarizes the frequency of collisions on a facility (highway) based on the amount of traffic that uses it. In this way, collision rates on highways throughout the State can be compared. Based on Caltrans Traffic Accident Surveillance and Analysis System (TASAS) data, the collision rate along PCH in Malibu is 1.24 accidents per million vehicle miles compared with the statewide average of 1.46 accidents per million vehicle miles for comparable facilities. Some discrete locations along PCH in the City have a higher collision rate than the total rate of 1.24 accidents per million vehicle miles.

Caltrans TASAS Selective Accident Retrieval (TSAR) data for All Parked Vehicles Accidents from 2011 through September 2014 was provided to the study team. From 2011 to September 2014 158 TSAR collisions were recorded. These collisions were cross-checked with the data included in the GIS database for this parking analysis. All but 10 of these 158 collisions are included in the GIS database.

4.3 DATA ANALYSIS

There were a total of 310 parking-related collisions reported along PCH in Malibu during the five-year period from January 2011 to December 2015. The parking-related data has been identified and evaluated from several different perspectives. Initially, a discussion of all parking-related collisions by travel direction/side of highway, by shoulder width, and by collision type are presented. Then these categories are broken down further to discussions of



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parking-related collisions at specific locations, including areas around beach access points, businesses, and other points of interest. Many of these locations overlap each other (e.g. Moonshadows restaurant is located within the Las Flores Canyon Road to Eastern City Limit area, Sara Wan Trailhead is located adjacent to Dan Blocker County Beach, etc.). Some of these locations have too few parking-related collisions to draw significant conclusions.

4.3.1 Northbound (Inland Side) vs Southbound (Ocean Side) Collisions

Slightly more collisions occurred on the inland side of the highway than on the ocean side, perhaps because drivers expect more parking maneuvers on the ocean side of the road and are more cautious as they drive southbound. During the five-year analysis period, 53 percent of the parking-related collisions (164 collisions) occurred on the inland (northbound) side of PCH, and 47 percent (145 collisions) occurred on the ocean (southbound) side. One collision report did not specify on which side of the highway the collision occurred.

Parking-related collisions by direction on PCH are summarized in **Table 4-1**.

Table 4-1 Parking-Related Collisions by Travel Direction

Direction	Number of Collisions	%
Northbound (Inland Side)	164	52.9%
Southbound (Ocean Side)	145	46.8%
Not Specified	1	0.3%
Total	310	

Severity

Collisions involving injuries can vary from complaint of pain by the injured party (i.e., no visible injury) to severe injuries. Collisions resulting in the death of a person are classified as fatal collisions. **Table 4-2** below summarizes the severity of parking-related collisions by travel direction.

Table 4-2 Parking-Related Collision Severity by Travel Direction

Direction	Injury		Fatal		Property Damage Only		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
Northbound (Inland Side)	60	36%	1	1%	103	63%	164	52.9%
Southbound (Ocean Side)	39	27%	1	1%	105	72%	145	46.8%
Not Specified	0	0%	0	0%	1	100%	1	0.3%
Total	99	32%	2	1%	209	67%	310	

During the five-year analysis period, approximately 32 percent of the parking-related collisions resulted in injury. Two parking-related collisions (1 percent) resulted in a fatality. Both of these fatal parking-related collisions occurred in 2015.

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On the inland side, 60 parking-related collisions resulted in injury (36 percent), and 1 parking-related collision (0.6 percent) resulted in a fatality during the five years. The fatality on the inland side occurred in March 2015 near Ramirez Mesa Road. The victim parked on the shoulder, exited the vehicle to stretch, and the victim and parked vehicle were struck by a hit-and-run driver traveling northbound. This parking-related fatal collision appears to be located at random, rather than related to a particular beach access, business, or point of interest, and occurred where the shoulder is less than 8 feet wide, although parking in this location is not prohibited by No Parking signs.

On the ocean side, 39 parking-related collisions resulted in injury (27 percent), and 1 collision resulted in a fatality (0.7 percent). The ocean side fatality occurred near Corral Canyon Road in June 2015. The victim was sitting in the driver's seat of a parked vehicle when it was struck by a vehicle travelling southbound on PCH. The reporting officer noted that the cause of the collision was unsafe speed, improper turn, and driver fatigue. The victim's vehicle was parked adjacent to the beach near Dan Blocker County Beach and where the shoulder is more than 10 feet wide.

In the two fatal parking-related collisions, the victims were not in the moving vehicle. Both fatal parking-related collisions occurred in areas where there is a low concentration of parking demand and parking-related collisions. There appears to be no common factor between these two fatal collisions which can be addressed by parking recommendations or improvements, and overall traffic safety along PCH has been addressed in the 2015 PCH Safety Study.

The severity of injuries or fatalities is related more to speed and vehicle equipment (i.e., air bags) than to geographic location.

Collision Type

Collision types by travel direction are summarized in **Table 4-3**.

Table 4-3 Parking-Related Collision Type by Travel Direction

Direction	Parked Vehicle		Parking Maneuver		Limited Sight		Bicyclist Dooring		Other		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
Northbound (Inland)	126	77%	30	18%	2	1%	4	3%	2	1%	164	52.9%
Southbound (Ocean)	104	72%	35	24%	1	1%	3	2%	2	1%	145	46.8%
Not Specified	0	0%	1	100%	0	0%	0	0%	0	0%	1	0.3%
Total	230	74%	66	21%	3	1%	7	2%	4	2%	310	

The proportion of collision types that occurred on each side of the highway were similar. On the inland side, 126 parking-related collisions involved a parked vehicle being struck (77 percent), 30 involved vehicles performing parking maneuvers (18 percent), 2 were the result of limited sight distance due to parked vehicles (1 percent), 4 involved a bicyclist being struck by the

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open door of a parked vehicle (i.e., “dooring”) (3 percent), and 2 were other parking-related collisions (1 percent). On the ocean side, 104 parking-related collisions involved a parked vehicle (72 percent), 35 involved vehicles performing parking maneuvers (24 percent), 1 was the result of limited sight distance from parked vehicles (1 percent), 3 involved “dooring” of bicyclists (2 percent), and 2 were other parking-related collisions (1 percent). The parking-related collision types are discussed further in **Section 4.3.3**.

Monthly

The number of collisions that occurred monthly on each side of the highway are summarized in **Table 4-4**.

Table 4-4 Monthly Parking-Related Collisions by Travel Direction

Month	Northbound (Inland)		Southbound (Ocean)		Not Specified		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
January	5	3%	6	4%	0	0%	11	4%
February	9	5%	13	9%	0	0%	22	7%
March	13	8%	13	9%	0	0%	26	8%
April	12	7%	14	10%	0	0%	26	8%
May	16	10%	13	9%	0	0%	29	10%
June	14	9%	13	9%	0	0%	27	9%
July	18	11%	15	10%	0	0%	33	11%
August	25	15%	12	8%	1	100%	38	12%
September	22	13%	12	8%	0	0%	34	11%
October	11	7%	15	10%	0	0%	26	8%
November	11	7%	8	6%	0	0%	19	6%
December	8	5%	11	8%	0	0%	19	6%
Total	164		145		1		310	

Parking-related collisions occurred during all months of the year; however, the collisions were not distributed evenly among the months. On the inland side, the month with the highest number of parking-related collisions was August with 25 collisions (15 percent). September was the second highest month for parking-related collisions on the inland side with 22 (13 percent), followed by July (18 collisions, 11 percent), May (16 collisions, 10 percent), and June (14 collisions, 9 percent). These five warm months (May through September) account for 58 percent of the total inland side parking-related collisions.

On the ocean side, July and October had the highest number of parking-related collisions with 15 collisions each (10 percent), followed by April with 14 collisions (10 percent). Four months (February, March, May, and June) had 13 collisions (9 percent) each, and two months (August and September) had 12 collisions (8 percent) each. The five warmer months (May through September) account for 44 percent of the parking-related collisions on the ocean side of PCH.

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Time of Day

Table 4-5 summarizes parking-related collisions by time of day for the five-year study period.

Table 4-5 Parking-Related Collisions by Time of Day by Travel Direction

Time	Northbound (Inland)		Southbound (Ocean)		Not Specified		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
12:00 Midnight	10	6%	10	7%	0	0%	20	6%
1:00 AM	4	2%	2	1%	0	0%	6	2%
2:00 AM	4	2%	4	3%	0	0%	8	3%
3:00 AM	5	3%	1	1%	0	0%	6	2%
4:00 AM	3	2%	1	1%	0	0%	4	1%
5:00 AM	5	3%	5	3%	0	0%	10	3%
6:00 AM	2	1%	7	5%	0	0%	9	3%
7:00 AM	4	2%	6	4%	0	0%	10	3%
8:00 AM	8	5%	1	1%	0	0%	9	3%
9:00 AM	2	1%	4	3%	0	0%	6	2%
10:00 AM	9	5%	5	3%	0	0%	14	5%
11:00 AM	9	5%	4	3%	0	0%	13	4%
12:00 Noon	8	5%	9	6%	0	0%	17	5%
1:00 PM	7	4%	8	6%	0	0%	15	5%
2:00 PM	17	10%	11	8%	1	100%	29	9%
3:00 PM	10	6%	20	14%	0	0%	30	10%
4:00 PM	10	6%	10	7%	0	0%	20	6%
5:00 PM	6	4%	5	3%	0	0%	11	4%
6:00 PM	8	5%	9	6%	0	0%	17	5%
7:00 PM	11	7%	5	3%	0	0%	16	5%
8:00 PM	5	3%	8	6%	0	0%	13	4%
9:00 PM	6	4%	2	1%	0	0%	8	3%
10:00 PM	7	4%	2	1%		0%	9	3%
11:00 PM	4	2%	6	4%		0%	10	3%
Total	164		145		1		310	

Parking-related collisions on each side of PCH were spread out across all hours of the day. On the inland side of PCH, the most parking-related collisions (17 collisions, 10 percent) occurred between 2:00 and 3:00 PM, and on the ocean side, the most parking-related collisions (20 collisions, 14 percent) occurred between 3:00 and 4:00 PM. The overall peak occurs between 2:00 PM and 4:00 PM when 9 to 10 percent of the parking-related collisions occurred. During the typical AM peak period (6:00 to 9:00 AM), a total of 14 parking-related collisions (8 percent) occurred on the inland side and 14 parking-related collisions (10 percent) occurred on the ocean side. During the typical PM peak period (4:00 to 7:00 PM), 24 collisions (15 percent) occurred on the inland side and 24 collisions (16 percent) occurred on the ocean side.

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Figure 4-1 illustrates the general locations of parking-related collisions by direction along PCH in the City of Malibu. As this figure shows, there are scattered occurrences of parking-related collisions on both sides of the highway in the west Malibu section of PCH, parking-related collisions on both sides of the highway spread out through the central Malibu section of PCH, and nearly solid incidences of parking-related collisions through the east Malibu section of PCH. Parking-related collisions at specific locations along PCH are discussed later in this chapter.

4.3.2 Shoulder Widths

As discussed in Chapter 3.0 Existing Conditions, according to the Caltrans HDM Table 302.1, the standard minimum paved width of the right shoulder of a highway is 8 feet, although 10 feet is preferred if parking is allowed. The paved shoulder width on PCH varies from less than 8 feet to more than 12 feet wide, with varying widths of additional dirt area adjacent to the paved shoulder. In the absence of signed or painted parking restrictions, parking is not prohibited on PCH, apart from standard regulations limiting parking at driveways, on bridges, adjacent fire hydrants, within intersections, and the travelway. While 8 feet is the minimum width for the design and striping of the highway shoulder, vehicles would not be ticketed if they are parked in a narrower shoulder if the vehicle remains entirely to the right of the edgeline of the travel lane and parking is not signed or striped as prohibited.

The average passenger vehicle width in the US is 6 feet; however, vehicle widths vary from as small as 5.5 feet for a small compact car to over 6.5 feet for a full-size sport utility vehicle or pick-up truck. Vehicles are allowed to park up to 18 inches from the curb, where provided per CVC Section 22502, thus resulting in the Caltrans standard of 8-foot minimum shoulder width where parking is allowed.

A potential correlation between parking collisions and shoulder width was explored. Approximately 14 percent of the parking-related collisions occurred where vehicles were parked in shoulders where the pavement is less than 8 feet wide. Although Caltrans does not allow parking on shoulders less than 8 feet wide, these vehicles are not necessarily parked illegally, as explained above. The majority, or 54 percent, of collisions occurred where the shoulder, including paved plus unimproved dirt shoulder, was between 8 and 12 feet wide. About 26 percent occurred where the shoulder was more than 12 feet wide. Another 3 percent of parking-related collisions occurred within intersections. The collision reports do not contain information on how close or far away the parked vehicle was from the edgeline.

Approximately 54 percent of the shoulder along PCH is between 8 and 12 feet wide, and approximately 12 percent of the shoulder is more than 12 feet wide.

This map was prepared using a variety of sources, including GIS data. A qualified photogrammetrist prepared aerial mapping with field verifications. However, these maps were completed for a planning study and are not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.

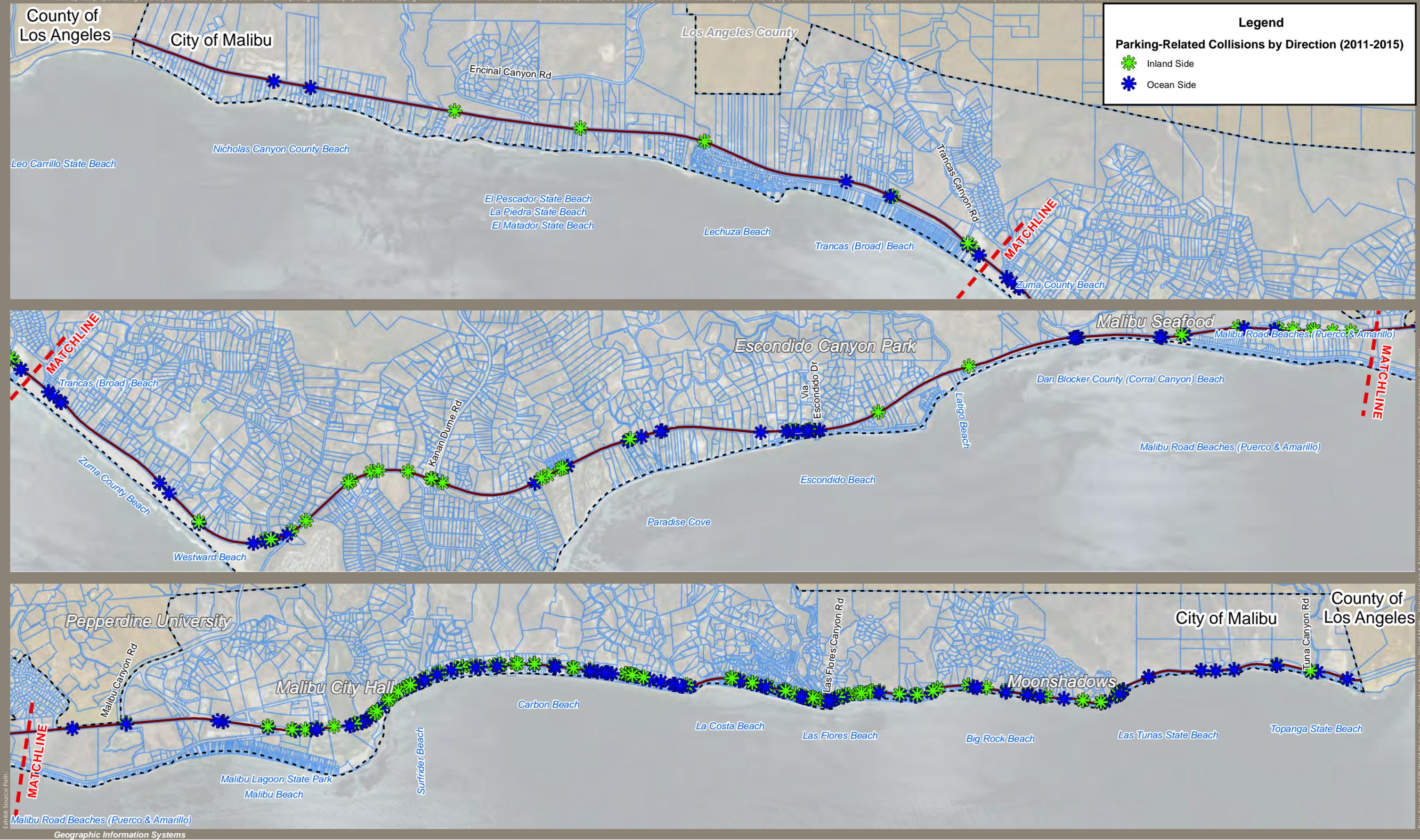


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stantec, and California Department of Transportation (Caltrans).

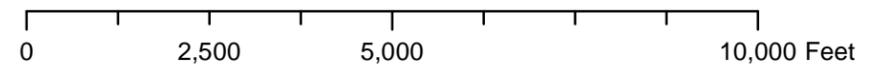


Figure 4-1
Parking-Related Collisions by Travel Direction

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Table 4-6 summarizes the number of collisions by shoulder width.

Table 4-6 Collisions by Shoulder Width

Shoulder Width	Number of Collisions	%
Less than 8 Feet Paved	45	14%
8 to 12 Feet Paved	157	51%
8 to 12 Feet Paved + Dirt	8	3%
More than 12 Feet Paved	70	23%
More than 12 Feet Paved + Dirt	10	3%
In Intersection	11	3%
Unknown	9	3%
Total	310	

Severity

The severity of collisions categorized by shoulder width is summarized in **Table 4-7**.

Table 4-7 Parking-Related Collision Severity by Shoulder Width

Shoulder Width	Injury		Fatal		Property Damage Only		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
Less than 8 Feet	14	32%	1	0.3%	30	68%	45	14%
8 to 12 Feet	53	32%	1	0.3%	111	67%	165	54%
More than 12 Feet	24	30%	0	0%	56	70%	80	26%
In Intersection	5	45%	0	0%	6	55%	11	3%
Unknown	3	33%	0	0%	6	67%	9	3%
Total	99	32%	2	1%	209	67%	310	

Approximately one-third of all parking-related collisions resulted in injury, and this percentage is consistent through all categories of shoulder width, with the exception of parking-related collisions which occurred within an intersection. Within intersections, parking-related collisions (11 total) resulted in injury 5 times (45 percent). The data shows that injuries occur at the same rate for all shoulder widths. One of the fatal parking-related collisions occurred where the shoulder is less than 8 feet wide, and the other fatal collision occurred where the shoulder is more than 10 feet wide. The rate of injuries is likely to be more dependent on vehicle speed and vehicle equipment such as air bags or seatbelt use than on shoulder width.

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Collision Type

The collision types summarized by shoulder width are shown in **Table 4-8**.

Table 4-8 Parking-Related Collision Type by Shoulder Width

Shoulder Width	Parked Vehicle		Parking Maneuver		Limited Sight		Bicyclist Dooring		Other		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
Less than 8 Feet	33	73%	9	20%	0	0%	1	2%	2	5%	45	14%
8 to 12 Feet	126	76%	29	18%	2	1%	6	4%	2	1%	165	54%
More than 12 Feet	57	71%	22	28%	1	1%	0	0%	0	0%	80	26%
In Intersection	9	82%	2	18%	0	0%	0	0%	0	0%	11	3%
Unknown	5	56%	4	44%	0	0%	0	0%	0	0%	9	3%
Total	230	74%	66	21%	3	1%	7	2%	4	2%	310	

Shoulder width does not appear to be a factor in collision type, except for bicycle “dooring” which did not occur where the shoulder is more than 12 feet wide. For all shoulder widths, the most common collision type is parked vehicles being struck by moving vehicles (71 to 76 percent), followed by vehicles performing parking maneuvers or vehicles yielding to vehicles performing parking maneuvers being involved in collisions (18 to 28 percent).

Monthly

Table 4-9 summarizes parking-related collisions by month and by shoulder width.

Table 4-9 Monthly Parking-Related Collisions by Shoulder Width

Month	Less than 8 Feet		8-12 Feet		More than 12 Feet		In Intersection		Unknown		Total	
	Number of Collisions	%										
January	0	0%	10	6%	1	1%	0	0%	0	0%	11	4%
February	3	7%	15	9%	3	4%	0	0%	1	11%	22	7%
March	4	9%	11	7%	10	13%	1	9%	0	0%	26	8%
April	4	9%	15	9%	6	8%	1	9%	0	0%	26	8%
May	2	4%	15	9%	9	11%	2	18%	1	11%	29	10%
June	1	2%	15	9%	9	11%	0	0%	2	22%	27	9%
July	9	20%	13	8%	8	10%	1	9%	2	22%	33	11%
August	6	13%	19	11%	9	11%	3	28%	1	11%	38	12%
September	4	9%	20	12%	6	8%	2	18%	2	22%	34	11%
October	6	13%	11	7%	9	11%	0	0%	0	0%	26	8%
November	3	7%	13	8%	2	2%	1	9%	0	0%	19	6%
December	3	7%	8	5%	8	10%	0	0%	0	0%	19	6%
Total	45		165		80		11		9		310	

Minor variations in the percentage of parking-related collisions occurred during the different months for the different shoulder widths.



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During the five-year analysis period, no parking-related collisions occurred in January where the shoulder is less than 8 feet wide, perhaps because the parking demand is lower during the winter months and abundant parking could be found in areas with wider shoulders during January. Parking-related collisions peak (14 to 20 percent) during the warmer summer and fall months (July through October) where the shoulder is less than 8 feet wide, with a slight drop during September (9 percent).

Where the shoulder is between 8 and 12 feet wide, the percentage of collisions is relatively consistent throughout the entire year (between 5 and 12 percent), with the peak occurring during August (11 percent) and September (12 percent).

Parking-related collisions occurred during all months where the shoulder is more than 12 feet wide; however, the peak occurred in March at 13 percent followed closely by May, June, August, and October at 11 percent each and July at 10 percent.

Time of Day

Table 4-10 on the following page summarizes parking-related collisions by time of day by shoulder width.

The time of day summary does not reveal any significant patterns regarding shoulder width. Parking-related collisions are spread throughout the day across all shoulder width categories, with some minor clusters of collisions occurring in the afternoon hours.

4.3.3 Collision Types

Parking-related collisions were categorized into five general categories: collisions with parked vehicles; collisions with vehicles performing parking maneuvers or vehicles yielding to vehicles performing parking maneuvers; collisions caused by obscured sightlines due to parked vehicles; parking-related collisions involving “dooring” of bicyclists; and parking-related collisions that do not fall into any of the other categories which are referred to as “Other”. **Table 4-11** on **page 4-13** details the number of collisions by collision type.

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Table 4-10 Parking-Related Collisions by Time of Day by Shoulder Width

Time	Less than 8 Feet		8-12 Feet		More than 12 Feet		In Intersection		Unknown		Total	
	Number of Collisions	%										
12:00 Midnight	4	9%	12	7%	3	4%	0	0%	1	11%	20	6%
1:00 AM	1	2%	5	3%	0	0%	0	0%	0	0%	6	2%
2:00 AM	1	2%	4	2%	3	4%	0	0%	0	0%	8	3%
3:00 AM	1	2%	4	2%	1	1%	0	0%	0	0%	6	2%
4:00 AM	3	6%	1	1%	0	0%	0	0%	0	0%	4	1%
5:00 AM	1	2%	8	5%	1	1%	0	0%	0	0%	10	3%
6:00 AM	0	0%	9	6%	0	0%	0	0%	0	0%	9	3%
7:00 AM	1	2%	7	4%	2	3%	0	0%	0	0%	10	3%
8:00 AM	2	5%	4	2%	2	3%	1	9%	0	0%	9	3%
9:00 AM	0	0%	2	1%	4	5%	0	0%	0	0%	6	2%
10:00 AM	3	7%	3	2%	7	10%	1	9%	0	0%	14	5%
11:00 AM	2	4%	6	4%	3	4%	1	9%	1	11%	13	4%
12:00 Noon	4	9%	8	5%	5	7%	0	0%	0	0%	17	5%
1:00 PM	2	5%	6	4%	4	5%	0	0%	3	33%	15	5%
2:00 PM	2	5%	19	12%	8	11%	0	0%	0	0%	29	9%
3:00 PM	1	2%	16	10%	9	12%	2	18%	2	22%	30	10%
4:00 PM	0	0%	9	6%	9	12%	1	9%	1	11%	20	6%
5:00 PM	0	0%	4	2%	7	10%	0	0%	0	0%	11	4%
6:00 PM	5	11%	9	5%	2	3%	1	9%	0	0%	17	5%
7:00 PM	3	7%	10	6%	2	3%	0	0%	1	11%	16	5%
8:00 PM	3	7%	5	3%	4	5%	1	9%	0	0%	13	4%
9:00 PM	0	0%	6	4%	1	1%	1	9%	0	0%	8	3%
10:00 PM	4	9%	4	2%	1	1%	0	0%	0	0%	9	3%
11:00 PM	2	4%	4	2%	2	3%	2	18%	0	0%	10	3%
Total	45		165		80		11		9		310	

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Table 4-11 Collisions by Type

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	230	74%
Involving a Parking Maneuver	66	21%
Involving Obscured Sightlines due to a Parked Vehicle	3	1%
Dooring (Bicyclists)	7	2%
Other Parking-Related Collisions	4	2%
Total	310	

Severity

Table 4-12 summarizes parking-related collision severity by collision type.

Table 4-12 Parking-Related Collision Severity by Collision Type

Type of Collision	Injury		Fatal		Property Damage Only		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
Involving a Parked Vehicle	72	31%	2	1%	156	68%	230	74%
Involving a Parking Maneuver	15	23%	0	0%	51	77%	66	21%
Involving Obscured Sightlines due to Parked Vehicle	2	67%	0	0%	1	33%	3	1%
Dooring (Bicyclists)	7	100%	0	0%	0	0%	7	2%
Other Parking-Related Collisions	3	75%	0	0%	1	25%	4	2%
Total	99	32%	2	1%	209	67%	310	

Approximately one-third of collisions involving parked vehicles resulted in injury, and the two fatal collisions (1 percent) that occurred during the five-year analysis period involved parked vehicles. A lower percentage of parking-related collisions involving vehicles performing parking maneuvers resulted in injury (23 percent). A high percentage of collisions involving obscured sightlines due to parked vehicles (67 percent) and other parking-related collisions (75 percent) resulted in injury. All the bicycle dooring collisions that occurred during the five-year period (100 percent) resulted in injury. The "Other" category consists of three non-dooring bicycle collisions and one pedestrian collision, and it is not unusual that a high percentage of these resulted in injury.

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Monthly

Table 4-13 summarizes the monthly parking-related collisions by collision type.

Table 4-13 Monthly Parking-Related Collisions by Collision Type

Month	Parked Vehicle		Parking Maneuver		Obscured Sightlines		Bicyclist Doorings		Other		Total	
	Number of Collisions	%										
January	7	3%	3	5%	0	0%	1	14%	0	0%	11	4%
February	12	5%	7	11%	0	0%	1	14%	2	50%	22	7%
March	21	9%	3	5%	1	33%	1	14%	0	0%	26	8%
April	20	9%	3	5%	1	33%	1	14%	1	25%	26	8%
May	27	12%	2	2%	0	0%	0	0%	0	0%	29	10%
June	20	9%	6	9%	0	0%	1	14%	0	0%	27	9%
July	22	10%	10	15%	0	0%	1	14%	0	0%	33	11%
August	23	10%	12	18%	1	33%	1	14%	1	25%	38	12%
September	24	10%	10	15%	0	0%	0	0%	0	0%	34	11%
October	20	9%	6	9%	0	0%	0	0%	0	0%	26	8%
November	17	7%	2	3%	0	0%	0	0%	0	0%	19	6%
December	17	7%	2	3%	0	0%	0	0%	0	0%	19	6%
Total	230		66		3		7		4		310	

The percentage of collisions involving a parked vehicle are highest during the spring, summer and fall months (9 – 12 percent), and lowest during the winter months (3 – 7 percent). Collisions involving vehicles performing parking maneuvers are also highest during the summer and fall months (9 – 18 percent) but also during February (11 percent). Between one and three parking-related collisions involving obscured sightlines from parked vehicles, bicycle doorings, and other collision types occurred throughout the year.

Time of Day

Table 4-14 on the following page summarizes parking-related collision by time of day by collision type.

There was no significant peak during the day for collisions involving a parked vehicle. These collisions are spread throughout the day. On the other hand, 80 percent of the collisions involving vehicles performing parking maneuvers occurred in the late morning (10:00 AM) through early evening (6:00 PM) hours. No reported collisions involving vehicles performing parking maneuvers occurred between 2:00 AM and 7:00 AM during the five-year analysis period. Collisions involving obscured sightlines from parked vehicles occurred sporadically throughout the morning. Bicycle doorings and other parking-related collisions occurred between 7:00 AM and 3:00 PM with a spike during the noon hour.

Each parking-related collision category is discussed below with significant contributing factors or patterns noted.

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Table 4-14 Parking-Related Collisions by Time of Day by Collision Type

Time	Parked Vehicle		Parking Maneuver		Obscured Sightlines		Bicyclist Doorings		Other		Total	
	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%	Number of Collisions	%
12:00 Midnight	16	7%	4	6%	0	0%	0	0%	0	0%	20	6%
1:00 AM	4	2%	2	3%	0	0%	0	0%	0	0%	6	2%
2:00 AM	8	3%	0	0%	0	0%	0	0%	0	0%	8	3%
3:00 AM	6	3%	0	0%	0	0%	0	0%	0	0%	6	2%
4:00 AM	4	2%	0	0%	0	0%	0	0%	0	0%	4	1%
5:00 AM	10	4%	0	0%	0	0%	0	0%	0	0%	10	3%
6:00 AM	8	3%	0	0%	1	33%	0	0%	0	0%	9	3%
7:00 AM	9	4%	0	0%	0	0%	1	14%	0	0%	10	3%
8:00 AM	7	3%	1	1%	1	33%	0	0%	0	0%	9	3%
9:00 AM	4	2%	2	3%	0	0%	0	0%	0	0%	6	2%
10:00 AM	8	3%	4	6%	0	0%	1	14%	1	25%	14	5%
11:00 AM	7	3%	4	6%	1	33%	1	14%	0	0%	13	4%
12:00 Noon	7	3%	5	8%	0	0%	2	29%	3	75%	17	5%
1:00 PM	11	5%	4	6%	0	0%	0	0%	0	0%	15	5%
2:00 PM	21	9%	7	11%	0	0%	1	14%	0	0%	29	9%
3:00 PM	18	8%	11	17%	0	0%	1	14%	0	0%	30	10%
4:00 PM	13	6%	7	11%	0	0%	0	0%	0	0%	20	6%
5:00 PM	9	4%	2	3%	0	0%	0	0%	0	0%	11	4%
6:00 PM	9	4%	8	12%	0	0%	0	0%	0	0%	17	5%
7:00 PM	15	7%	1	1%	0	0%	0	0%	0	0%	16	5%
8:00 PM	12	5%	1	1%	0	0%	0	0%	0	0%	13	4%
9:00 PM	6	3%	2	3%	0	0%	0	0%	0	0%	8	3%
10:00 PM	8	3%	1	1%	0	0%	0	0%	0	0%	9	3%
11:00 PM	10	4%	0	0%	0	0%	0	0%	0	0%	10	3%
Total	230		66		3		7		4		310	

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4.3.3.1 Parked Vehicles Hit by Moving Vehicles

The overwhelming majority (74 percent) of parking-related collisions involve a moving vehicle directly striking a parked vehicle. Out of 310 total parking-related collisions, 230 consisted of a parked vehicle(s) being struck by a moving vehicle. Rear end collisions comprised 41 percent of the total collisions involving a parked vehicle, and sideswipe collisions also comprised 41 percent. A total of 12 percent of the collisions involving a parked vehicle were head-on or broadside, and 7 percent were some other type of collision.

Severity

Parking-related collisions that resulted in injury totaled 72 collisions (31 percent), and 2 collisions (1 percent) resulted in a fatality. As discussed previously, one of the fatalities involved a pedestrian, located near Ramirez Mesa Road, and the other involved multiple parked vehicles just south of Corral Canyon Road.

Pedestrians

Two of the collisions involving a parked car (1 percent) also involved a pedestrian being struck.

Direction of Travel

There were 126 collisions (55 percent) involving a parked vehicle that occurred on the inland side of the highway. There were 104 collisions (45 percent) involving a parked vehicle that occurred on the ocean side of the highway.

Driver Under Influence/Sleep

Of the parked vehicles hit by moving vehicles, 32 (14 percent) involved the driver under the influence (DUI), and 31 (14 percent) involved a sleeping driver. Another 4 collisions (2 percent) were caused by a medical condition or emergency. The remaining 163 collisions involving a parked vehicle were caused by a variety of factors, such as improper turn, unsafe speed, right-of-way violation, and other improper driving behaviors.

4.3.3.2 Vehicle Collisions During Parking Maneuvers

There were 66 collisions involving a vehicle performing parking maneuvers. These parking maneuvers include entering traffic from a shoulder parking space, attempting to park, waiting to park, yielding to another parking vehicle, or vehicles colliding with other vehicles yielding to drivers performing parking maneuvers. The highest number of collisions (28) involving parking maneuvers were rear-end collisions (42 percent), and 16 were sideswipe (24 percent). Fifteen collisions (23 percent) were caused by a parking vehicle backing into another parked vehicle.

It should be noted that the movement preceding the collision was interpreted by the officer preparing the report. In other words, one officer might have recorded that the movement was a "parking maneuver" while another officer might have recorded "backing." The results summarized here reflect the information provided by the reporting officer.

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Severity

Fifteen collisions involving vehicles performing parking maneuvers (23 percent) resulted in injuries. No collisions involving vehicles performing parking maneuvers resulted in a fatality.

Pedestrians

One of the collisions involving vehicles performing parking maneuvers (2 percent) involved a pedestrian being struck.

Direction of Travel

More collisions involving vehicles performing parking maneuvers occurred on the ocean side of the highway (53 percent) than on the inland side (46 percent), the reverse of the overall trend of more collisions on the inland side.

Driver Under Influence

Three collisions were caused by DUI (5 percent). The remaining 63 collisions (95 percent) involving a vehicle performing parking maneuvers were caused by a variety of factors, such as improper turn, unsafe speed, right-of-way violation, and other improper driving behaviors.

4.3.3.3 Parked Vehicles Impairing Sight Distance

Only three parking-related collisions were reported by drivers who claimed the sight distance was obscured by parked vehicles or was interpreted by the officer preparing the report. Two of these collisions were the result of motorists entering traffic from the shoulder parking space and one was the result of a motorist backing out of residential driveway. Their view of oncoming traffic was obscured by other parked vehicles.

There may have been other collisions along PCH where impaired sight distance was a factor; however, if the collision did not directly involve a parked vehicle or a vehicle performing parking maneuvers and the collision report did not specifically list impaired vision from parked vehicles as a factor, then this analysis cannot include other collisions as parking-related collisions in this category. This collision summary also does not include near-miss incidents which did not result in a reported collision involving a parked vehicle nor does it include residents' complaints to the City or Caltrans about impaired sight distance.

Severity

Two of the collisions caused by obscured sight distance from parked vehicles (67 percent) resulted in injuries, and none were fatal.

Pedestrians

None of the collisions involving impaired sight distance due to parked vehicles involved a pedestrian being struck.

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Direction of Travel

Two collisions caused by obscured sight distance (67 percent) were on the inland side and one (33 percent) was on the ocean side of the highway.

Driver Under Influence

None of the collisions caused by obscured sight distance from parked vehicles involved DUI.

4.3.3.4 Bicycle Dooring

Seven collisions involved a bicyclist being struck by the open door of a parked vehicle ("dooring") during the five-year analysis period. **Figure 4-2** shows the locations of parking-related collisions that involved bicycle dooring.

Severity

All seven of the dooring collisions (100 percent) resulted in injury, but none fatally.

Pedestrians

None of the collisions involving bicycle dooring involved a pedestrian being struck.

Direction of Travel

The dooring collisions were split between the inland side and the ocean side, with one more collision occurring on the inland side (four collisions, 57 percent) than the ocean side (three collisions, 43 percent). Five of these collisions (71 percent) were located within the roughly 2.5-mile section of PCH between Carbon Canyon Road and Big Rock Drive

Driver Under Influence

None of the dooring collisions involved DUI.

Shoulder Width

Only one dooring collision (14 percent) occurred where the shoulder was less than 8 feet wide, and one (14 percent) occurred where the shoulder was approximately 8.5 feet wide. The remaining five collisions (71 percent) occurred where the shoulder was more than 10 feet wide. None of the bicycle dooring collisions along PCH occurred where the shoulder is more than 12 feet wide.

4.3.3.5 Other Parking-Related Collisions

Four parking-related collisions do not fall into the previously identified categories.

Three collisions in the "Other" category involved a bicyclist striking a parked vehicle. These three parking-related bicycle collisions are not considered part of the "Dooring" category in **Table 4-11** on **page 4-13** but they are included in **Figure 4-2**. The three bicycle/parked vehicle collisions occurred many miles from each other, not in a concentrated area.

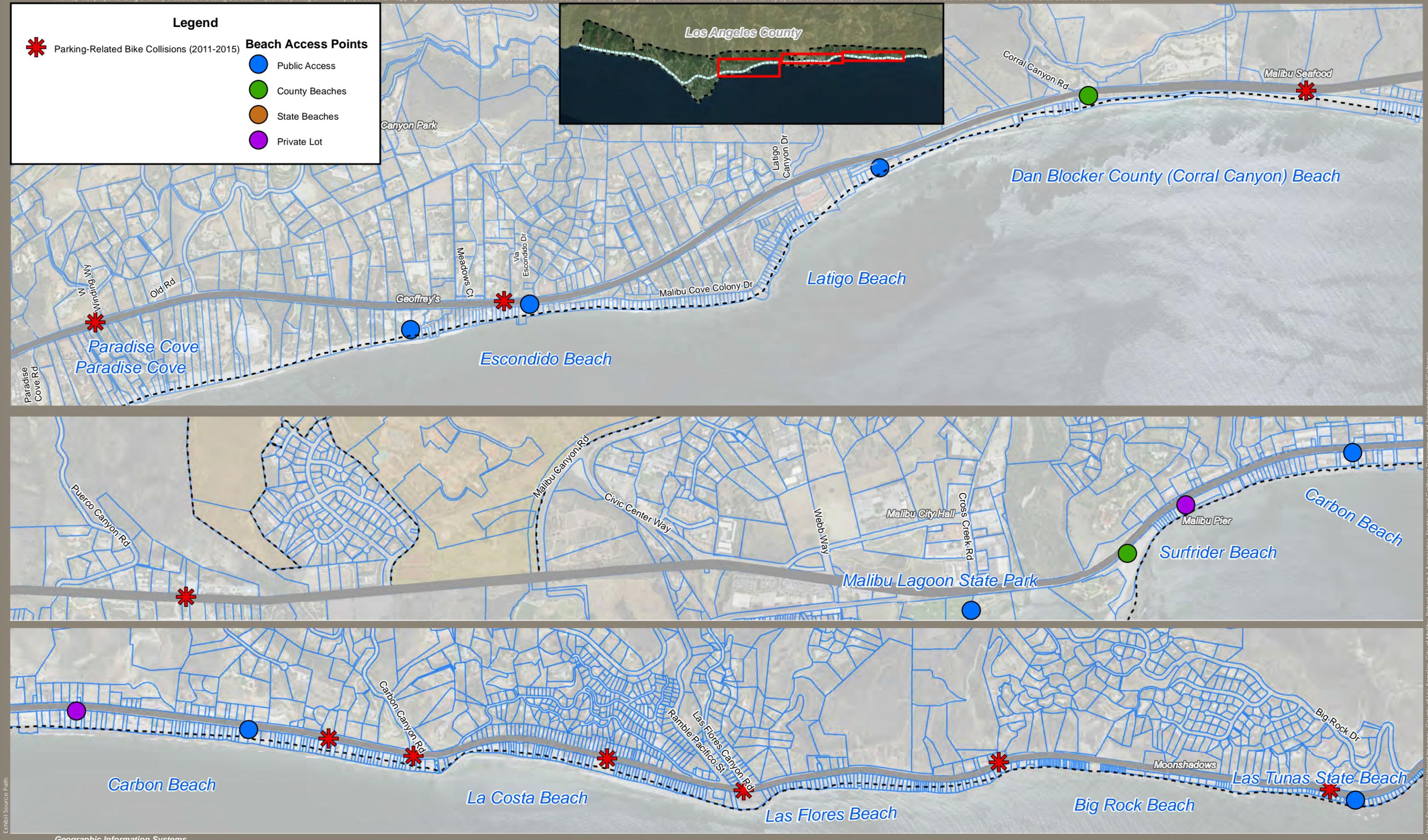


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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).

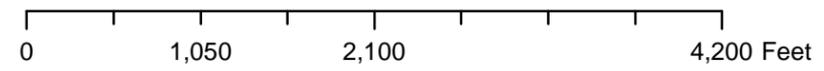


Figure 4-2
Parking-Related Collisions Involving Bicycles
4.19

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The remaining collision in the "Other" category involves a pedestrian. In this collision, the pedestrian was accessing the back seat of a parked car, which caused a motorist to stop suddenly to avoid the pedestrian and be rear-ended by another moving vehicle. Neither the pedestrian nor the parked car were struck; however, the collision report referenced the pedestrian and his parked vehicle as cause of the collision which leads to this collision being included in the analysis.

Severity

Two of the three bicycle-involved "Other" collisions (67 percent) resulted in injury, and none were fatal. The pedestrian-involved "Other" collision resulted in injury to a motorist.

Direction of Travel

One of the three bicycle-related "Other" collisions was on the inland side (33 percent) and two were on the ocean side (67 percent). The pedestrian-involved "Other" collision occurred on the inland side.

Driver Under Influence

None of the collisions in the "Other" category involved DUI.

Shoulder Width

One bicycle-related "Other" collision (33 percent) occurred where the shoulder width is less than 8 feet, and two (67 percent) occurred where the shoulder width is between 8 and 10 feet wide. The pedestrian-involved "Other" collision occurred where the shoulder width is less than 8 feet wide.

4.3.4 Collision Locations

As previously discussed, all parking-related collisions were mapped in a GIS system. The mapped locations of the collisions were placed as closely as possible based on the information provided in the collision reports (i.e., distance from nearest intersection), subject to the estimate made by the reporting officer, but may not be shown in the exact location where the collision actually occurred. However, mapping of the collisions has illustrated information regarding clusters of parking-related collisions at different locations along PCH.

The analysis of collision locations reveals that parking-related collisions did not occur in only a few concentrated locations. Collisions involving parked vehicles occurred along the entire length of PCH through the City and in both directions. However, the location of collisions shows that most parking-related collisions occur in areas where parking is frequently used as determined by numerous field visits by senior team members.

Preliminary analysis has confirmed that parking-related collisions are most frequent in the areas between Webb Way and Las Flores Canyon Road. This includes the Malibu Civic Center, Pier area, area east of the Pier, and areas where on-street parking is used continuously, day and

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night. High concentrations of parking collisions are also involved in other areas where parking is normally observed. These include:

- The ocean side of the highway between Las Flores Canyon Road and the eastern City Limit where many residential homes access PCH directly
- Areas where PCH passes very close to public beach access areas, such as Zuma Beach, Escondido Beach, and Dan Blocker Beach
- Areas where on-street parking is notably heavy near fee parking areas that serve isolated beaches, such as Nicholas Canyon County Beach, El Pescador, La Piedra, and El Matador State Beaches, and Paradise Cove
- Locations near parking areas for Santa Monica Mountains trailheads where capacity is typically exhausted early in the day leaving visitors to seek shoulder parking on PCH
- Areas that rely upon on-street parking to support businesses or employee parking on PCH, such as PCH at Heathercliff Road in the vicinity of Point Dume Shopping Area, Geoffrey's restaurant, Moonshadows restaurant, and Duke's Malibu restaurant.

The list above does not represent every location where a parking-related collision occurred during the five-year analysis period. There are other isolated locations where a parked vehicle was involved in a collision in an area that normally does not experience heavy parking demand.

Specific areas along PCH and relevant parking-related collision factors are discussed in the following sections. Detailed tables summarizing direction of travel, shoulder width, severity, month, and time of day are not provided for each area, unless a situation that is significantly different than the overall trends emerges, since this information has been presented in the previous sections. Some of these areas (beach access, businesses, points of interest) overlap and are addressed more than once.

An exposure rate is presented for the locations discussed below in addition to a parking-related collision rate per mile. The exposure rate measures the relative risk of being in a parking-related collision over five years based on the number of parked vehicles in an area. This estimates the relative collision risk against the amount of parking that is actually used rather than the number of spaces that are available. The number of parked vehicles was determined from a field observation made on a Saturday afternoon in July 2016. This summer weekend observation represents a high parking demand. The average exposure rate for this study is 0.21 collisions per parked vehicle and was determined from the locations analyzed here. The exposure rate can be compared between locations to identify segments that have a higher than average exposure rate for PCH in Malibu.

4.3.4.1 Webb Way to Las Flores Canyon Road

This 3.3-mile segment of PCH includes the Civic Center, Malibu Pier, and area east of the Pier. Although this 3.3-mile segment represents less than 16 percent of the 21-mile roadway segment, approximately 48 percent (149 collisions) of the total parking-related collisions occurred in this section of PCH. **Table 4-15** shows the collisions by type in this area, and **Figure 4-3** illustrates the collisions in this section of the roadway.



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Table 4-15 Collisions by Type, Webb Way to Las Flores Canyon Road

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	107	72%
Involving a Parking Maneuver	36	24%
Involving Obscured Sightlines due to Parked Vehicle	2	1%
Dooring (Bicyclists)	3	2%
Other Parking-Related Collisions	1	1%
Total	149	

The area between Webb Way and Las Flores Canyon Road includes varying uses and sub-areas, including the Civic Center Area, the Pier area, and the business and residential area east of the Pier. Each of these is further broken down and discussed individually. These areas represent different districts with different attractions and parking characteristics.

Malibu Civic Center Area: Webb Way to Cross Creek Road

The Malibu Civic Center area analyzed here extends from north of Webb Way to just beyond Cross Creek Road, approximately 0.7 mile. There were 11 collisions in the Civic Center area during the five-year analysis period for an average of 3.2 collisions per mile per year. With approximately 52 parked vehicles in this area observed on both sides of PCH during a typical Saturday afternoon in July 2016, the exposure rate is 0.21 collisions per parked vehicle. This exposure rate is equal to the average for PCH in Malibu. **Table 4-16** summarizes parking-related collisions by type in the Malibu Civic Center area.

Table 4-16 Collisions by Type, Malibu Civic Center Area

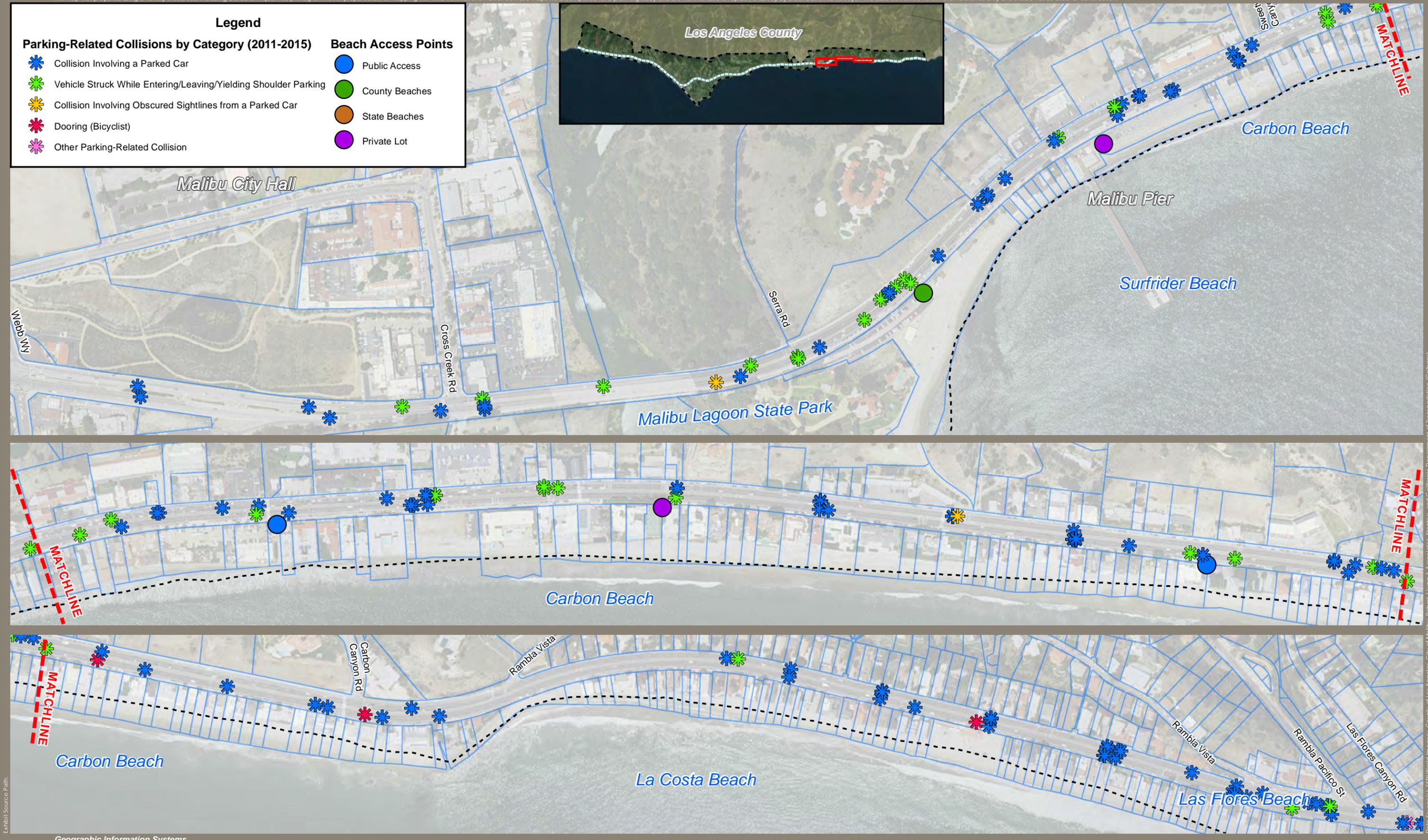
Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	8	73%
Involving a Parking Maneuver	3	27%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	0	0%
Total	11	

Eight of the collisions involved cars already parked, and three involved drivers performing parking maneuvers. One collision resulted in injury (9 percent) and none resulted in a fatality.

Parking is allowed in most of this area, and the shoulders are typically more than 10 feet wide.

Figure 4-4 shows the collisions in the Malibu Civic Center area, by type.





Legend

Parking-Related Collisions by Category (2011-2015)	Beach Access Points
Collision Involving a Parked Car	Public Access
Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking	County Beaches
Collision Involving Obscured Sightlines from a Parked Car	State Beaches
Dooring (Bicyclist)	Private Lot
Other Parking-Related Collision	

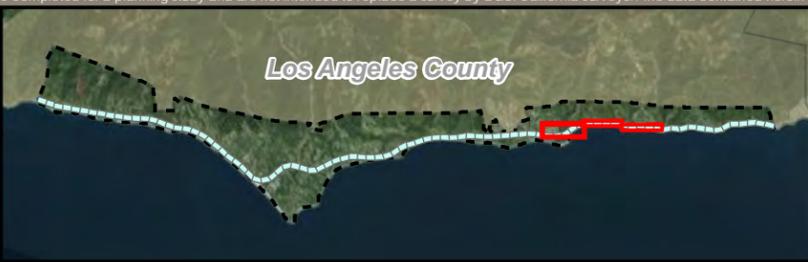


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).

Geographic Information Systems

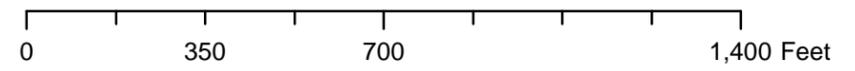


Figure 4-3
Collisions by Type - Webb Way to Las Flores Canyon Road
4.23



Legend

Parking-Related Collisions by Category (2011-2015)	Beach Access Points
Collision Involving a Parked Car	Public Access
Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking	County Beaches
Collision Involving Obscured Sightlines from a Parked Car	State Beaches
Dooring (Bicyclist)	Private Lot
Other Parking-Related Collision	

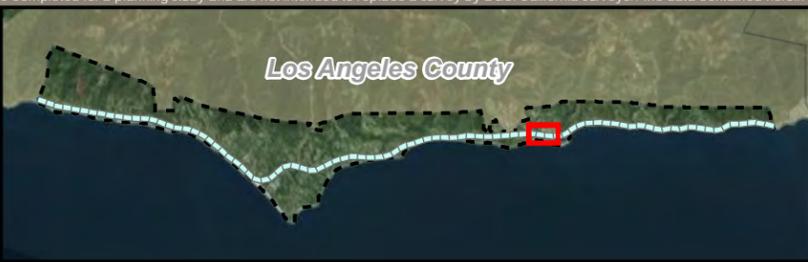
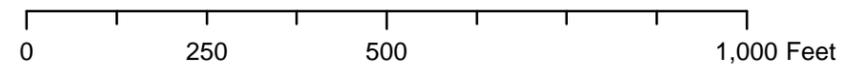


Exhibit Source Path:

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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stanlec, and California Department of Transportation (Caltrans).



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Pier Area: Serra Road to Sweetwater Canyon Drive

The Malibu Pier is located mid-way between Serra Road and Sweetwater Canyon Drive. From north of Serra Road to Sweetwater Canyon Drive, a distance of 0.5 miles, there were 33 parking-related collisions from January 2011 to December 2015. That is an average of 13.2 collisions per mile per year. Parking in this area is in constant use by residents and visitors, with 150 parked vehicles counted on both sides of PCH during a Saturday afternoon in July 2016. The exposure rate is 0.22 collisions per parked vehicle, which is 0.01 higher than the average exposure rate. **Table 4-17** summarizes parking-related collisions by type in the Malibu Pier area.

Table 4-17 Collisions by Type, Malibu Pier Area

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	21	64%
Involving a Parking Maneuver	11	33%
Involving Obscured Sightlines due to Parked Vehicle	1	3%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	0	0%
Total	33	

This area saw three types of parking collisions: 21 involved cars already parked, 11 involved drivers performing parking maneuvers, and 1 involved an obscured sight line. This area experienced 11 injury collisions (33 percent) and no fatal collisions.

The area north of Serra Road allows parking on the ocean side, and the shoulders are 8-feet 4-inches wide. Parking is restricted on the inland side of the roadway on both sides of Serra Road. Parking is mostly allowed north of Serra Road, beyond intersection restrictions to the first businesses near the Pier. In the business area, parking is mostly restricted, with some allowed parking areas. Shoulders in this area are typically wider than 10 feet, with some areas over 15 feet wide.

Figure 4-5 shows the collisions in the Malibu Pier area, by type.

Area East of Pier: Sweetwater Canyon Drive to Rambla Vista Road

This 1.5-mile section of businesses, hotels, multi-family residences, and single-family homes experienced 65 parking-related collisions during the five years from 2011 to 2015. The collision rate is 8.7 collisions per mile per year. With approximately 341 parked vehicles observed on both sides of PCH in this area on a July 2016 Saturday afternoon, the exposure rate is 0.19 collisions per parked vehicle, .02 less than the average exposure rate. **Table 4-18** summarizes parking-related collisions by type in the central Malibu area.

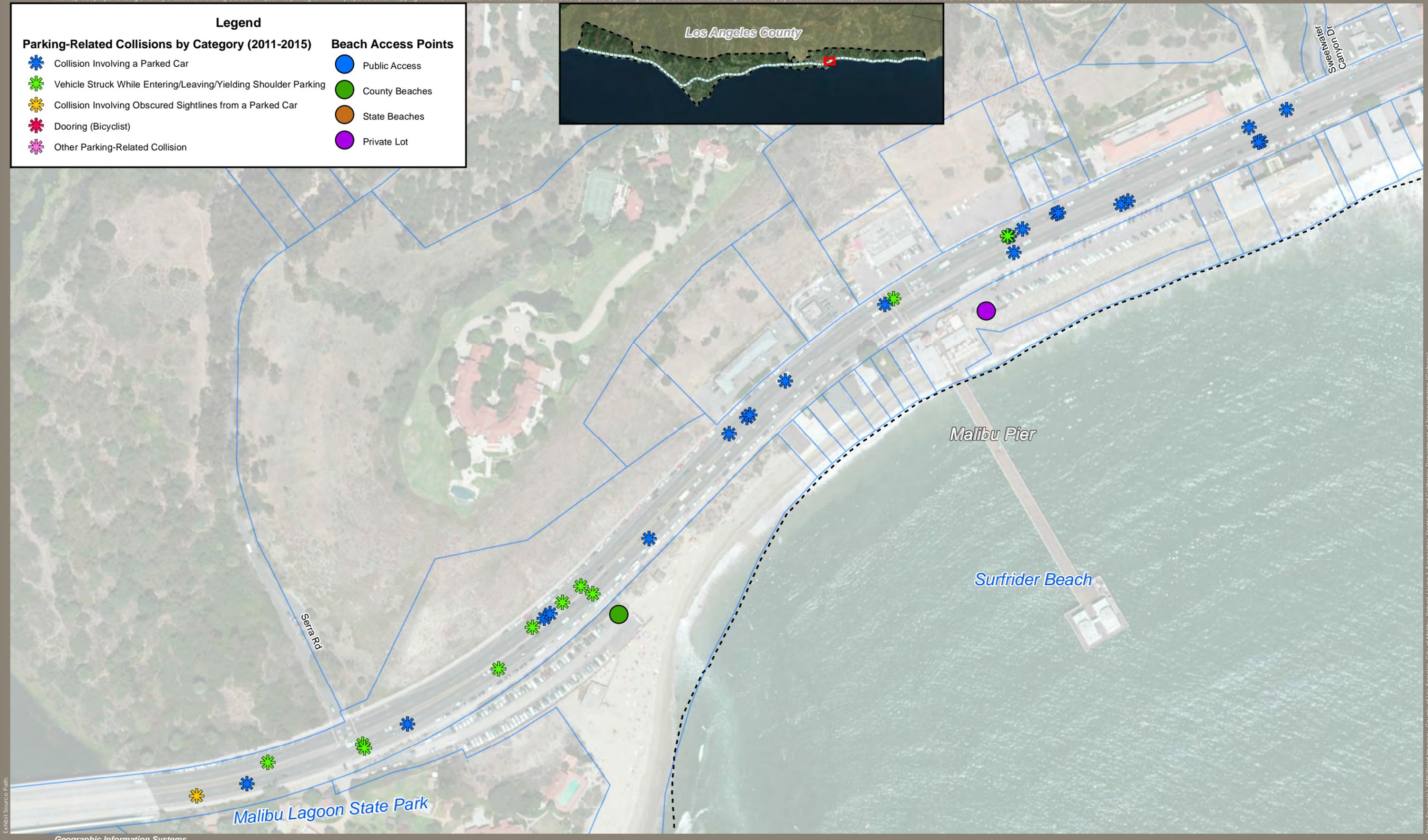


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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stantec, and California Department of Transportation (Caltrans).

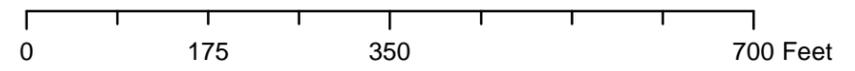


Figure 4-5
Collisions by Type - Malibu Pier Area
4.26

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Table 4-18 Collisions by Type, Area East of Pier

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	46	71%
Involving a Parking Maneuver	16	25%
Involving Obscured Sightlines due to Parked Vehicle	1	1%
Dooring (Bicyclists)	2	3%
Other Parking-Related Collisions	0	0%
Total	65	

This area had four types of parking collisions including parked vehicles, parking maneuvers, obscured sightlines, and bicyclists being doored. There were 2 dooring collisions and both occurred in the area around Carbon Canyon Road, with 1 being in an area where parking is not allowed. Both bicycle dooring collisions and 18 other collisions (20 total) resulted in injury (31 percent) and no collisions resulted in a fatality in this area.

Although the shoulders in this area are typically wide – over 10 feet, and up to 16 feet, there are also many driveways and areas that have parking restrictions, including driveways, fire hydrants, and red curbs.

Figure 4-6 shows the collision locations by type for the area east of the Pier.

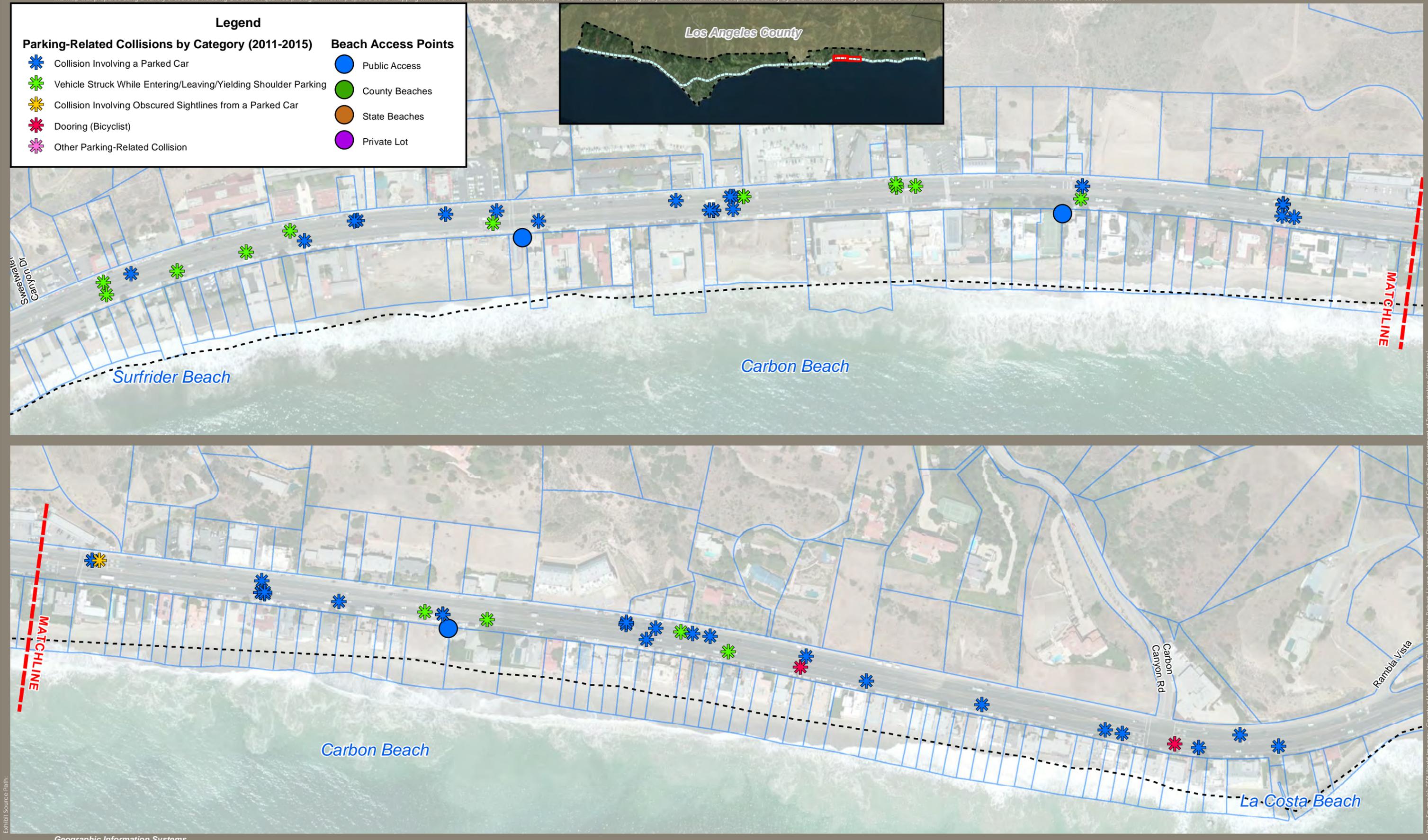
4.3.4.2 Las Flores Canyon Road to Eastern City Limit

The approximately 3-mile section of PCH from Las Flores Canyon Road to the eastern City Limit recorded 79 parking-related collisions from January 2011 to December 2015. This section of PCH has a collision rate of 5.2 collisions per mile per year. A total of 448 parked vehicles were observed on both sides of PCH during a July 2016 Saturday afternoon, which correlates to an exposure rate of 0.18 collisions per parked vehicle, .03 less than the average exposure rate.

Table 4-19 summarizes parking-related collisions by type in the Las Flores Canyon Road to Eastern City Limit area.

Table 4-19 Collisions by Type, Las Flores Canyon Road to Eastern City Limit

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	64	81%
Involving a Parking Maneuver	11	14%
Involving Obscured Sightlines due to Parked Vehicle	1	1%
Dooring (Bicyclists)	2	3%
Other Parking-Related Collisions	1	1%
Total	79	



Legend

Parking-Related Collisions by Category (2011-2015)

- Collision Involving a Parked Car
- Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
- Collision Involving Obscured Sightlines from a Parked Car
- Dooring (Bicyclist)
- Other Parking-Related Collision

Beach Access Points

- Public Access
- County Beaches
- State Beaches
- Private Lot



Figure 4-6
 Collisions by Type -Area East of Pier (Sweetwater Canyon Dr to Rambla Vista Rd)

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This area is approximately 3 miles in length, representing approximately 15 percent of the project area. With 79 collisions, about 25 percent of the parking-related collisions on PCH occurred in this area, with the majority involving parked cars, but all types of parking-related collisions are represented. Two of the collisions involved bicycle dooring, and both of these resulted in injury. A total of 31 parking-related collisions resulted in injury (39 percent), and no fatal collisions occurred in this area.

This area does not have many red curbs or parking restrictions, but it does have many driveways that restrict public parking. However, many cars are observed to be parked in these driveway areas, both perpendicular and parallel to the roadway.

This segment of PCH closely follows the coastline with only a single row of homes between the roadway and the shore. It has many homes on the ocean side of the highway, either with garage access directly on the road or with no garage or on-site parking at all so that residents and visitors have to rely on shoulder parking on PCH. The few homes on the inland side take access from side roads or from very long driveways. Many of the homes on the ocean side have sufficient area along their frontage that they can park their vehicles on their private property. Although the inland side of the highway is adjacent a cliff for the majority of this section of PCH, 52 percent of the parking collisions occurred on the inland side, and 48 percent were on the ocean side of the highway.

Figure 4-7 shows the collisions and types for the Las Flores Canyon Road to eastern City limit area.

4.3.4.3 Beach Access Areas

Several beaches are located close to the highway, such as Zuma Beach, Escondido Beach, and Dan Blocker State Beach with little or no development between the shore and the highway. These are beach areas where many visitors use shoulder parking.

Zuma Beach

The Zuma Beach area examined here extends from Trancas Canyon Road to Westward Beach Road, a distance of 1.8 miles. Over the five-year analysis period, 18 collisions occurred adjacent to Zuma Beach. The collisions were spread along the entire 1.8-mile length, with a collision rate of 2.0 collisions per mile per year. There were 407 parked vehicles observed on both sides of PCH on a July 2016 Saturday afternoon, which correlates to an exposure rate of 0.04 collisions per parked vehicle, 0.17 less than the average exposure rate. **Table 4-20** summarizes parking-related collisions by type in the Zuma Beach area.

The City's PCH Bike Route Improvement Project, which was completed in 2015, improved parking conditions adjacent to Zuma Beach, and parking collisions in the area may decrease as a result of the recent improvements.

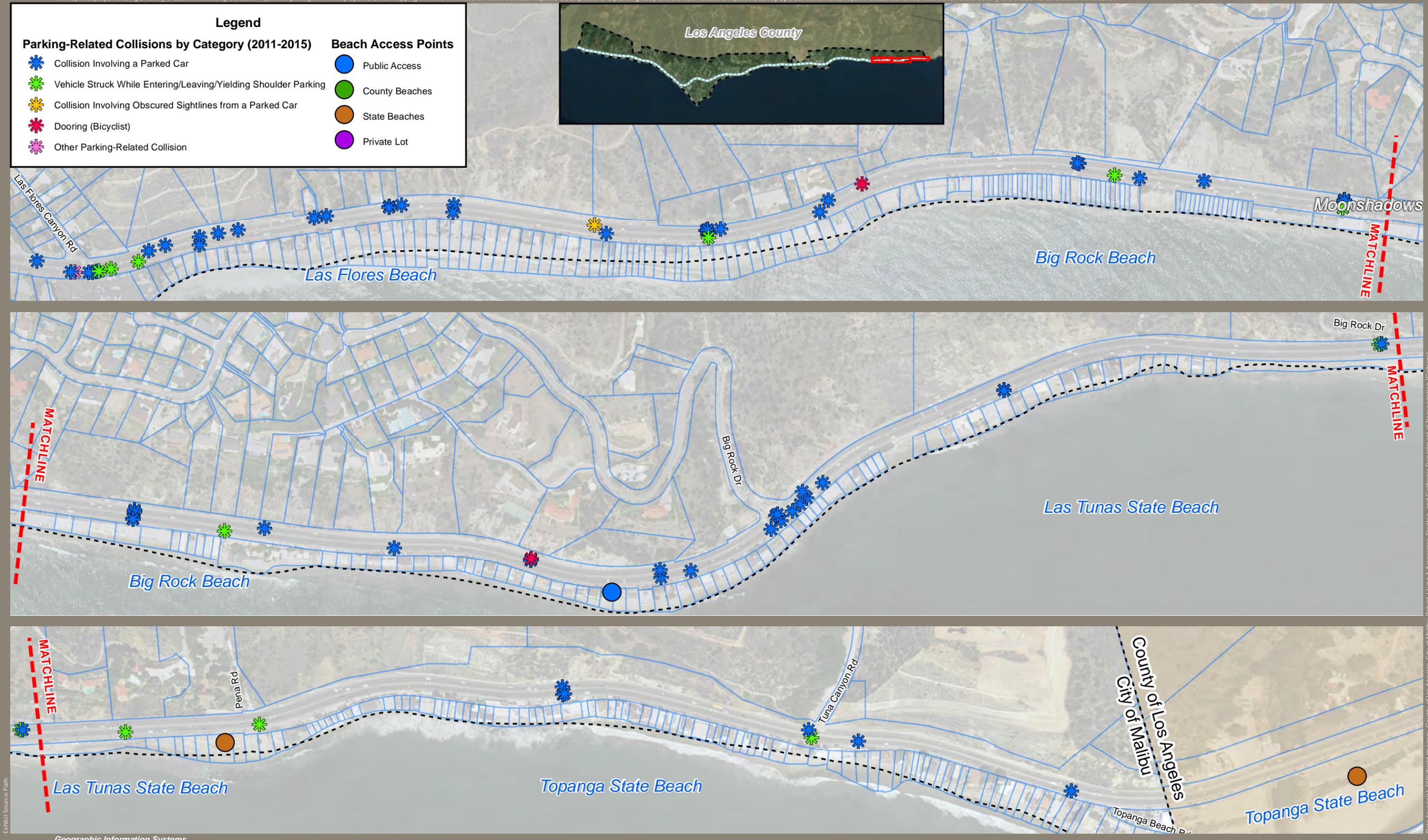


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stanlec, and California Department of Transportation (Caltrans).

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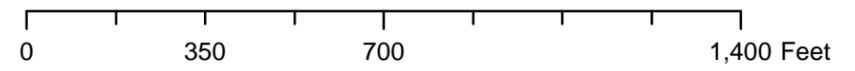


Figure 4-7
Collisions by Type - Las Flores Canyon Road to Eastern City Limit

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Table 4-20 Collisions by Type, Zuma Beach

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	12	67%
Involving a Parking Maneuver	6	33%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	0	0%
Total	18	

Zuma Beach has a very large parking lot available; however, many visitors choose to park on the shoulder to avoid the parking fee. Of the 18 parking-related collisions adjacent to Zuma Beach, 7 occurred on the inland side where parking is prohibited. One collision on the inland side was located where the shoulder is less than 8 feet wide. The remaining collisions occurred where the shoulder is more than 8 feet or within the intersection of Busch Drive or Bonsall Drive/Westward Beach Road. A total of 5 collisions in the Zuma Beach area resulted in injury (28 percent), and no collisions resulted in a fatality.

Figure 4-8 shows the collisions in the Zuma Beach area.

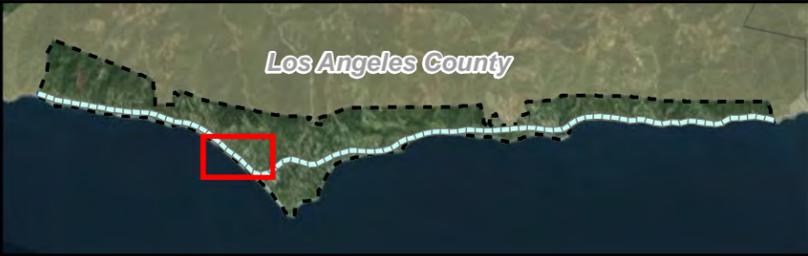
Escondido Beach

There were 12 parking-related collisions adjacent to Escondido Beach from about 500 feet south of Old Road to Via Escondido Drive, a distance of 0.6 miles. Five of these collisions occurred after 5:00 PM and may be associated with parking for Geoffrey's Restaurant. The collision rate is 4.2 collisions per mile per year, and with 125 parked vehicles observed on both sides of PCH during a typical summer Saturday afternoon, the exposure rate is 0.10 collisions per parked vehicle, 0.11 less than the average.

Figure 4-9 and **Table 4-21** show the collisions in the Escondido Beach area.

Table 4-21 Collisions by Type, Escondido Beach

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	8	67%
Involving a Parking Maneuver	3	25%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	1	8%
Other Parking-Related Collisions	0	0%
Total	12	



Legend

Parking-Related Collisions by Category (2011-2015)	Beach Access Points
Collision Involving a Parked Car	Public Access
Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking	County Beaches
Collision Involving Obscured Sightlines from a Parked Car	State Beaches
Dooring (Bicyclist)	Private Lot
Other Parking-Related Collision	

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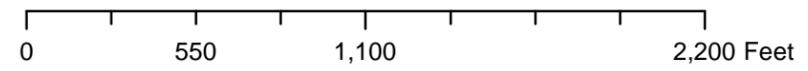


Figure 4-8
Collisions by Type - Beach Access Areas - Zuma Beach
4.32

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).

Legend

Parking-Related Collisions by Category (2011-2015)

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision

Beach Access Points

-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot

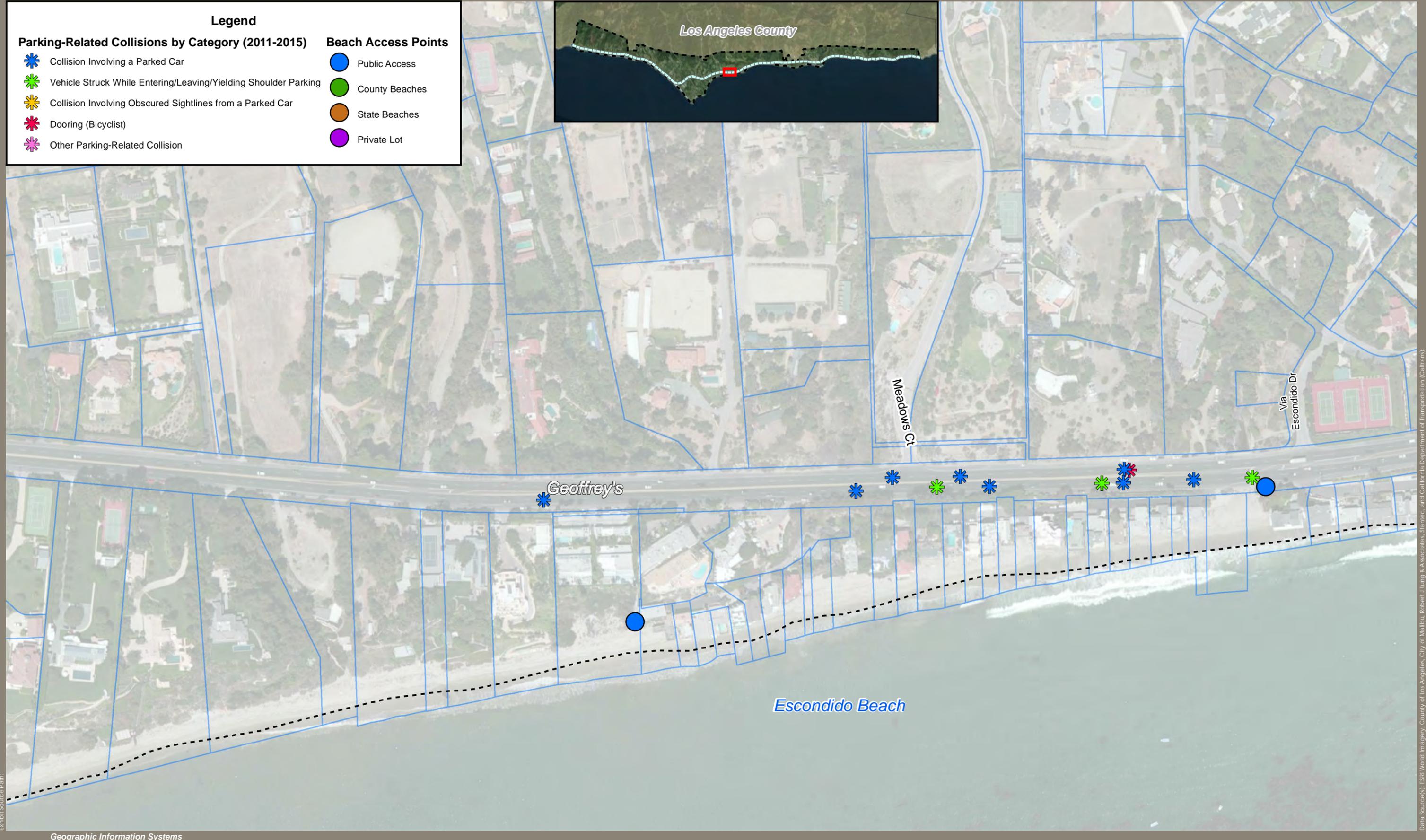
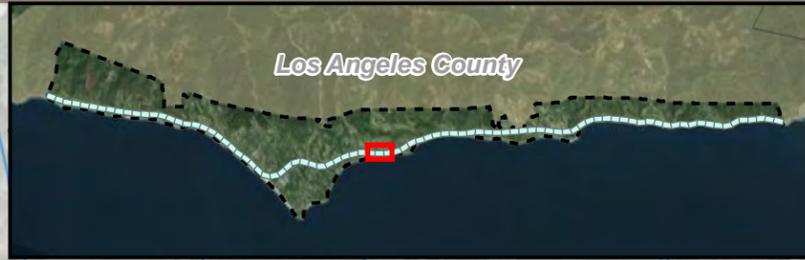


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Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stantec, and California Department of Transportation (Caltrans).

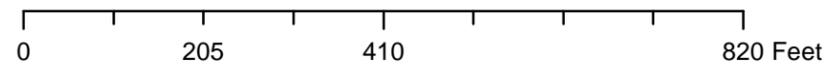


Figure 4-9
Collisions by Type - Beach Access Areas - Escondido Beach

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Four of the parking-related collisions in the Escondido Beach area resulted in injury (33 percent), and none were fatal. Two of the injury collisions occurred on the inland side where the shoulder was less than 8 feet wide. The remaining 8 collisions adjacent to Escondido Beach occurred where the shoulder was more than 8 feet wide.

Dan Blocker Beach

There were 10 parking-related collisions in the 1.2 mile area adjacent to Dan Blocker Beach, from Latigo Shore Drive to Malibu Road, for a collision rate of 1.7 collisions per mile per year. Five of these collisions were clustered just south of Corral Canyon Road, and three were concentrated just south of Malibu Seafood Restaurant/Sara Wan Trailhead parking. On a July 2016 Saturday afternoon, there were 198 parked vehicles observed on both sides of PCH adjacent to Dan Blocker County Beach. The exposure rate is 0.05 collisions per parked vehicle, 0.16 less than the average exposure rate. **Table 4-22** summarizes the parking-related collisions by type for the Dan Blocker Beach area.

Table 4-22 Collisions by Type, Dan Blocker Beach

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	6	60%
Involving a Parking Maneuver	2	20%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	2	20%
Total	10	

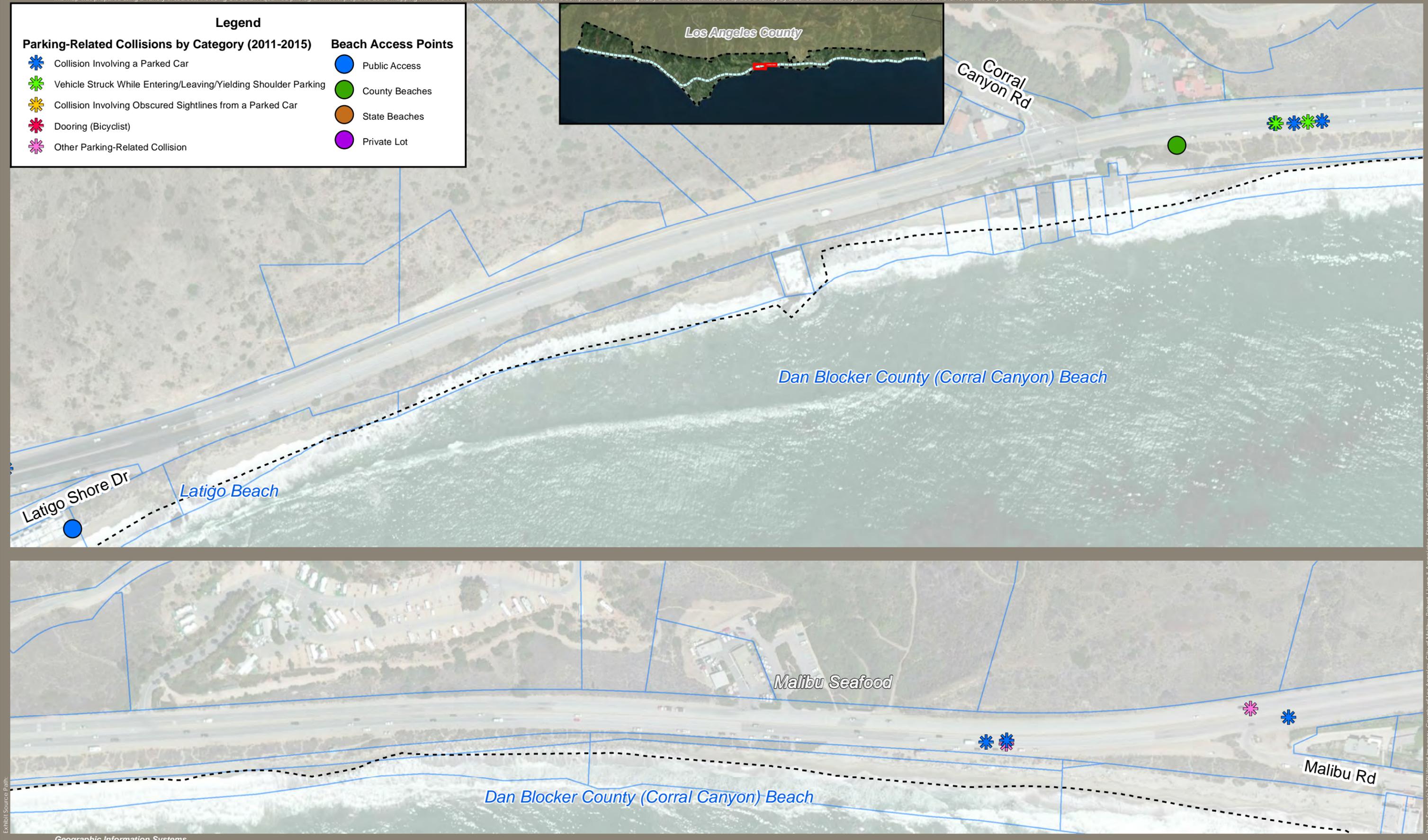
Of these collisions, 8 occurred on the ocean side and 2 occurred on the inland side of the highway. One of the parking-related collisions adjacent to Dan Blocker Beach resulted in a fatality, and 5 resulted in injuries. The fatal collision, discussed previously, occurred on the ocean side of PCH in an area where the shoulder is more than 12 feet wide.

Figure 4-10 shows the collisions in the Dan Blocker Beach area.

4.3.4.4 Beach Parking Areas in Isolated Locations

Nicholas Canyon County Beach

Nicholas Canyon County Beach provides 154 parking spaces and charges \$3 to \$10 to park all day. There was 1 parking-related collision near the parking lot for Nicholas Canyon County Beach, it involved a parked vehicle, and it was located on the ocean side of the highway. This parking-related collision did not result in injury or fatality. **Figure 4-11** shows the location of this collision.

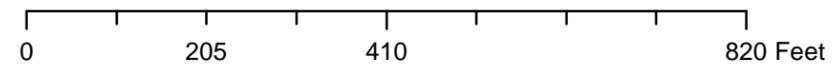


Legend

Parking-Related Collisions by Category (2011-2015)	Beach Access Points
Collision Involving a Parked Car	Public Access
Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking	County Beaches
Collision Involving Obscured Sightlines from a Parked Car	State Beaches
Dooring (Bicyclist)	Private Lot
Other Parking-Related Collision	

Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stanlec, and California Department of Transportation (Caltrans).



Collisions by Type - Beach Access Areas - Dan Blocker (Corral Canyon) County Beach

Figure 4-10

Legend

Parking-Related Collisions by Category (2011-2015)

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision

Beach Access Points

-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot



Exhibit Source Path:

Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Stanlec, and California Department of Transportation (Caltrans).

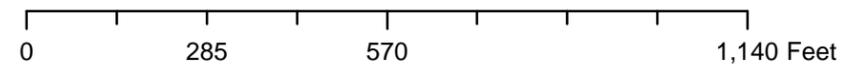


Figure 4-11
Collisions by Type - Isolated Beach Parking Areas - Nicholas Canyon County Beach

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El Pescador State Beach/La Piedra State Beach/El Matador State Beach

Parking lots for El Pescador, La Piedra, and El Matador State Beaches charge from \$10 to \$15 and provide between approximately 25 and 45 spaces.

There were no reported parking-related collisions in the vicinity of La Piedra State Beach.

There was one parking-related collision in the vicinity of El Pescador State Beach and 1 near El Matador State Beach. Both of these collisions were located on the inland side of the highway and both involved parked vehicles. The parking-related collision near El Matador State Beach resulted in injury.

There were a total of 185 parked vehicles on both sides along PCH from El Pescador Beach Road to El Matador Beach Road, approximately one mile, during a July 2016 Saturday afternoon, which correlates to an exposure rate of 0.01 collisions per parked vehicle, 0.20 less than the average.

Figure 4-12 shows the collisions in the El Pescador, La Piedra, and El Matador State Beach areas.

Paradise Cove

Paradise Cove parking is privately operated and charged from \$35 to \$50 per day during the five-year analysis period. Although approximately 229 spaces are available in the parking lot, and parking on PCH requires a long walk, many visitors to Paradise Cove park on PCH. There were 9 parking-related collisions along PCH near Paradise Cove Drive from Zuma View Place to W. Winding Way. Six of these collisions occurred on the inland side of the highway and 3 occurred on the ocean side. The collision rate for the 0.6 mile surrounding Paradise Cove Drive is 2.9 collisions per mile per year. Approximately 170 parked vehicles were counted on both sides of the street during a Saturday afternoon in July 2016; therefore, the corresponding exposure rate is 0.05 collisions per parked vehicle, 0.16 less than the average.

Seven of the parking-related collisions near Paradise Cove involved vehicles colliding with a parked vehicle, while 1 involved the driver performing parking maneuvers, and 1 was identified as "Other" and involved a bicycle crashing into the back of a parked car (i.e., not a "dooring" collision). One of the fatal parking-related collisions occurred in this area, and 2 collisions resulted in injury (22 percent).

Figure 4-13 shows the collisions in the Paradise Cove area.

4.3.4.5 Mountain Trailhead Locations

Sara Wan Trailhead

The parking lot for the Sara Wan Trailhead south of Corral Canyon Road, adjacent to Malibu Seafood restaurant, has 14 spaces. Shoulder parking near the trailhead parking lot experienced 5 collisions during the five-year analysis period. These parked vehicles may have been parked for

Legend

Parking-Related Collisions by Category (2011-2015)

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision

Beach Access Points

-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot

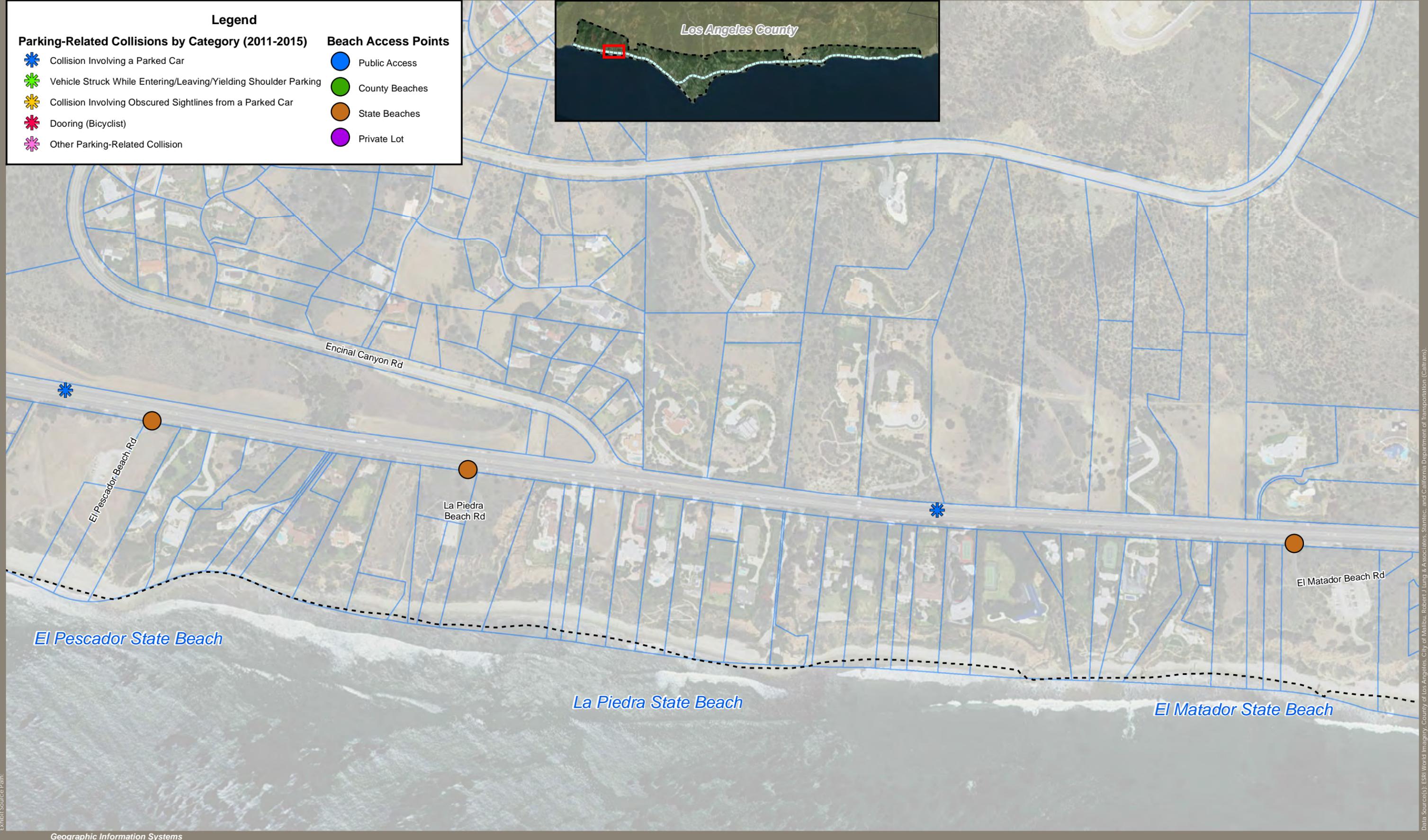
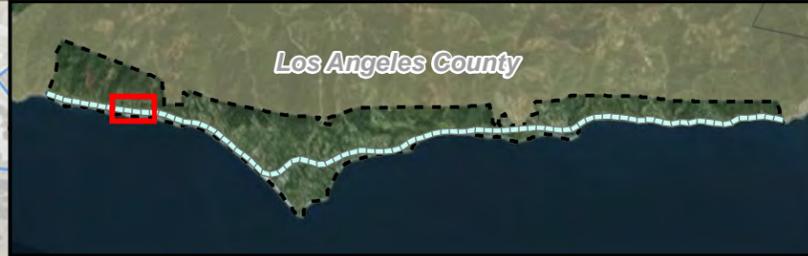
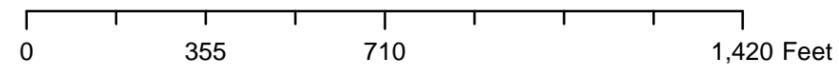


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Staniec, and California Department of Transportation (Caltrans).

Geographic Information Systems



Collisions by Type - Isolated Parking Areas - El Pescador/La Piedra/El Matador Beaches

Figure 4-12

Legend

Parking-Related Collisions by Category (2011-2015)

Beach Access Points

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision
-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot

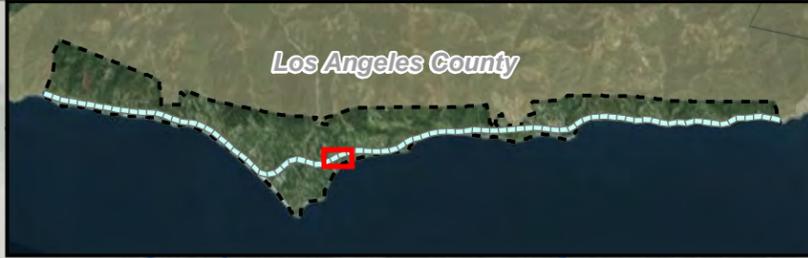


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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Starlec, and California Department of Transportation (Caltrans).

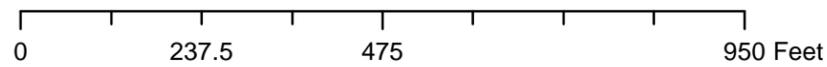


Figure 4-13
Collisions by Type - Isolated Beach Parking Areas - Paradise Cove

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the trailhead, Malibu Seafood, or the beach. One collision was located on the inland side of the highway, and 4 were located on the ocean side. Details about the parking-related collisions in this area are included under the previous discussion for Dan Blocker County Beach.

Winding Way Trail Parking

A parking lot is located at the northwest corner of Winding Way and PCH for access to Escondido Canyon Park. The parking lot provides approximately 14 unmarked parking spaces. Five parking-related collisions were recorded during the five-year analysis period within the vicinity of Winding Way. Three of these collisions are within 1,000 feet of Paradise Cove Road and may be associated with Paradise Cove parking rather than for Escondido Canyon Park. One of these collisions occurred on the inland side of the highway and 4 occurred on the ocean side. All 5 collisions involved a parked vehicle, and 1 involved a bicyclist colliding with a parked vehicle. Two parking-related collisions resulted in injury, and none were fatal.

4.3.4.6 On-Street Parking Near Businesses

Some businesses rely on shoulder parking to augment their off-street parking. These businesses and areas are discussed below.

Point Dume Village Shopping Center

Four collisions occurred near Point Dume Village Shopping Center, near Heathercliff Road, during the five-year period. Four parked vehicles were observed on both sides of PCH in the area of Point Dume Village Shopping Center on a recent Saturday afternoon in July, which results in an exposure rate of 1.00 collisions per parked vehicle. This exposure rate is significantly higher than the average exposure rate of 0.21 collisions per parked vehicle. All 4 parking-related collisions near Point Dume Village Shopping Center involved a parked vehicle, all occurred on the inland (northbound) side of the roadway, and none resulted in injury or fatality. The shoulders in this area range from under 8 feet to over 15 feet.

Figure 4-14 shows the collisions near the Point Dume Village Shopping Center.

Geoffrey's Restaurant

Geoffrey's Restaurant is located just north of Meadows Court adjacent to Escondido Beach and experienced 12 parking-related collisions. Since 5 of these collisions occurred after 5:00 PM they may be associated with parking for Geoffrey's Restaurant rather than the beach. Details about the parking-related collisions in this area are included under the previous discussion for Escondido Beach.

Rambla Pacifico Street/Las Flores Canyon Road/Duke's Malibu Restaurant

The 0.5-mile section of PCH around Rambla Pacifico Street and Las Flores Canyon Road had 41 parking-related collisions during the five-year period. This area has several small businesses on the inland side of PCH north of Rambla Pacifico Street as well as Duke's Malibu Restaurant

Legend

Parking-Related Collisions by Category (2011-2015)

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision

Beach Access Points

-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot

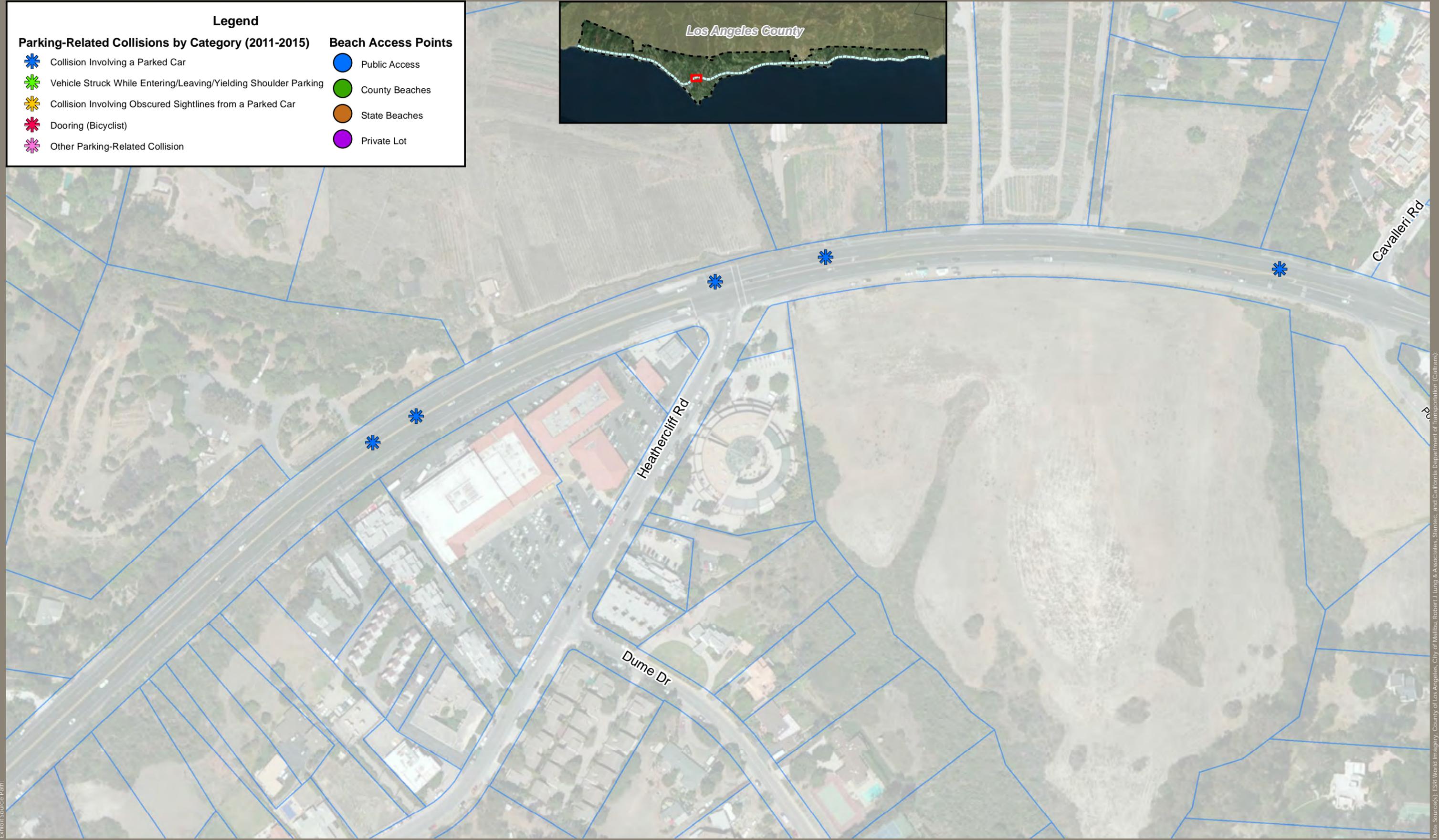
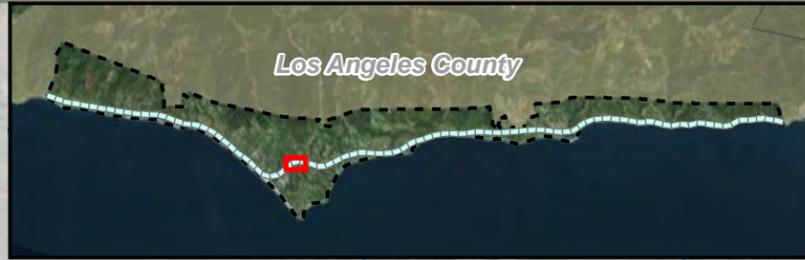


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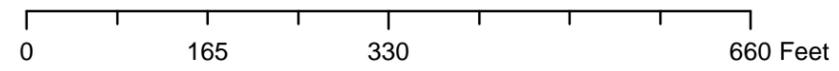


Figure 4-14
Collisions by Type - Parking Near Businesses - Point Dume Village

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opposite Las Flores Canyon Road. A total of 14 collisions occurred during the late night or early morning hours, and may be associated with Duke's Restaurant rather than the other businesses in the area. There were 131 parked vehicles observed on both sides of PCH on a July 2016 Saturday afternoon, which correlates to 0.31 collisions per parked vehicle, 0.10 higher than the average exposure rate. **Table 4-23** summarizes the parking-related collisions by type for the Rambla Pacifico Street/Las Flores Canyon Road/Duke's Malibu Restaurant area.

Table 4-23 Collisions by Type, Business Areas: Duke's Restaurant Area

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	35	85%
Involving a Parking Maneuver	5	12%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	1	3%
Total	41	

In this area, 35 collisions involved a parked vehicle, 5 involved a driver performing parking maneuvers, and 1 involved a bicyclist striking a parked vehicle. A total of 16 collisions resulted in injury (39 percent) and none were fatal. The shoulders also vary significantly in this area, from under 6 feet to over 17 feet.

Figure 4-15 shows the collisions in the area around Duke's Restaurant.

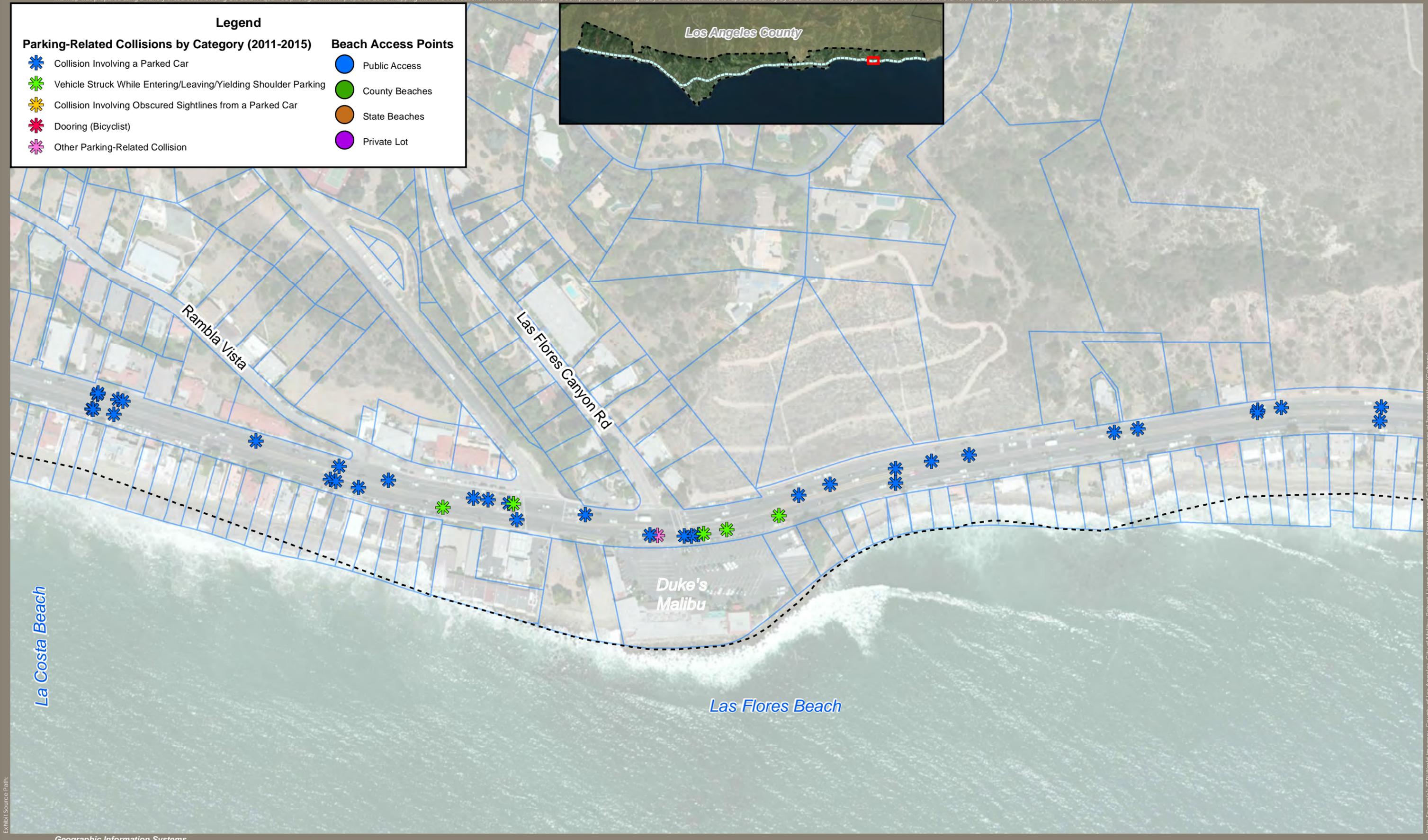
Moonshadows Restaurant

Moonshadows Restaurant is located about one mile south of Las Flores Canyon Road within the area previously discussed for Las Flores Canyon Road to Eastern City Limits. A total of 11 parking-related collisions occurred in the 0.3 mile area in the vicinity of Moonshadows. There were 45 vehicles parked in the vicinity on both sides of PCH on a typical Saturday afternoon in July 2016 which produces a rate of 0.24 collisions per parked vehicle, 0.03 higher than the average. **Table 4-24** summarizes the parking-related collisions by type for the Moonshadows area.

Table 4-24 Collisions by Type, Business Areas: Moonshadows Restaurant

Type of Collision	Number of Collisions	%
Involving a Parked Vehicle	10	91%
Involving a Parking Maneuver	1	9%
Involving Obscured Sightlines due to Parked Vehicle	0	0%
Dooring (Bicyclists)	0	0%
Other Parking-Related Collisions	0	0%
Total	11	





Legend

Parking-Related Collisions by Category (2011-2015)	Beach Access Points
Collision Involving a Parked Car	Public Access
Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking	County Beaches
Collision Involving Obscured Sightlines from a Parked Car	State Beaches
Dooring (Bicyclist)	Private Lot
Other Parking-Related Collision	

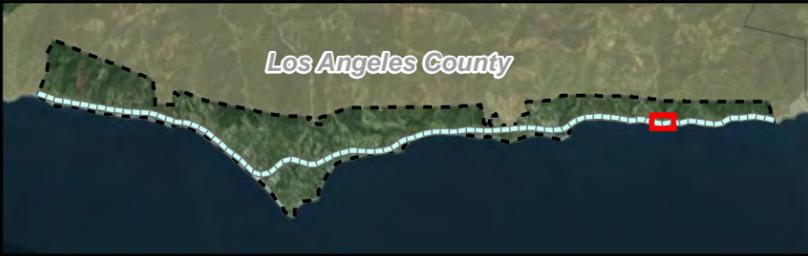


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Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).

Geographic Information Systems

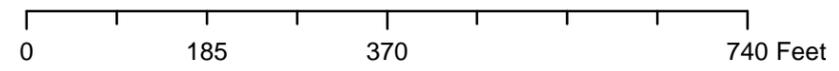


Figure 4-15
Collisions by Type - Parking Near Businesses - Duke's Malibu Restaurant

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Of the 11 collisions, 10 involved parked cars, and 1 involved parking maneuvers. Five of the parking-related collisions occurred during late night or early morning hours. Four parking-related collisions resulted in injury, but none were fatal.

Figure 4-16 shows the collisions in the area around Moonshadows restaurant. The exhibit appears to show several parking-related collisions clustered at two hot spots; however, these two positions are exactly 1 mile south of Las Flores Canyon Road and 0.50 mile north of Big Rock Drive, which indicate an estimate made by the officers taking the collision reports and is likely not an exact location of the collision.

4.4 CONCLUSIONS

Examination of the parking-related collision data reveals that 310 parking-related collisions occurred along PCH during the five-year period from January 2011 to December 2015. Approximately 32 percent of the parking-related collisions resulted in injury, either severe injury, visible injury or complaint of pain, and two of the collisions resulted in a fatality. The majority of parking-related collisions (67 percent) were property damage only. Approximately 58 percent of the collisions occurred during the five warm weather months from May to September when the parking demand along PCH is the highest.

Approximately 53 percent of the parking-related collisions were located on the inland side of the highway and 47 percent were on the ocean side. Parking-related collisions occurred along every segment of PCH from the western City Limit to the eastern City Limit; however, the largest concentration of collisions occurred in the 3.3-mile stretch between Webb Way and Las Flores Canyon Road where approximately 48 percent of the parking-related collisions were located. This area, which includes the Civic Center, Malibu Pier, and area east of the Pier, has a high demand for parking year-round.

Parking-related collisions occurred at all shoulder widths, from less than 8 feet wide to over 12 feet wide. Approximately 54 percent of the shoulder along PCH is between 8 and 12 feet wide, and 54 percent of the parking-related collisions occurred where the shoulder is this wide. Approximately 12 percent of the shoulder is more than 12 feet wide, and 24 percent of the parking-related collisions occurred here. Providing more than 12 feet of shoulder parking area does not guarantee a safer parking environment.

Approximately 74 percent of the parking-related collisions directly involved a vehicle parked on the shoulder of PCH. Approximately 21 percent involved a vehicle performing parking maneuvers or a vehicle trying to avoid a vehicle performing parking maneuvers. Approximately 5 percent of the parking-related collisions involved motorists whose sight lines were obscured due to parked vehicles, bicyclists being "doored", and bicyclists striking parked vehicles. Although only a small percentage of the parking-related collisions involved pedestrians being struck or bicyclists, all but one resulted in injury and one resulted in a fatality. Collisions involving bicyclists or pedestrians frequently result in injury.

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As previously discussed, there were pedestrian-related collisions which may have involved pedestrians crossing PCH to or from their parked vehicle, including nine fatalities over the five-year analysis period. However, these pedestrian collisions were not included in this parking study unless the parked vehicle was referenced in the collision report as a contributing factor to the collision. There are many other scenarios which could involve pedestrians besides crossing PCH from a parked vehicle (riding a bus, jogging, crossing from one home to another or from a home to a business, etc), and without a direct reference to a parked vehicle being involved in the collision, these pedestrian collisions cannot be included in the parking-related collision analysis.

Legend

Parking-Related Collisions by Category (2011-2015)

-  Collision Involving a Parked Car
-  Vehicle Struck While Entering/Leaving/Yielding Shoulder Parking
-  Collision Involving Obscured Sightlines from a Parked Car
-  Dooring (Bicyclist)
-  Other Parking-Related Collision

Beach Access Points

-  Public Access
-  County Beaches
-  State Beaches
-  Private Lot

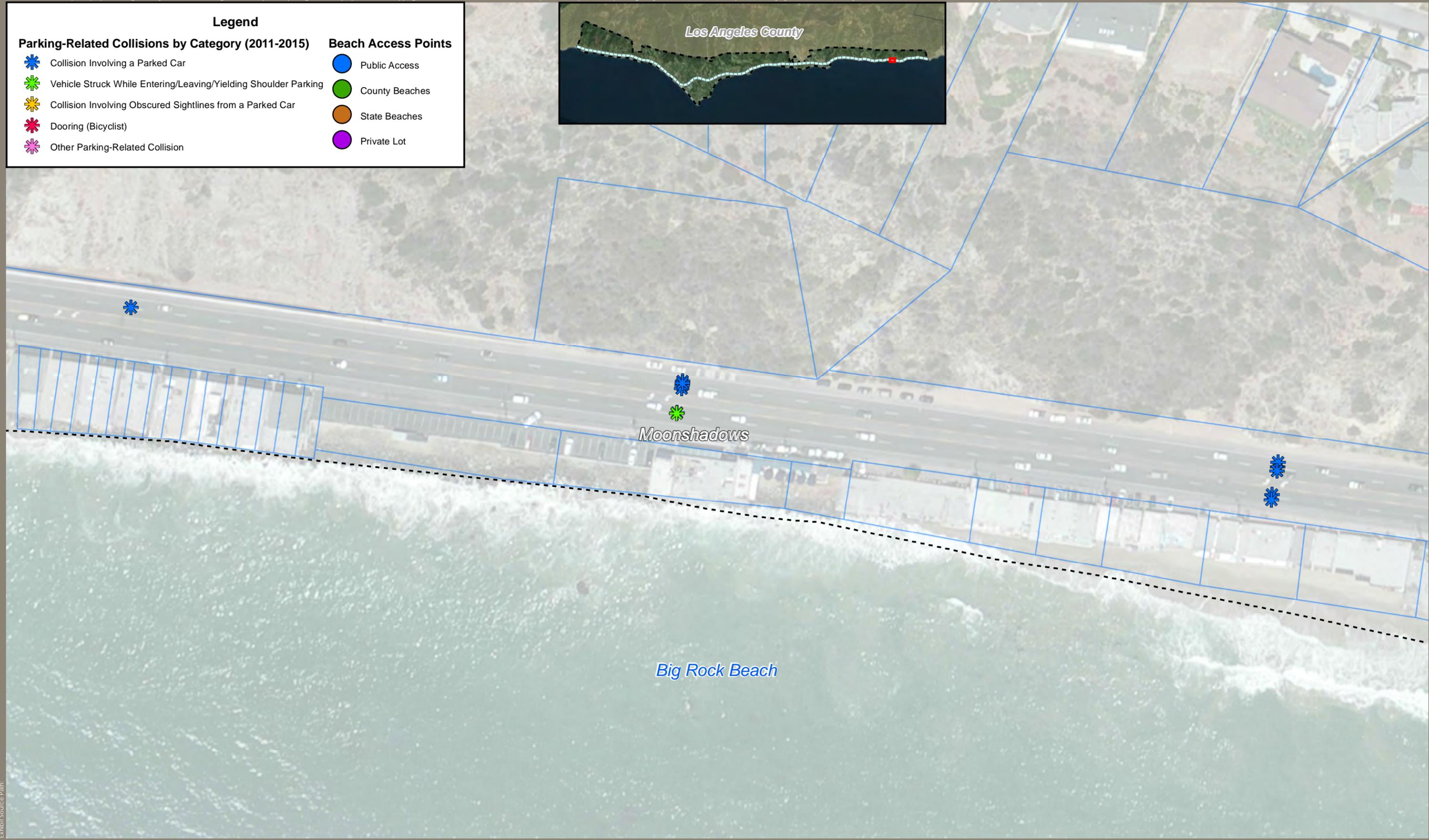


Exhibit Source Path:

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Lung & Associates, Staniec, and California Department of Transportation (Caltrans).



5.0 PARKING RECOMMENDATIONS

5.1 BACKGROUND

The safety and mobility analysis showed where parking-related collisions were occurring along the roadway. However, the most important conclusion to remember from the analysis was that parking-related collisions can occur in many locations, on both sides of the highway, under many varied roadway and shoulder conditions. Most parking-related collisions directly involve a parked vehicle being struck, but many parking-related collisions involve vehicles performing parking maneuvers. Therefore, many strategies are needed to improve parking safety.

Strategies include widening shoulders, improving marking and signage of existing parking restrictions, increasing parking supply in some areas, and establishing new on-street parking restrictions in other areas. Because the CCC is charged with maintaining and increasing public access to coastal resources, any recommended reduction of parking was noted and matched as much as possible with an added parking location that was found to be more convenient to residents and visitors seeking to utilize recreational sites in the area. However, there are many obstacles to increasing the parking areas along PCH, including physical challenges such as building removal, extensive excavation, or utilities relocation, ROW challenges where private property is involved, and financial challenges.

Per Caltrans, the minimum allowable shoulder width is 8 feet (HDM Table 302.1). However, 10 feet is preferred where on-street parking is allowed, and the goal of the recommendations is to provide parking with a shoulder width of 10 feet or more to allow for drivers to enter and exit their vehicle, bicycles to avoid the doors of parked vehicles, and pedestrians to walk adjacent to parked vehicles where no sidewalk exists. Parking along shoulders less than 8 feet wide is not allowed by Caltrans. The recommendations include installing No Parking signs to officially prohibit parking where the shoulder width is less than 8 feet. Where the shoulder is currently less than 8 feet and the roadway alignment is relatively straight, widening the shoulder to between 8 and 10 feet is sufficient to recommend adding parking.

Each strategy is discussed in more detail in **Sections 5.1.1 through 5.1.3**, but criteria was outlined before determining the recommendation for each location. The preliminary strategies were also discussed with the public at a Public Workshop held November 29, 2016, and public input on site-specific recommendations was solicited. Public input is noted in **Section 5.1.4**. The main strategies are as follows:

- **Shoulder Widening.** Where the shoulder can be widened to provide additional parking spaces, this can be recommended. Shoulder widening can be done through restriping of the existing paved area or by providing additional pavement. Criteria for recommending widening the shoulder includes wide travel lanes, wide median, or unpaved area adjacent to the shoulder which would provide additional space for widening of the paved shoulder to 8 feet or more where the roadway alignment is relatively straight or 10

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feet or more elsewhere. Another consideration is proximity to existing or future access points. If shoulder widening can be completed through restriping, special consideration must be given to the shoulder pavement condition, including the joint between the travel lanes and the shoulder.

- **Parking Restrictions.** If parking in a certain area could contribute to a safety issue, and its safety cannot be feasibly improved through shoulder widening or other improvements, the recommendation is to restrict parking. Criteria for removing parking includes shoulders less than 8 feet where parking is not currently prohibited (and cannot be improved through shoulder improvements), uncontrolled pedestrian crossings, low parking demand (existing and future anticipated), or compromised sight distance at intersections and driveways. When the removal of parking on one side of the highway allows restriping of the travel lanes to widen the shoulder on the opposite side, additional spaces or improved parking can be recommended on the opposite side. Parking restrictions at bus stops that are not currently signed No Parking are also recommended to provide for safe loading and unloading of bus passengers.
- **Improving Current Parking Restrictions.** There are areas where the current restrictions are unclear, often due to missing or damaged signs. Criteria for emphasizing current parking restrictions includes missing or deteriorated signage, deteriorated curb markings, or narrow shoulders that cannot feasibly be widened to 8 feet or more due to physical, ROW, or financial constraints. Caltrans is in the process of replacing missing signs along PCH; however, this report provides a review of conditions from 2016.
- **Eliminating Parking Restrictions.** Existing parking restrictions were evaluated to see if they could be removed and parking in that area allowed, to accommodate existing and potential future parking needs. Where there would be a loss of parking spaces due to safety requirements, allowing parking where currently restricted in other areas can be used as a tool to offset the loss.

Painting pavement markings on the shoulder to designate parking spaces is not recommended on PCH. Painted pavement markings designating parking spaces may actually result in a loss of available parking since motorists must remain within the prescribed marks (i.e., 24 feet per space); however, if there are no markings, motorists are able to park closer together than 24 feet.

5.1.1 Strategies: Shoulder Widening

Widening of the shoulder can achieve one of two purposes. Where the paved shoulder is slightly less than 8 feet now, shoulder widening can provide 8 feet or more of shoulder width to add parking spaces where they currently do not exist, even though some vehicles may already be parking there, legally if signs do not prohibit parking and the vehicle does not encroach on the travelway. An 8-foot paved shoulder is the minimum for Caltrans to allow parking, but 10 feet is preferred (HDM Table 302.1).



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Where the shoulder is currently more than 8 feet wide and parking is not prohibited by signs or striping, shoulder widening can improve the parking experience by providing a paved shoulder of 10 feet or more. Widening the parking area to 10 feet or more allows additional clearance between the parked cars and moving vehicles. This improves safety for pedestrians entering and exiting vehicles, as well as walking next to vehicles, and bicyclists can move farther away from the “door zone” and moving traffic. It also provides for additional sight distance for motorists exiting the parking area or driveways.

Roadway Restriping – Narrow Lanes/Widen Shoulder on Both Sides

In certain areas, one strategy which can be implemented to improve parking is to restripe the roadway and slightly narrow the painted median and travel lane widths to allow for a wider shoulder width. PCH has two travel lanes in each direction. Travel lanes which are currently 12 feet wide can be narrowed to 11 feet, which can add up to 2 feet to each shoulder. In some areas of PCH, the painted median varies from approximately 5 feet to approximately 13.5 feet and can be narrowed slightly to add width to the shoulders. Raised medians in other areas along PCH are more costly and harder to alter. These recommendations do not include altering raised medians on PCH.

An additional effect of making the travel lanes more narrow may be a slight decrease in speeds; however, decreased speeds is not the main purpose of the recommendation. It is also noted that Caltrans non-standard Design Exceptions will be required for any lane less than 12 feet wide. Also, further evaluation of the pavement joints will be needed.

The recommendation to narrow the travel lanes to less than 12 feet wide is to potentially improve the safety of parked vehicles, pedestrians, bicyclists, and moving traffic by providing a wider shoulder area for parking to move parked vehicles farther away from the moving traffic, but the narrower lanes also might make driving more uncomfortable for some drivers resulting in slightly lower speeds.

Roadway Restriping – Remove Parking on One Side/Widen Shoulder on One Side

Some areas are recommended to have parking on one side of the highway prohibited so that the travel lanes may be restriped to increase the width of the shoulder on the opposite side, either to allow parking where it is currently too narrow or to increase the width to 10 feet or more where it is currently 8 feet wide. This strategy is recommended where the shoulder parking is only lightly used on the inland side, and pedestrians must walk across 55-mph traffic mid-block to access the ocean side of the highway without a nearby traffic signal or other traffic controls to provide gaps in traffic. This strategy may reduce parking-related collisions by removing parking on one side of the highway and shifting the parked vehicles farther away from moving vehicles on the other side. This strategy also improves the sight distance at driveways by shifting moving traffic away from the edge of the highway, gives pedestrians more space to enter and exit vehicles and walk in areas where there is no sidewalk, moves bicyclists farther away from the “door zone” on the ocean side, and eliminates the “door zone” on the inland side. A bike lane could be striped where the width allows it.



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Pavement Expansion

Another strategy to widen the shoulder is to pave where there currently are large flat areas of dirt adjacent to the paved shoulder to increase the paved shoulder width to 10 feet or more. This strategy can be used alone or in combination with the roadway restriping discussed above, and may reduce parking-related collisions by shifting the parked vehicles farther away from moving vehicles. It improves sight distance at driveways by shifting moving traffic away from the edge of the highway, gives pedestrians more space to enter or exit vehicle and walk in areas where there is no sidewalk, and moves bicyclists farther away from the "door zone."

Any new paved areas would be subject to environmental review to determine if environmentally sensitive habitat areas (ESHA) are adjacent. Since the dirt areas adjacent to the highway shoulder being recommended for pavement expansion are currently being used for parking and, therefore, are compacted and void of vegetation, environmental findings are likely to be no significant impact.

5.1.2 Strategies: Parking Restrictions

Existing Parking Restriction Improvement

Locations with existing parking restrictions were reviewed to determine if the parking restriction is legitimate, if it is still needed, and whether parking can be allowed through method such as widening of the shoulder area.

Locations where large portions of parking are currently restricted but poorly signed are recommended to have missing or damaged signs and curb markings improved. Consistent sign types (R26K No Parking signs with a red circle crossed out over a capital "P" and a symbol of a tow truck at the top as shown in **Table 3-5**), sign mounting techniques, and sign spacing per CAMUTCD Section 2B.47 and Section 2B.48 are recommended. Each No Parking zone shall be signed with a No Parking sign (R26K-L) indicating the beginning of the No Parking zone and a No Parking sign (R26K-R) indicating the end of the No Parking zone, with No Parking signs (R26K) spaced appropriately per Caltrans, often every 200 feet, between the beginning and ending signs.

The inventory and mapping of existing signs and curb markings from this study should help with regular monitoring and replacement of missing or defaced signs (CAMUTCD Section 2A.22(02)) and the maintenance of red curb markings. Caltrans performs an annual reflectivity evaluation of signs along PCH, and replaces signs once the reflectiveness become less than 50 percent. Furthermore, regular inspection and maintenance of weeds, trees, shrubbery, and other materials or equipment should be performed to ensure that signs are not obstructed (CAMUTCD Section 2A.22(03)).

As noted previously, unless parking is expressly prohibited, parking is not illegal where the paved shoulder is less than 8 feet wide provided the vehicle parks entirely to the right of the edgeline and does not encroach on the travel lane; however, Caltrans does not allow on-street parking

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on shoulders less than 8 feet wide. The recommendation in this study is to officially prohibit parking through signage where the shoulder is less than 8 feet wide.

New Sight Distance Restrictions

A recommendation at several locations is to restrict parking at non-signalized intersections and driveways at the northern pocket beaches where it is not currently prohibited to provide the appropriate sight distance. Parking restrictions at non-signalized intersections are per HDM Table 405.1A. Estimates of the sight distance restrictions have been prepared from aerial photos, but more detailed study will be required to determine the actual required sight distance restrictions. Sight distance restrictions at the beach parking lot driveways are based on parking restricted 200 feet to the left of the driveway and 50 feet to the right from the point of view of a motorist exiting the driveway. No Parking zones shall be designated with R26K No Parking signs as noted above.

Corner sight distance requirements should be applied at signalized intersections whenever possible due to unanticipated violations of the signal or malfunctions of the signal (HDM 405.1 (2)). This would allow motorists space to react and maneuver to avoid collisions. Furthermore, rear-end collisions are common on approaches to signalized intersections, and motorists veering to avoid a rear-end collision may instead collide with a vehicle parked on the shoulder.

Bus Zones

This study does not include any recommendations to relocate bus stops in order to provide a larger No Parking bus zone per Metro's optimal No Parking zone dimensions (2016 Metro Transit Service Policies & Standards Section 3.2B). It is recommended to restrict parking for 90 feet at far-side bus stops, 100 feet at near-side bus stops, and 150 feet at mid-block bus stops if possible; however, the minimum distance that parking should be restricted at a bus stop is the length of the bus (40 feet). It is recommended to mark parking restrictions at bus stops with consistent signage (R28C) at all locations and red curbs where curbs are present. New pavement hatching (i.e., painting or stenciling a crosshatched pattern on the pavement) is not recommended.

5.1.3 Strategies: Maintain Parking Usage

As previously noted, PCH serves many uses, and the parking is used for varying reasons, including providing additional on-street parking for business and residential parking needs and providing space for visitors to the beach. This means that there are areas of the roadway that nearly always have parked cars, while there are other areas that are rarely used, except on peak holidays during the warm months, such as Memorial Day, July 4th, and Labor Day, during peak hours between 9:00 AM and 5:00 PM. The recommendations throughout this chapter have tried to only prohibit parking in areas that are typically not used and to especially improve those areas that are often used. **Figure 5-1** shows the parking usage by area along the roadway.

This map was prepared using a variety of sources, including GIS data. A qualified photogrammetrist prepared aerial mapping with field verifications. However, these maps were completed for a planning study and are not intended to replace a survey by a Lic. California Surveyor. The data contained herein is for reference only and should not be used for construction.

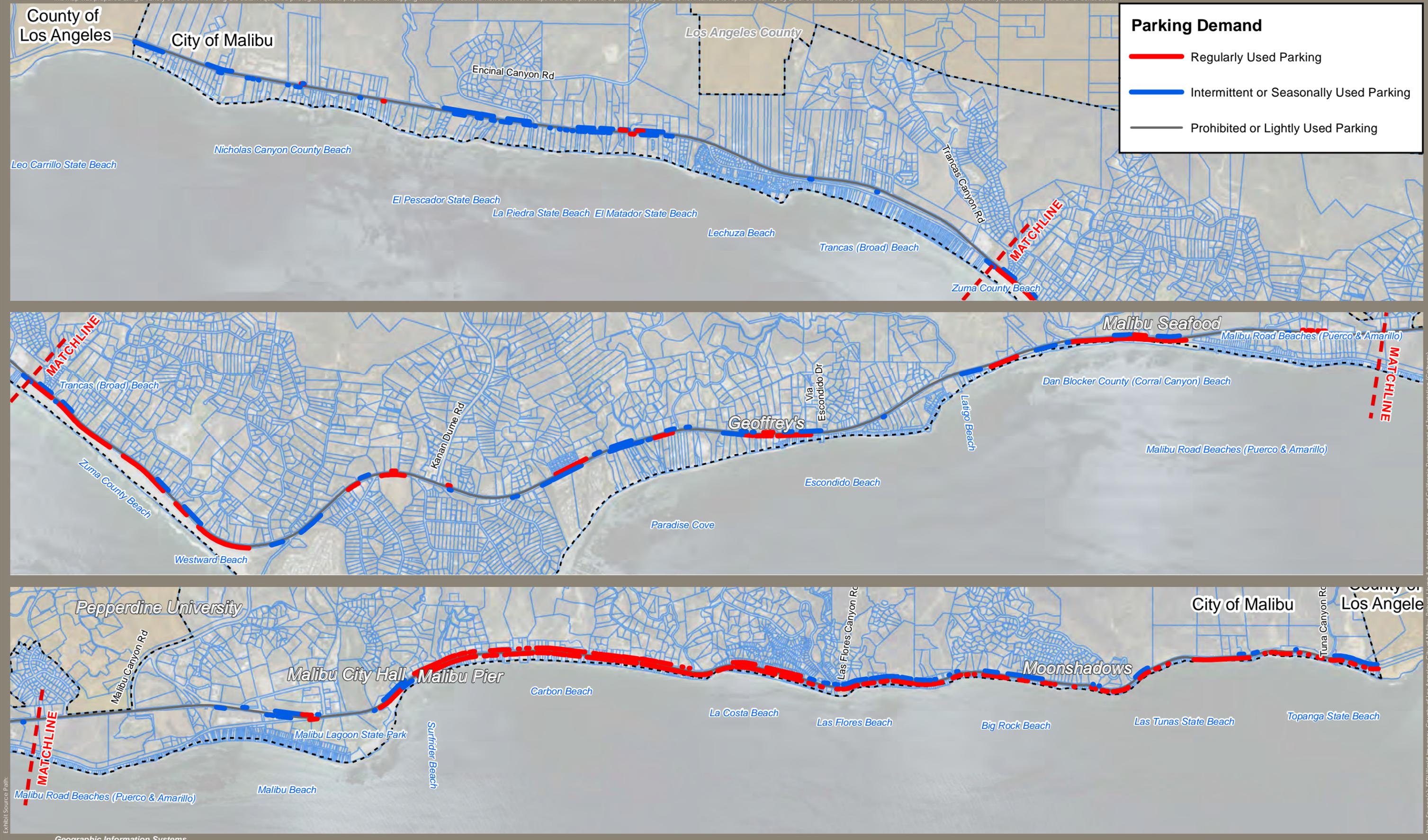


Exhibit Source Path:

Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Stanlec, and California Department of Transportation (Caltrans).



Figure 5-1
Parking Usage Map

PACIFIC COAST HIGHWAY PARKING STUDY

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Public Participation

A public meeting was held to solicit information and feedback from the residents and stakeholders on November 29, 2016. There were approximately 46 people who attended the meeting. The meeting participants included Malibu residents, business representatives, press and neighboring community members.

Participants were given an opportunity to ask questions and voice their views, and were also invited to discuss specific issues, including writing and/or marking site specific concerns on project area maps. In case participants were unable to attend or wanted another avenue to express their views or concerns, meeting materials such as the Power Point presentation was made available online, and the community was also provided comment cards and the City Project Manager's email address to submit additional comments and questions.

A total of 167 comments were collected, and these were reviewed in conjunction with the existing conditions and the safety and mobility assessment to develop the recommendations.

Full details of this meeting, including all comments received, are included in **Appendix D**.



Figure 5-2 Public Participation Workshop – November 29, 2016

PACIFIC COAST HIGHWAY PARKING STUDY

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The following sections discuss specific locations where the parking strategies are recommended. PCH is divided into four zones for this discussion. Zone A is from the western City Limit to Trancas Canyon Road, Zone B is from Trancas Canyon Road to Webb Way, Zone C is from Webb Way to Las Flores Canyon Road, and Zone D is from Las Flores Canyon Road to the eastern City Limit. **Figure 5-3** shows the limits of the zones. Recommendations at specific locations along PCH are illustrated on the Recommendations maps in **Appendix C** (66 pages).

5.2 ZONE A FROM WESTERN CITY LIMIT TO TRANCAS CANYON ROAD

Open Space Zone - Western City Limit to Trancas Canyon Road

Zone A in this chapter refers to PCH between the western City Limit and Trancas Canyon Road, approximately 4.8 miles. This segment of PCH has low on-street parking demand due to limited beach access and residences set far back from the roadway with little need of on-street parking. Although most of Zone A is comprised of open space on the inland side of PCH and experiences light parking needs, areas near County and State beaches, such as Nicholas Canyon County Beach, El Pescador State Beach, La Piedra State Beach, and El Matador State Beach, have a higher parking demand due to people visiting Malibu's recreational resources. The popularity of El Matador State Beach has increased lately due to social media exposure. This trend may continue and may spread to the other pocket beaches in the area. Parking-related collision frequency is also low in these areas (but may increase as a result of the recent growing popularity), though occasionally drivers on PCH are involved in a collision with a vehicle parked on the shoulder (12 parking-related collisions during the five-year period from 2011 through 2015).

Preserving the number of parking spaces available to those living in and visiting Malibu is crucial to ensure that there is enough parking to meet the demand. However, parking located on the inland side of PCH in this area could be problematic for those currently using it to access beaches. Those parking on the inland side of PCH must cross the 55-mph highway to access these resources on the ocean side without benefit of traffic signals or other traffic controls in this area. The only traffic signal in this area is located at Trancas Canyon Road at the south end of the zone.

Prohibiting parking on the inland side would not only be a logical safety measure for pedestrians, but narrowing the shoulder on the inland side would also provide available space to increase the shoulder width on the ocean side. Widening of the ocean side parking could increase the amount of available parking by allowing parking in areas that are currently too narrow. It could result in fewer parking-related collisions by moving the parked vehicles on the ocean side farther from the southbound moving traffic. During the five-year analysis period, 50 percent of the parking-related collisions occurred on the inland side of PCH in this section; therefore, removing parking on the inland side should also reduce the number of collisions with parked vehicles by a significant amount. However, with increased parking on the ocean side, parking-related collisions might increase on the ocean side.

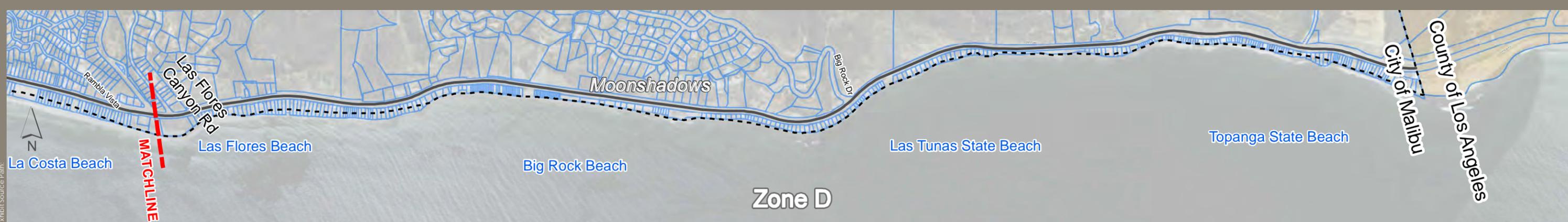
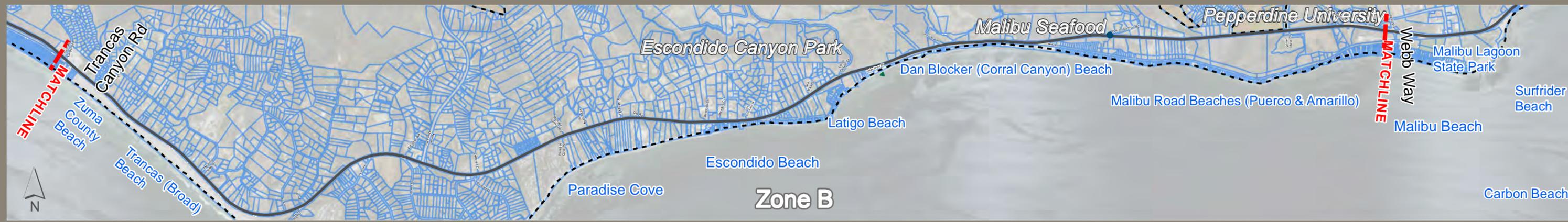


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Review of the data available showed that areas very close to Trancas Canyon Road had four parking-related collisions in the five years between 2011 and 2015. It is recommended that parking be clearly prohibited on the inland side in front of the shopping center and gas station to the boundary of the development, about 300 feet north of the Trancas Canyon Road intersection. There appear to be available parking spaces in the shopping center parking lot.

The segment of PCH between W. Broad Beach Road and Trancas Canyon Road/E. Broad Beach Road has a low parking demand since parking on Broad Beach Road is more convenient for beach parking. PCH is elevated above the level of Broad Beach Road, and provides views of the ocean in this area. There are three wide flat dirt areas adjacent to the paved shoulder on the ocean side along this section of PCH, which should be paved to provide a wider area for visitors to park while viewing the ocean. This may cause drainage or scouring issues at these locations that should be evaluated.

West City Limit to W. Broad Beach Road (approximately 3.25 miles) – Prohibit parking on inland side, restripe travel lanes from 12 – 13 feet to 11 feet, and shift travel lanes toward the inland side to provide 7.5-foot buffered bike lane on inland side and 9-foot shoulder and 7.5-foot buffered bike lane on ocean side.

- Inland side parking is lightly used, except near beach parking lots
- Allows vehicles on ocean side to park farther from moving vehicles, increasing separation between moving and parked cars
- Improves sight distance at driveways by removing parked vehicles on the inland side
- May allow reduction in parking prohibitions for sight distance on ocean side by shifting moving vehicles farther away from the edge of the highway
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Caltrans Design Exception will be required for the 11-foot travel lanes
- Downside: Loss of equivalent parking spaces

Figure 5-4 illustrates the existing and proposed cross-section for the area from West City Limit to Broad Beach Road.



Figure 5-4 Zone A Existing and Proposed Cross Sections

Beach access parking lots (Nicholas Canyon County Beach, El Pescador State Beach, La Piedra State Beach, El Matador State Beach) – Prohibit parking on the ocean side from 200 feet north to 50 feet south of parking lot driveways for sight distance based on common traffic engineering practice and judgement.



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W. Broad Beach Road to Trancas Canyon Road/E. Broad Beach Road (approximately 1.55 miles) - Prohibit parking on inland and ocean sides, except at locations noted below.

- Parking is lightly used on PCH because more convenient street parking is available on Broad Beach Road for beach access
- Improves sight distance at driveways
- Improves safety for pedestrians
- Improves safety for bicycles
- Removes conflicts between moving and parked cars
- Downside: Loss of equivalent parking spaces

Sea Cloud Lane to Lunita Road (approximately 0.6 mile) – Widen shoulder on ocean side to 10 feet or more where areas of flat gravel turnouts are located.

Trancas Canyon Road – Improve signage to clearly prohibit parking from approximately 450 feet south of to 300 feet north of Trancas Canyon Road on the inland side, and from 200 feet north of Trancas Canyon Road to the existing parking prohibition that begins 200 feet south of Trancas Canyon Road on the ocean side based on common traffic engineering practice and judgement.

- Four parking-related collisions here. Parking collisions are more likely where parking is allowed near traffic signals. Rear-end collisions are common on approaches to signalized intersections, and motorists veering to avoid a rear-end collision may instead collide with a vehicle parked on the shoulder.

Since parking spaces are not marked on the pavement along PCH, an exact count of the number of spaces gained or lost from the recommended changes is not possible. Estimates of parking spaces gained and lost are based upon the Caltrans standards in CAMUTCD Figure 3B-21. A paved area of the right shoulder providing 8 feet of width is determined to be the minimum width for a parking space, although the recommendations attempt to provide 10 feet of paved width. Twenty-four feet is the length assumed for each equivalent parking space in a row to allow for maneuvering distance between spaces. Isolated areas of at least 20 feet in length are assumed to provide one equivalent space since the motorist would not have to maneuver between other parked vehicles.

A total of 525 equivalent spaces will be removed and 100 equivalent spaces will be created in Zone A for an overall decrease of 425 equivalent spaces. Approximately 105 equivalent spaces will be widened and improved. **Section 5.6** shows the areas with heavy and lighter parking demand. All of the spaces to be removed in this area are in the lighter parking demand area. Since these low-demand spaces are less likely to be sought out by motorists, traffic is not likely to increase from motorists traveling up and down PCH looking for replacement parking spaces.

Figure 5-5 conceptually shows the Zone A parking recommendations.

Legend

Malibu Parking Recommendations Categories

Category

- █ Allow Parking - New (only with the implementation of Recommended Improvements)
- █ Prohibit Parking - New
- █ Restripe lanes, remove inland parking add/widen ocean shoulder parking
- █ Restripe lanes or pave dirt area, widen shoulder
- █ Improve signs, install missing signs - existing parking restriction
- █ Install "Park Off Pavement" Signs

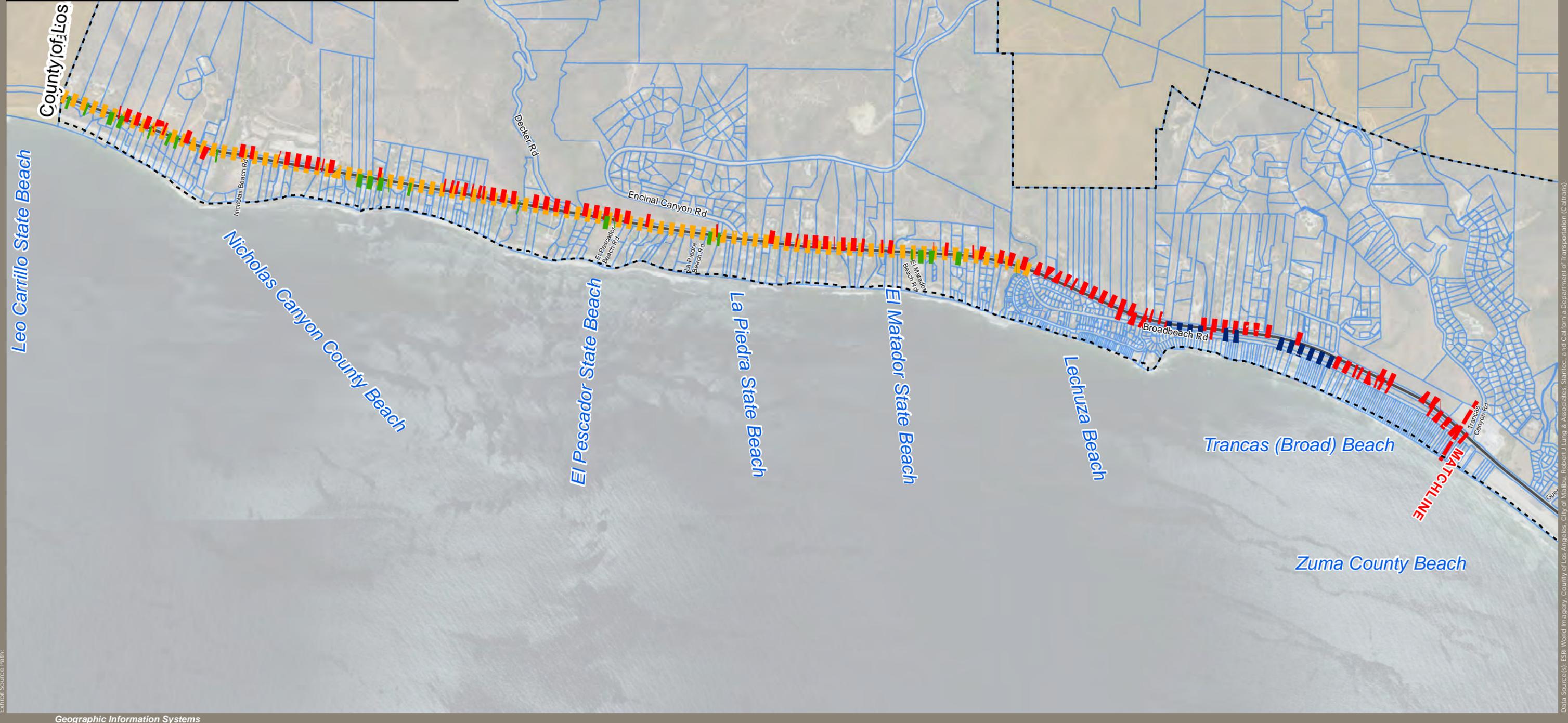


Exhibit Source Path:

Geographic Information Systems

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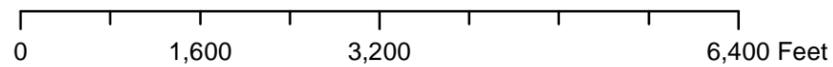


Figure 5-5

Zone A Parking Recommendations

5.3 ZONE B FROM TRANCAS CANYON ROAD TO WEBB WAY

Housing and Beach Zone - Trancas Canyon Road to Webb Way

Zone B refers to the approximately 9.5-mile section of PCH between Trancas Canyon Road and Webb Way, and includes Zuma County Beach, Westward Beach, Paradise Cove, Escondido Beach, Winding Way and Sara Wan trailheads, Dan Blocker County Beach, Malibu Beach, and the Civic Center area. This segment of PCH experiences a range of parking demand depending on location. Parking demand is high in areas adjacent to Zuma County Beach except where parking is prohibited. On-street parking demand from Busch Drive to John Tyler Drive can range from light to intermittent, based on field observations.

Certain areas along PCH have been observed by senior project team members over numerous occasions to experience higher parking demand due to the surrounding recreation or retail attractions that are available. These areas of higher parking demand include:

- 29350 PCH Commercial (Zuma Terrace)
- Point Dume Village Retail Center at Heathercliff Road
- Paradise Cove vicinity
- Santa Monica Mountains at Sara Wan Trailhead
- W. Winding Way vicinity
- Meadows Court to Escondido Beach area
- Dan Blocker Beach/Corral Canyon Road area to Malibu Road, including Malibu Seafood restaurant area

These areas are an important focus area due to the high number of vehicles that park on the shoulders. The more vehicles that are parked on the street, the higher the chance of a moving vehicle to collide with a parked car. The collision history analysis showed that there are areas that are prone to parking collisions. These areas include:

- Busch Drive to Bonsall Drive – 5 collisions, 0.1 mile
- 600 feet north to 200 feet south of Heathercliff Road – 4 collisions, 0.2 mile
- 300 feet north to 200 feet south of Kanan Dume Road – 4 collisions, 0.1 mile
- 400 feet north to 400 feet south of Ramirez Mesa Drive – 5 collisions, 0.2 mile (includes fatal collision)
- 200 feet north to 300 feet south of W. Winding Way – 3 collisions, 0.1 mile
- 500 feet south of Meadows Court to 300 feet south of Via Escondido Drive – 11 collisions, 0.4 mile
- Corral Canyon Road to 700 feet south of Corral Canyon Road – 5 collisions, 0.1 mile (includes fatal collision)

It is recommended to prohibit parking near these intersections as proximity of parking to intersections may be a contributing factor to the number of collisions that occur with vehicles parked on the shoulder. Rear-end collisions are common on approaches to intersections, and motorists veering to avoid a rear-end collision may instead collide with a vehicle parked on the shoulder.

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In addition, existing parking restrictions should be clearly signed and reinforced. For example, any missing or damaged No Parking signs should be replaced or installed using R26K No Parking signs with a red circle crossed out over a capital "P" and a symbol of a tow truck at the top (see **Table 3-5**). Similarly, areas where shoulders are less than 8 feet and are not suitable for widening should be paired with R26K No Parking signs.

Trancas Canyon Road to Bonsall Drive (approximately 1.95 miles) – Prohibit parking on the inland side.

- Inland side parking is mostly prohibited currently
- Improves sight distance at driveways on inland side
- Improves safety for pedestrians
- Improves safety for bicycles on inland side
- Downside: Loss of equivalent parking spaces

Morning View Drive – Improve signage on the ocean side and maintain red curb on the inland and ocean sides to clearly prohibit parking in the bus zone north of the intersection.

Busch Drive – Improve signage on the inland side and maintain red curb on the inland and ocean sides to clearly prohibit parking in the bus zone north of the intersection.

Bonsall Drive to Cavalleri Drive (approximately 0.70 mile) – Prohibit parking on the inland side from approximately 575 feet south of Bonsall Drive to approximately 600 feet north of Cavalleri Road and restripe lanes to widen shoulder to 10 feet on ocean side.

- Inland side parking is lightly used and mostly prohibited currently
- Improves sight distance at driveways
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Loss of equivalent parking spaces

Heathercliff Road - Maintain parking restriction on ocean side from approximately 400 feet north of Heathercliff Road to the intersection at Heathercliff Road. Install signage and maintain red curb on inland side north of the intersection and on the ocean side south of the intersection to clearly prohibit parking in the bus zones.

Cavalleri Road – Prohibit parking 450 feet north and 180 feet south on ocean side per corner sight distance calculations (HDM Table 405.1A).

Kanan Dume Road – Prohibit parking on inland and ocean sides north of Kanan Dume Road intersection to Cavalleri Road/Portshhead Road intersection. Improve signage and maintain red curb on inland side to clearly prohibit parking in the bus zone north of the intersection. Install signage on the ocean side to clearly prohibit parking in the bus zone south of the intersection.

- Shoulder width less than 8 feet

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Zuma Mesa Drive to approximately 600 feet north of Zumirez Drive (approximately 0.15 mile) – Pave additional shoulder where possible and narrow travel lanes to 11 feet to widen shoulder on inland side to 10 feet and allow parking.

- Allows vehicles on inland side to park farther away from moving vehicles
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Caltrans Design Exception will be required for 11-foot travel lanes

Zumirez Drive – Install signage and maintain red curb on inland side to clearly prohibit parking in the bus zone north of the intersection. Install signage and paint red curb on ocean side to clearly prohibit parking in the bus zone south of the intersection.

Zumirez Drive to Ramirez Mesa Drive (approximately 0.3 mile) – Prohibit parking on inland side.

- Shoulder width less than 8 feet

Zumirez Drive to approximately 800 feet north of Paradise Cove Road (approximately 0.5 mile) – Narrow travel lanes to 11 feet to widen shoulder on ocean side to 10 feet.

- Allows vehicles to park farther away from moving vehicles
- Improves sight distance at driveways
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Caltrans Design Exception will be required for 11-foot travel lanes

Ramirez Mesa Drive to approximately 200 feet north of Ramirez Canyon Road (approximately 0.1 mile) – Pave additional shoulder to widen shoulder on inland side to 10 feet.

- Allows vehicles to park farther away from moving vehicles
- Improves sight distance at driveways
- Improves safety for pedestrians
- Improves safety for bicycles

Paradise Cove Road – Maintain existing signage and red curb on inland side to clearly prohibit parking in the bus zone north of the intersection. Improve signage and maintain red curb on ocean side to clearly prohibit parking in the bus zone north of the intersection.

Paradise Cove Road – Widen shoulder on inland and ocean sides and allow parking on both sides.

- Allows vehicles to park farther away from moving vehicles
- Improves sight distance at driveways
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Would require extensive embankment construction

W. Winding Way to E. Old Road (approximately 0.35 mile) – Restripe lanes to widen shoulder to 10 feet on inland side and allow parking.

- Allows vehicles to park on inland side



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W. Winding Way to E. Old Road (approximately 0.35 mile) – Prohibit parking on ocean side.

- Shoulder width less than 8 feet
- Roadway curve

E. Old Road to Meadows Court (approximately 0.5 mile) – Improve signage for currently restricted parking on ocean side.

Meadows Court – Allow parking on inland side from approximately 170 feet north of Meadows Court to 15 feet north of existing fire hydrant.

Meadow Court - Allow parking on inland side from approximately 375 feet north of Meadow Court to 75 feet north of Meadow Court.

Via Escondido Drive – Improve signage on inland and ocean sides to clearly prohibit parking in the bus zones north of the intersection.

Via Escondido Drive to Sea Vista Drive (approximately 0.45 mile) – Prohibit parking on inland and ocean sides.

- Shoulder width less than 8 feet
- Roadway curve restricts sight distance

Latigo Canyon Drive – Prohibit parking 125 feet north and 240 feet south of intersection on inland side per corner sight distance calculations (HDM Table 405.1A).

Latigo Canyon Drive to Latigo Shore Drive (approximately 0.25 mile) – Improve signage or replace missing signs for currently prohibited parking on inland and ocean sides.

Latigo Shore Drive – Prohibit parking 410 feet north and 110 feet south of intersection on ocean side per corner sight distance calculations (HDM Table 405.1A).

Latigo Shore Drive to Corral Canyon Road (approximately 0.4 mile) – Restripe travel lanes to 11 feet to provide 10-foot shoulder on ocean side. Improve signage or replace missing signs for currently restricted parking on inland side.

- Allows vehicles to park farther away from moving vehicles
- Improves safety for pedestrians
- Improves safety for bicycles
- Downside: Caltrans Design Exception will be required for 11-foot travel lanes

Corral Canyon Road – Prohibit parking 165 feet south on inland side for sight distance. Improve signage and maintain red curb on inland and ocean sides to clearly prohibit parking in bus zones north of intersection.

Malibu Seafood/Sara Wan Trailhead parking lot – Improve signage and paint red curb on inland side to clearly prohibit parking in bus zone south of parking lot driveway. Improve signage on ocean side and maintain red curb to clearly prohibit parking in bus zone south of parking lot driveway.



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North of W. Malibu Road (approximately 0.2 mile) – Prohibit parking on inland side from Malibu Seafood/Sara Wan Trailhead parking lot to W. Malibu Road.

- Shoulder width less than 8 feet

South of W. Malibu Road – Restripe travel lanes to 11 feet to widen shoulder on ocean side to 9 feet from approximately 1,050 feet to 1,350 feet south of W. Malibu Road.

- Downside: Caltrans Design Exception will be required for 11-foot travel lanes

Puerco Canyon Road – Prohibit parking 180 feet north and 240 feet south of intersection on inland side per corner sight distance calculations (HDM Table 405.1A).

North of John Tyler Drive (approximately 0.1 mile) – Prohibit parking approximately 450 feet north to John Tyler Drive on inland and ocean side.

- Shoulder width less than 8 feet

John Tyler Drive – Install signage and maintain red curb on inland and ocean sides to clearly prohibit parking in the bus zones south of the intersection.

An equivalent of 230 total spaces will be removed and an equivalent of 5 spaces will be created in the lighter parking demand areas in Zone B for a decrease of 225 equivalent spaces, and 230 equivalent spaces will be widened and improved in the lighter parking demand areas. In the often used areas, 20 equivalent spaces will be removed and 35 equivalent spaces will be added for an increase of 15 spaces, and 100 equivalent spaces will be widened and improved. Overall, there will be a decrease of 210 equivalent spaces in this zone and 330 spaces will be widened and improved. **Figure 5-6** conceptually shows the Zone B parking recommendations.

Legend

Malibu Parking Recommendations Categories

Category

- Allow Parking - New (only with the implementation of Recommended Improvements)
- Prohibit Parking - New
- Restripe lanes, remove inland parking add/widen ocean shoulder parking
- Restripe lanes or pave dirt area, widen shoulder
- Improve signs, install missing signs - existing parking restriction
- Install "Park Off Pavement" Signs

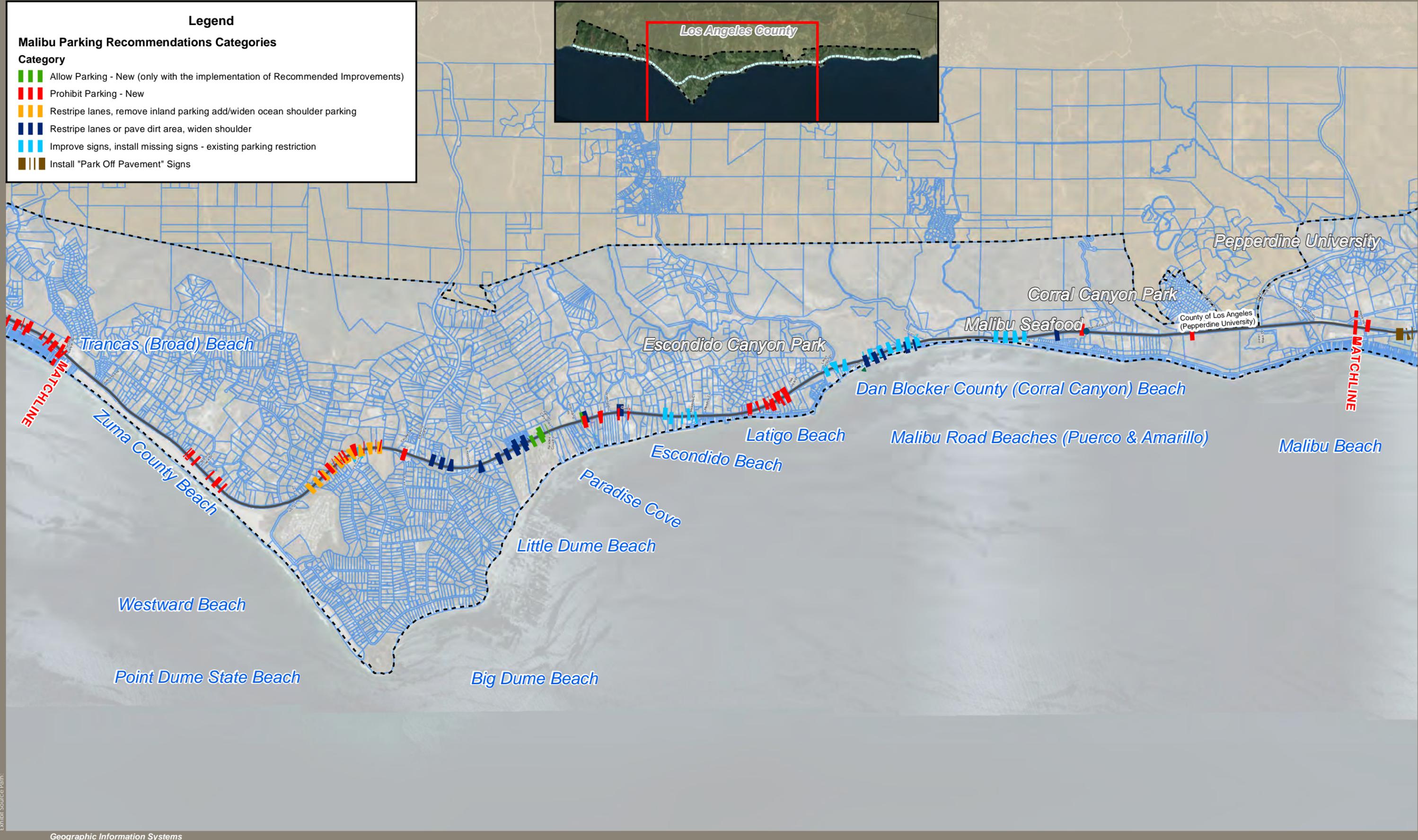
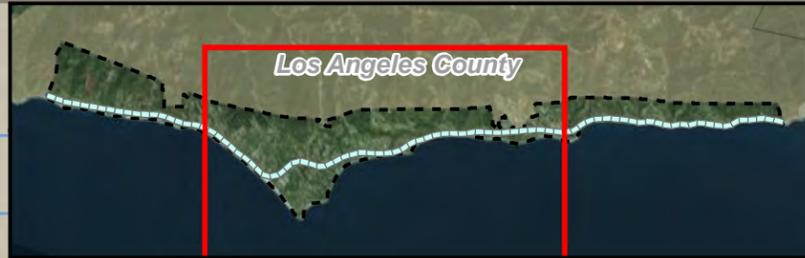


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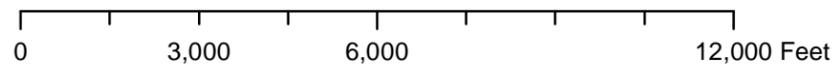


Figure 5-6
Zone B Parking Recommendations

5.4 ZONE C FROM WEBB WAY TO LAS FLORES CANYON ROAD

Malibu Pier Area and Area East of the Pier Zone - Webb Way to Las Flores Canyon Road

The 3.3-mile section between Webb Way and Las Flores Canyon (Zone C) experiences heavy parking demand throughout the segment wherever parking is allowed. Zone C is a heavily visited area due to beach access points and the Malibu Pier, as well as retail and residential developments. Fast food restaurants, quality restaurants, small shops, office buildings, medical offices, hotels, and single-family and multi-family residences are located in this area of the City. Collisions with parked vehicles in this segment of PCH appear to be consistent throughout, but there are higher concentrations of parking-related collisions at certain locations. These locations include:

- Webb Way to 100 feet south of Cross Creek Road – 9 collisions, 0.4 mile
- 300 feet north of Serra Road to the pedestrian crossing near 22514 PCH – 53 collisions, 1.1 mile
- 100 feet north to 500 feet south of Carbon Canyon Road – 6 collisions, 0.1 mile
- 200 feet north of E. Rambla Vista to 800 feet south of Las Flores Canyon Road – 21 collisions, 0.2 mile

Through the Malibu Pier area and area east of the Pier, from Serra Road to Las Flores Canyon Road, the shoulder on both the inland and ocean side is currently greater than 10 feet wide. The strategy to widen the shoulders through pavement widening does not apply in this area since the area is constrained by developed property on both sides, and parking is in such high demand at all times that parking should not be prohibited. The recommendation through this area is to narrow the travel lanes to 11 feet, stripe 6-foot Class II bike lanes, and implement speed management strategies, such as signal timing adjustments, to slow the 45-mph traffic and minimize the number and severity of parking-related collisions. Narrowing the travel lanes will both increase the distance of the parking area from moving traffic and provide a bike lane, and potentially slow the traffic; however, new parking spaces will not be created. **Figure 5-7** shows the existing and recommended cross-sections for this area.



Figure 5-7 Zone C Existing and Proposed Cross Sections

Webb Way – Stripe red curb on inland side at northbound right-turn lane.

- Parking should already be prohibited in this 275-foot long right-turn lane; however, except at a fire hydrant and a driveway located mid-way along the turn lane and red curb along the last 30 feet at the intersection, parking is not currently prohibited.

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W. Malibu Road to Cross Creek Road (approximately 0.1 mile) – Install signs on ocean side “Park Off Pavement”.

Pier Area and Area East of Pier (approximately 2.7 miles) – Restripe to narrow travel lanes to 11 feet, and widen shoulders and stripe Class II bike lanes on both inland and ocean sides from Serra Road to Las Flores Canyon Road.

- Allows vehicles to park farther away from moving vehicles
- Improves safety for bicycles
- Recommend implementing speed management strategies, such as coordinated signal timing, to slow traffic
- Downside: Caltrans Design Exception will be required for 11-foot travel lanes

Malibu Pier area – Install signage and maintain red curb at bus zone on inland side north of Malibu Pier and at the bus zone on ocean side south of Malibu Pier to clearly prohibit parking.

Nobu Restaurant area – Install signage and maintain red curb on inland and ocean sides to clearly prohibit parking at the bus zones north of Nobu Restaurant.

Mid-Block Pedestrian Signal – Install signage and maintain red curb on inland and ocean sides to clearly prohibit parking at the bus zones at mid-block pedestrian signal.

Carbon Canyon Road – Prohibit parking 210 feet north of intersection on inland side per corner sight distance calculations (HDM Table 405.1A).

W. Rambla Vista – Install signage and paint red curb on inland side to clearly prohibit parking in bus zone north of the intersection. Install signage and maintain red curb on ocean side to clearly prohibit parking in bus zone north of the intersection.

E. Rambla Vista to Las Flores Canyon Road (approximately 0.1 mile) – Prohibit parking on inland side from 600 feet north of Rambla Vista to Las Flores Canyon Road.

- Improves sight distance between intersections/driveways
- Bus stop location
- Low parking demand

E. Rambla Vista – Install signage and paint red curb on inland side to clearly prohibit parking in bus zone north of the intersection. Install signage and maintain red curb on ocean side to clearly prohibit parking in bus zone north of the intersection.

A total of 20 equivalent spaces will be removed in Zone C, and 455 equivalent spaces will be widened and improved. All of the spaces in this area are in the high parking demand area.

Figure 5-8 conceptually shows the Zone C parking recommendations.

Legend

Malibu Parking Recommendations Categories

Category

- Allow Parking - New (only with the implementation of Recommended Improvements)
- Prohibit Parking - New
- Restripe lanes, remove inland parking add/widen ocean shoulder parking
- Restripe lanes or pave dirt area, widen shoulder
- Improve signs, install missing signs - existing parking restriction
- Install "Park Off Pavement" Signs

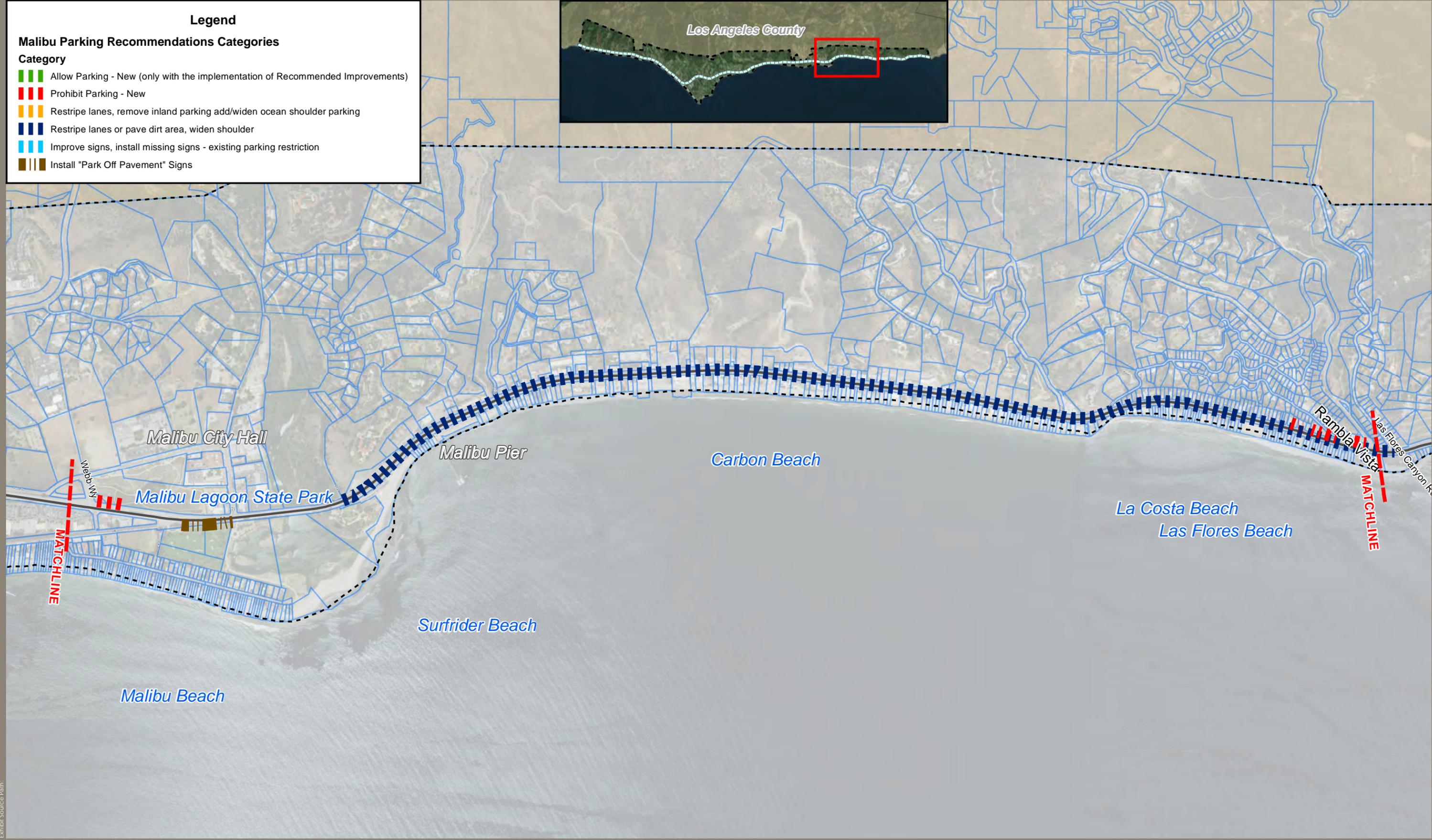
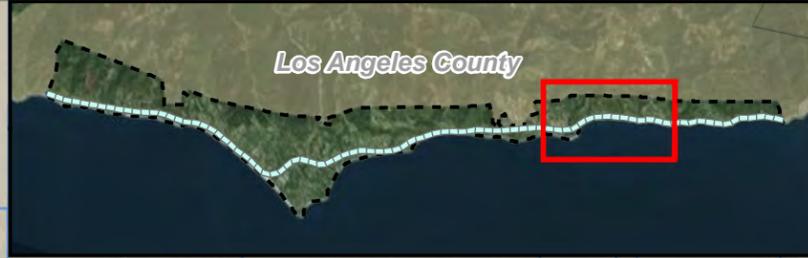


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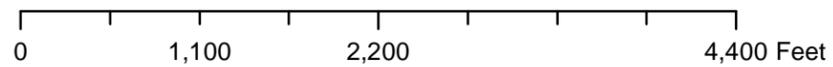


Figure 5-8

Zone C Parking Recommendations

5.5 ZONE D FROM LAS FLORES CANYON ROAD TO EASTERN CITY LIMIT

Housing Zone - Las Flores Canyon Road to Eastern City Limit

Zone D is the 3-mile segment of PCH from Las Flores Canyon Road to the eastern City Limit. Parking demand is heavy along the ocean side everywhere parking is allowed due to homes fronting on PCH that rely on shoulder parking, as well as beach access for visitors. Parking demand is intermittent on the inland side based on field observations by senior team members.

Parking-Related Collision Concentrations

- Las Flores Canyon Road to 20932 PCH (end of curve) – 21 collisions, 0.3 mile
- 20550 PCH to 20520 PCH – 3 collisions, 0.1 mile
- 100 feet north to 500 south of Big Rock Drive – 9 collisions, 0.1 mile

Parking-related collisions were not a serious problem from Big Rock Drive to the eastern City Limit during the five-year analysis period. This was surprising based upon the land use patterns and driveways along the ocean. There were 22 parking-related collisions in this 1.4-mile segment, but 9 of them occurred within 500 feet of Big Rock Drive as pointed out above.

This section of PCH has several areas of wide, relatively flat, unpaved dirt adjacent to the paved shoulder on the inland side. These unpaved dirt areas provide an opportunity to widen portions of the inland side shoulder; however, potential issues to consider before widening of the shoulder can occur include drainage, potential to weaken roadway, and stability of the adjacent hillside.

South of Las Flores Canyon Road to eastern City Limit (approximately 3 miles) – Widen shoulder on inland side to 10 feet where flat unpaved areas adjacent to the paved shoulder make it possible.

- Allows vehicles to park farther away from moving vehicles
- Improves sight distance at driveways
- Improves safety for bicycles

Moonshadows Restaurant area – Install signage on inland side to clearly prohibit parking in bus zone opposite Moonshadows Restaurant. Maintain white “No Parking Bus Zone” pavement marking. Install signage and maintain red curb on ocean side to clearly prohibit parking in bus zone north of Moonshadows Restaurant.

Big Rock Drive – Prohibit parking 320 feet north and 110 feet south on ocean side per corner sight distance calculations (HDM Table 405.1A). Install signage and paint red curb on inland and ocean sides to clearly prohibit parking in bus zones north of the intersection.

Tuna Canyon Road - Install signage and maintain red curb on inland side to clearly prohibit parking in bus zone south of the intersection. Install signage on ocean side to clearly prohibit parking in bus zone north of the intersection.

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An equivalent of 20 spaces will be removed and no new equivalent spaces will be created in Zone D for an overall decrease of 20 equivalent spaces. Approximately 105 equivalent spaces will be widened and improved in this zone. All of the spaces to be removed and improved in this area are in the high parking demand area. **Figure 5-9** conceptually shows the Zone D parking recommendations.

5.6 NET PARKING CHANGE

Each zone has some changes in the shoulder parking restrictions and allowable shoulder parking areas. As noted previously, an equivalent parking space is counted as 8 feet wide by 24 feet long for spaces in a row, or 8 feet wide by 20 feet long for a single isolated space per CAMUTCD Figure 3B-21. The total change in shoulder parking spaces for each zone, and along all of PCH, is shown in **Table 5-1**.

Table 5-1 Recommended Parking Changes

Zone	Parking Spaces Lost	Parking Spaces Added	Parking Spaces Improved	Net Parking Space Change
Zone A: West City Limit to Trancas Canyon Road				
Often Used Areas	--	--	--	--
Normally Unused Areas	-525	100	105	-425
Zone B: Trancas Canyon Road to Webb Way				
Often Used Areas	-20	49	100	29
Normally Unused Areas	-230	5	230	-225
Zone C: Webb Way to Las Flores Canyon Road				
Often Used Areas	-20	0	455	-20
Normally Unused Areas	--	--	--	--
Zone D: Las Flores Canyon Road to East City Limit				
Often Used Areas	-20	0	105	-20
Normally Unused Areas	--	--	--	--
Total:				
Often Used Areas	-60	49	660	-11
Normally Unused Areas	-755	105	335	-650

The total net parking loss is 661 equivalent spaces. Most of the reductions are in the lighter parking demand areas, with a net loss of 11 equivalent spaces in the often used areas. However, a total of 995 equivalent spaces are improved or widened, with 660 of these spaces in the often used areas.

Legend

Malibu Parking Recommendations Categories

Category

- Allow Parking - New (only with the implementation of Recommended Improvements)
- Prohibit Parking - New
- Restripe lanes, remove inland parking add/widen ocean shoulder parking
- Restripe lanes or pave dirt area, widen shoulder
- Improve signs, install missing signs - existing parking restriction
- Install "Park Off Pavement" Signs

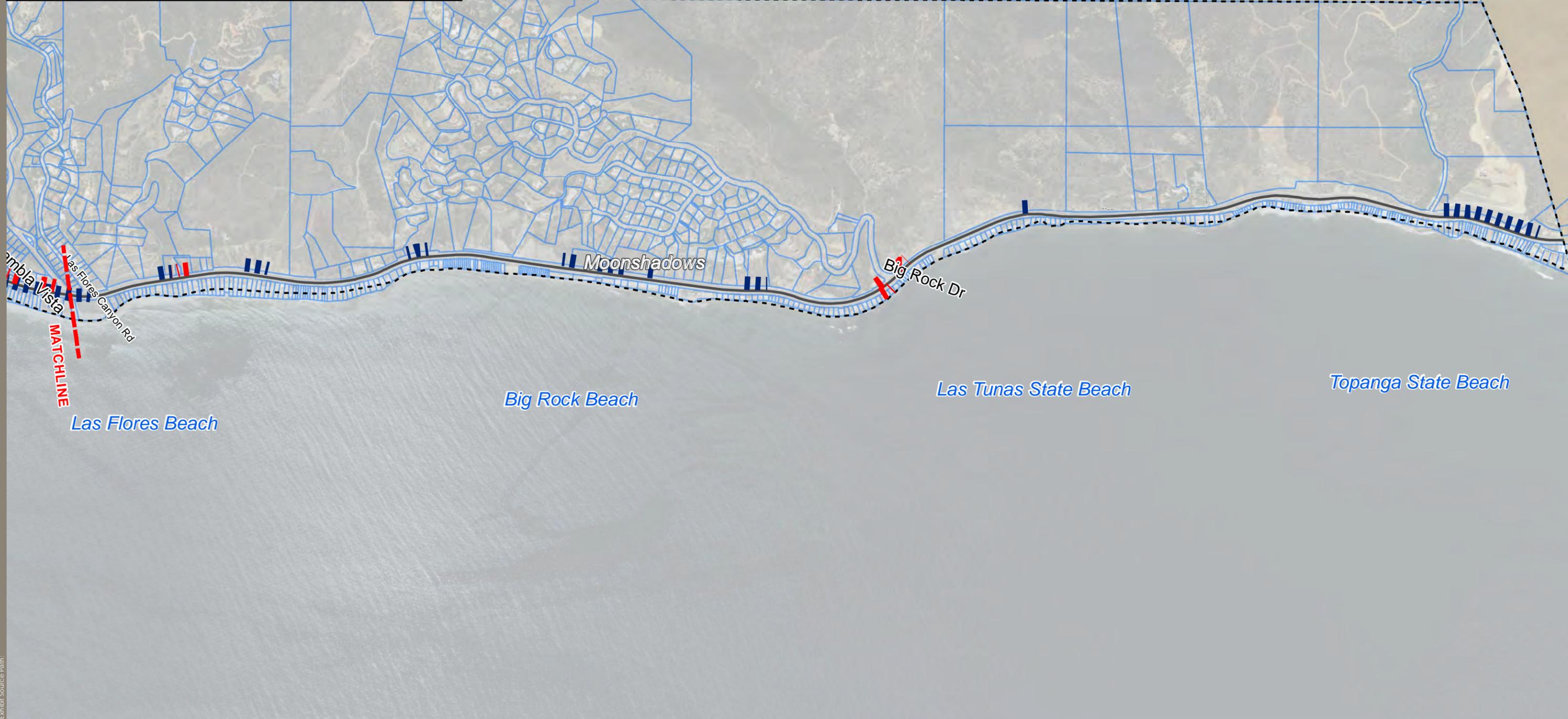
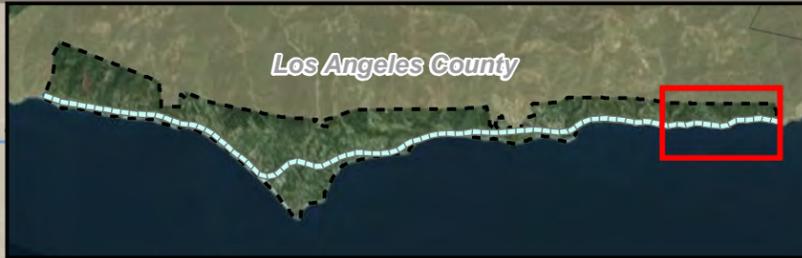


Exhibit Source Path:

Geographic Information Systems

Data Source(s): ESRI World Imagery, County of Los Angeles, City of Malibu, Robert J. Jung & Associates, Stantec, and California Department of Transportation (Caltrans).

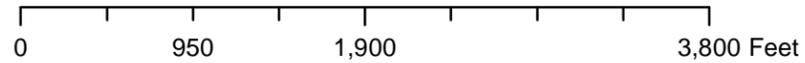


Figure 5-9
Zone D Parking Recommendations

5.7 OPTIONS FOR FURTHER CONSIDERATION

5.7.1 Changes to Cost of Parking

One of the current issues along the entire length of roadway is that the free spaces on the highway are heavily used before visitors use the large beach parking lots which charge a fee. This can be more balanced by either reducing the fees in the beach lots or introducing a fee structure for the highway area where free parking is now available. If the spaces along the highway charged a fee, the incentive to park there would be significantly reduced.

Similarly, installation of parking meters in the Zuma Beach area (Zone A) or Malibu Pier area and area east of the Pier (Zone C) could encourage more frequent turnover of parked vehicles making more parking available for visitors to businesses and beaches.

However, introducing charges for formerly free parking can become controversial and is not recommended at this time by this study. The City may want to pursue this strategy themselves, but it is not being recommended by this study.

Local authorities are permitted to establish parking meter zones and the fixing of fees for those zones by ordinance per CVC Section 22508 and by LA County Traffic Code Sections 15.64.450 and 15.64.460. Charging a fee to park on the street is common in beach cities in Southern California, such as Long Beach, Huntington Beach, and Newport Beach among others. Furthermore, the enforcement required to ensure compliance could be offset by the parking fee, or the revenue generated by a new parking fee could be used to improve parking conditions along PCH or investigate new off-street parking locations.

5.7.2 Time Limit Restrictions

There are concerns of vehicles using parking areas for extended periods of time, especially in the Pier Area (Zone C). These vehicles stay parked for extended periods of time, either for business advertising or living arrangements. The concern is that these vehicles are taking spaces that would typically be used by visitors and can be alleviated through use of time-restricted parking (such as midnight to 5 AM). This would not restrict beach or business visitors and would mitigate some of the parking needs. Local authorities may restrict overnight parking along portions of the highway per CVC Section 22507.5 through the use of time-restricted No Parking signs.

Other time limit restrictions, such as 1-hour or 2-hour parking limits, can be imposed by appropriate signage along PCH to encourage turnover and make more parking available (LA County Traffic Code Section 15.64.010). Use of parking meters can also be effective at limiting the amount of time drivers park.

Installation of time-limit No Parking signs increases the need for parking enforcement to ensure compliance with the restrictions.

5.7.3 Oversized Vehicle Restrictions

Oversize vehicles, including recreational vehicles, can pose different sight-distance challenges than a standard car, which has windows intended to be seen through for safety. The area has a few oversize vehicles which advertise (or operate as) local businesses and some that might be used for living accommodations (which are prohibited per LA County Traffic Code Section 16.86.020 although this may not be enforceable). Unfortunately, these vehicles can be difficult to see through or around, and can block drivers trying to enter or exit driveways. Specifically in Zone C, prohibiting oversized vehicles from parking near driveways can help improve sight distance at the driveways, without completely prohibiting the necessary parking spaces for standard size vehicles.

Local authorities may restrict oversize vehicles including, but not limited to, vehicles that are six feet or more in height, during all or certain hours of the day, by ordinance or resolution per CVC Section 22507 and LA County Traffic Code Section 15.64.261. Establishment of oversize vehicle restrictions increases the need for parking enforcement to ensure compliance with the restrictions.

5.7.4 Existing Enforcement

The public raised concerns over both code enforcement and parking enforcement. Code enforcement refers to monitoring and ensuring the proper placement of official signs (i.e., limiting illegal removal of legitimate signs or appropriate removal of private signs in the public ROW), while parking enforcement refers to ticketing parking restriction violators. This study is providing a baseline to show the existing and recommended parking restrictions. This study may be used by the City and Caltrans in the future to make sure that any missing No Parking signs can be replaced, and private signs in the public ROW can be removed. In addition, consistency between the existing signs will make parking restriction enforcement easier. The signs are not geocoded and the locations shown on the maps are approximate.

5.7.5 Parking Shuttles

An option to mitigate parking losses on PCH, or portions thereof, would be to provide shuttles from an off-site parking location to the beach areas. The City of Laguna Beach in Orange County has implemented a program that provides for parking off-site and free shuttles which are very well used. Unfortunately, this type of program can be very expensive to operate and requires availability of large off-site parking areas. It may not be feasible for the City of Malibu to provide the off-site parking required.

5.7.6 Parking Lots

The use of government office parking lots to provide off-street parking during times of peak beach parking demand when the government offices would be closed, such as on weekends or holidays, could be explored by the City to replace lost shoulder parking. Similarly, commercial

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office development parking lots could be used for beach parking during the periods of peak beach parking demands. Parking agreements between the City and parking lot owners would need to be negotiated, and transportation to/from the parking lots to the beach may need to be provided, depending on how far from the beach the parking lot is located.

Hotel, restaurant, and retail parking lots could also be considered to provide additional off-street parking spaces during times of peak beach parking demand. An example of this is the parking lot at 22601 PCH, where public pay parking is provided on weekends and holidays per a Coastal Commission permit condition. However, peak beach parking demand might coincide with retail business high parking demands.

5.8 PRIORITIZATION AND IMPLEMENTATION

Many improvements have been recommended, ranging from replacing missing signs at currently prohibited parking locations to widening shoulders through restriping travel lanes or paving new shoulder areas. The purpose of the recommendations is to improve safety and reduce parking-related collisions.

The priority of the recommendations is based on engineering judgement, potential impact on improving safety, feasibility, the presumed cost of implementation, public input where appropriate, and need for further study. The general priority of the recommendations is summarized below:

1. Replace missing, faded, or damaged No Parking signs (currently underway by Caltrans)
2. Install signage for new parking restrictions
3. Improve signage and curb markings at bus zones
4. Review locations for new parking areas
 - 4.1. Widened shoulders
 - 4.2. Other off-site locations
5. Restripe travel lanes to add 1 to 2 feet to shoulders
6. Restripe Malibu Pier area and area east of the Pier (Serra Road to Las Flores Canyon Road) to widen shoulders and stripe bike lanes
7. Restripe West City Limit to Trancas Canyon Road to remove parking and stripe bike lane on inland side and widen shoulder and stripe bike lane on ocean side
8. Widen shoulders at Paradise Cove Road

A summary of the recommendations made in this study are summarized in **Table E-1** in **Appendix E**.

5.9 CONCLUSIONS

PCH spans the length of the City of Malibu and serves as the local main street and residential corridor, as well as a regional and State highway carrying over 40,000 vehicles daily in some sections. It is also a major recreation corridor for pedestrians and bicyclists. Visitors travel to experience the City's scenic coastline, beaches, recreational trails, and open space. There are no frontage roads along the 21-mile section in the City to provide parallel alternate routes for slower local vehicle traffic or bicycle and pedestrian users. The highway is owned, operated, and maintained by Caltrans. Despite its 45 to 55 mph speed limit and diverse users, PCH is constrained by limited right-of-way between the Pacific Ocean coastline and the Santa Monica Mountains, and also by private property and existing developments.

Due to its proximity to the beaches and recreation areas of the Santa Monica Mountains, there is a strong demand for visitor parking along many portions of PCH. Other portions of the highway provide desired parking for local residents and businesses. Any Coastal Development Permit or Local Coastal Program Amendment to change parking regulations would be subject to Coastal Commission review. As a result, public parking along PCH is highly valued as a form of protected coastal access. Parking is thus generally allowed and largely unrestricted along much of the frontages of PCH to meet localized parking needs and to provide access to coastal and mountain recreation resources.

Data on existing conditions was collected in the field by Stantec, and was also provided to Stantec from agencies including Caltrans and the City of Malibu. Data collection included aerial and topography data, shoulder and curb measurements, photography, field confirmation of agency provided data, peak summer shoulder parking usage, and parking-related sign and curb marking locations. Locations and details about off-street parking lots, coastal access points, and shoulder parking restrictions were assembled and summarized. All of this information was coded into a Geographic Information System (GIS) database.

Information regarding parking-related collisions along PCH in Malibu during the five-year period of 2011 through 2015 was gathered, geocoded and summarized. There were a total of 310 parking-related collisions during the five-year study period. The average collision rate for PCH in Malibu is less than the State average for facilities of this type. This collision data was analyzed from several different aspects, including by direction of travel, shoulder width, collision type, time of day and year, and specific locations such as adjacent beach access points, businesses, and other points of interest.

Recommendations to improve parking conditions and reduce the occurrence of parking-related collisions were made. Locations were identified where lanes could be restriped to add width to the shoulders, where parking on the inland side could be prohibited to add width to the ocean side shoulder, where flat dirt areas adjacent to the paved shoulder could be paved to add width to the shoulder, where existing parking restrictions that are vague because

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of damaged or missing No Parking signs are improved with new signs consistent with the CAMUTCD, where intersections or driveways could provide improved sight distance through parking restrictions, and where improvements can be made at bus zones. The total recommended improvements resulted in a net loss of 675 equivalent parking spaces, and the widening and improvement of 995 equivalent spaces.

This Parking Study is a planning level document to identify potentially unsafe parking locations and conditions along PCH and to provide recommendations to assist the City of Malibu in the planning of modifications to the roadway and shoulder for the safe parking of vehicles on the shoulder, as well as the safety of all roadway users, including moving vehicles, pedestrians, and bicyclists.

Once the study is completed and approved, individual recommendations will still be evaluated for further analysis or implementation by the City.

Some recommended modifications can be implemented immediately by Caltrans after being requested by the City without further study or an Encroachment Permit from Caltrans or Coastal Development Permit from the California Coastal Commission. The modifications that can be immediately implemented include: installation of missing or damaged No Parking signs in existing No Parking zones, installing No Parking signs to improve sight distance at driveways or intersections, and installing No Parking signs in existing bus zones.

Other recommended modifications will require further analysis. Samples of such analysis include design exceptions and pavement condition at the joint between the travel way and the shoulder for areas where re-striping is recommended, environmental impacts to unpaved areas that are recommended for paving, and potential Permits from the Coastal Commission prior to restricting any existing parking allowed. Most of the recommendations will require further analysis. These recommendations may guide these future studies.