



PACIFIC COAST HIGHWAY

traffic safety evaluation



Prepared by Malibu/Lost Hills Station



SPEED
LIMIT

MALIBU

27 MILES OF SCENIC BEAUTY



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I. Background

Pacific Coast Highway (State Route 1) is a four-lane state highway traveling in an east to west direction along the Pacific Coast. In 1947, the roadway was completely reconstructed and widened to its current configuration of 4 lanes.

In 1964, turn pockets and signals were installed. Minor improvements including additional traffic signals, plastic center median paddles (Quick Curb) and other safety modifications stemming from illegal traffic movements have been initiated in subsequent years.

The Pacific Coast Highway (PCH) is part of a major coastal artery that provides access to the many canyons of the Santa Monica Mountains, the major beaches along the coast, Pepperdine University, and many other residential and commercial developments in the area. Additionally, the highway is part of the most direct route between the Ventura/Oxnard area and the coastal cities of Los Angeles County. Consequently, this route frequently carries traffic between those two locations as an alternate to the Ventura (SR-101) and San Diego Freeways (I-405).

PCH is approximately 21 miles long through the City of Malibu and serves mostly commuters during the weekday peak hours. During this period, approximately 35,000 commuters utilize PCH. In summer months, it also serves as an access route to the beaches along the coast, causing the commuter levels to reach 100,000.

The southern portion of the roadway is a four-lane conventional highway with a ten-foot painted center median that alternates between a double solid stripe and a left turn lane. The profile varies from a flat to a slightly rolling grade and the

alignment varies from curved segments to tangents up to one-half mile in length.

The middle portions of the highway consist of four lanes with a raised center median. The profile is mostly a rolling grade and the alignment consists predominantly of long tangents up to one mile in length connected by large radius curves.

The northern part of the roadway is a four-lane conventional highway. There is a striped center median and painted two-way left turn median lane which is essentially continuous. This alignment consists predominantly of long tangents connected by large radius curves.

PCH is designated as a Class III bikeway. A Class III bikeway is defined in the Section 890.4 of the California Streets and Highways Code as an on street bike route usually depicted by signs or permanent markings. Small signs erected by Caltrans are the only indication to motorists that PCH is a bike route.

North of Malibu Canyon, with the exception of the Zuma Beach area, PCH is a mostly rural highway with available, but lightly used street parking. South of Malibu Canyon, PCH is highly congested with concentrated business and residential areas. This area is extremely hazardous for cyclists as they are forced to ride adjacent to 45 mph traffic with the constant threat of parked vehicles opening doors, vehicles exiting driveways and garages, along with pedestrians crossing the roadway outside of crosswalks.

Due to PCH containing multiple diverse elements throughout its 21 mile stretch, combined with the mixture of vehicle, pedestrian, and bicyclist use, improvements intended to enhance PCH safety is historically based and is a continual process.



II. Executive Summary

Prior to incorporation, both the CHP and LASD provided law enforcement services for the county area, including the section that would eventually become the City of Malibu. LASD provided general law enforcement, while the CHP provided traffic enforcement.

Malibu was incorporated as a city in 1991, and in July, contracted with the Sheriff's Department to provide law enforcement services. Initially, the city contracted for 4.5 general law enforcement field units, while 9.5 units were purchased specifically for traffic enforcement. In September of the same year, the City of Malibu modified its field complement to 4.5 units for general law enforcement and 6.5 for traffic enforcement. As of July 2010, the City of Malibu contracts for 9 general law enforcement, with 6.5 for traffic, 2.5 of which are motor units. Importantly, general law enforcement also performs traffic enforcement, which is considered a crucial element of their law enforcement duties. The last year, prior to the incorporation of the city, there were eleven fatal collisions on PCH. Over the last ten years, fatal collisions averaged 2.5 per year.

Traditionally, the natural inclination is to assume that there is always a direct correlation between the number of traffic citations issued and driving under the influence arrests to the number of collisions. The belief is that the more citations issued and driving under the influence arrests made, the number of collisions will be reduced, providing a safer traffic environment. This is illustrated by the nationally accepted Enforcement Index (EI), which combines the number of hazardous citations issued with the driving under the influence arrests, then divides that sum by the number of fatal and injury traffic collisions. The national standard is 20:1, which means in order to reach the standard, 20 citations/arrests per 1 (one) collision must be reached. As of the date of this document, the City of Malibu's EI is 103:1, which greatly exceeds the national accepted level of provided highway safety.

The number of collisions on PCH is generally proportional to the number of vehicles using the highway. The most common collision on PCH is low speed rear-end collisions, predominately during the evening rush hour. As expected, the number of collisions increases during the summer months even though additional field personnel are provided.

The most frequent Primary Collisions Factors (PCF) for traffic accidents for the last three years are: Unsafe speed (38%), unsafe lane change (15%), right of way violation (11%) and improper turning (9%). The most common types of collisions include: Rear-end (49%), sideswipe (21%), and broadside (15%). The extent of injuries include: Non-injury (65%), complaint of pain (17%), injury (17%), and fatal (0.009%). The number of collisions increases as the volume of traffic increases in during the summer months and is slightly higher on Friday, Saturday, and Sunday, with the highest number of collisions during the evening commute hours.

Moreover, in regards to speed limit, terrain, vehicle/bicycle/pedestrian use, and commercial/residential/tourist use, PCH is not a static highway. The speed limit varies from 45 MPH, 50 MPH, and 55 MPH, none of which address traffic congestion and the competition between motor vehicles, bicycles, and pedestrians. Reduced roadway widths, lack of center medians, erratic roadway surface, all merge to create excessive traveling variables. These variables amplify the safety issues when combining the competitive use of PCH by motor vehicles, bicycles, and pedestrians.

The central portion of PCH is highly congested with commercial use, tourist interests, and cross-traffic, all creating an environment of randomness of actions. This creates a challenging environment for all participants to safely maneuver. Based on statistical information, the intersection of Las Flores Canyon and PCH has the highest accident rate for an intersection. Additionally, mid-block between Carbon Canyon Road

and Las Flores Canyon has the highest accident rate per mile for a mid-block section of PCH.

Although the City of Malibu's EI greatly exceeds the national standard, the City of Malibu and the Malibu/Lost Hills Sheriff's Station continue to strive to enhance traffic safety on PCH. Malibu/Lost Hills Sheriff's Station continues to utilize various Departmental resources to continue to improve safety. These include: Reserve Forces Traffic Enforcement saturation, Traffic Services Bureau DUI check-points, and saturation patrol. Internally, Malibu/Lost Hills Sheriff's Station conducts Distracted Driver check-points and traffic enforcement saturation. Additionally, educational handouts have been provided to drivers in order to assist in sensitizing the public to the various traffic issues of PCH.

PCH is an arterial highway that is part of the overall transportation network for the Los Angeles and Ventura County region. It is inadequate to handle the current commuter traffic volumes and gridlocks on busy summer weekends. With the combined effort of all involved stakeholders, PCH can be improved for the public's use.

RECOMMENDATIONS

HIGHWAY ENVIRONMENT

The most common improvements suggested on PCH for intersections included: Improved lighting, construction of acceleration and deceleration lanes, and protected center turn lanes with median modifications. The lighting improvements should improve visibility and bring the existing systems up to current standards using low energy LED or similar devices. The recommendation of acceleration and deceleration lanes is universal in light of the most common collisions consisting of rear-end and turning movements. They also can be utilized to relieve congestion

by removing slow vehicles from the travel lanes. Center median modifications, while mainly recommended for eliminating U-turns and unsafe turning movements, may also reduce pedestrian crossings. Additionally, congestion management and roadway design are two elements that must be employed to address the current surroundings. These improvements will be covered throughout sections of this evaluation.

TRAFFIC ENFORCEMENT/EDUCATION

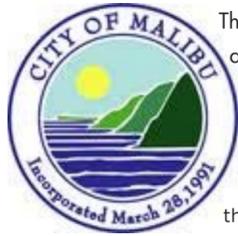
The use of motorcycle officers is one of the most effective tools for traffic enforcement in the City of Malibu. The narrow shoulders and heavy traffic do not allow enough safe areas for deputies in traditional radio cars to stage and subsequently pull out into traffic. Once in traffic, it is nearly impossible for a sedan to safely pass other vehicles in order to catch a violator. Motorcycle officers are able to maneuver through heavy traffic and utilize narrow highway shoulders to monitor traffic. Understanding the transitory nature of persons who utilize PCH, continual education and enforcement are integral elements of enhancing the safety of PCH. Education consists of highway signage, city traffic safety notices via local newspapers, and Sheriff Department generated education programs.

BICYCLE RECOMMENDATIONS

A Class II bikeway provides a restricted right-of-way designated for the exclusive or semi-exclusive use of bicycles with travel by motor vehicles or pedestrians prohibited, except for vehicle parking and cross flows by pedestrians and motorists at marked locations. These lanes are commonly depicted by two parallel white lines painted on the roadway edge or outside the parking lane. The entire length of PCH should be converted to a Class II bicycle lane. Without the conversion, cyclists often have to share the lane with motor vehicles traveling in excess of 45 miles per hour.

III. Government Stakeholders

THE CITY OF MALIBU



The City of Malibu contracts for a specific number of hours of patrol and traffic units from the Los Angeles County Sheriff's Department. These hours are monitored on a weekly basis and staffing levels are adjusted accordingly. As a contract city with the LASD, the City of Malibu can draw upon the resources of the entire Sheriff's Department when the need arises. Additionally, the City of Malibu purchases sheriff personnel to enhance summer enforcement (Beach Team) and any other events with the intent to address public safety or quality of life issues.

The City of Malibu and the Sheriff's Department share a common goal of advancing the safety of motorists, bicyclists, and pedestrians who utilize PCH. In order to address such issues, the City of Malibu continually evaluates the desires of its elected officials, residents, and business representatives. These concerns pertain to competing goals of maintaining differing quality of life descriptors, monetary confines, and state government controls and limitations based upon PCH being a state highway. Evaluating parking limitations, highway hardscape modifications, and egress adjustments, Malibu continually seeks to obtain a balance with the competing stakeholders.

MALIBU/LOST HILLS SHERIFF'S STATION



Malibu/Lost Hills Sheriff's Station provides traffic enforcement and law enforcement services for the City of Malibu. The number of deputies patrolling the city varies depending upon the time of day. The level of service is limited by the budget allotment for law enforcement services designated by the City of Malibu.

Currently, Malibu staffs two full time motor deputies and shares two other motor deputies with the four other cities in the MLH jurisdic-

tion for a total of 2.5 forty hour motorcycle deputies per week. The motors are supplemented by two other traffic sedans on the A.M. and P.M. shifts. There is an overlap car in the evenings that stays in Malibu until 4 A.M. that focuses on locating impaired drivers. Thus, the average number of traffic deputies on the streets in Malibu is four. Obviously there are other deputies designated as crime cars who also conduct traffic enforcement when not handling calls for service.

In the short term, the station has requested the use of reserve forces bureau to provide additional staffing. Unfortunately, this service is provided to the entire Department, and is not a source of day-to-day enforcement that would have an appreciable effect on the total number of citations issued. They are available on a monthly basis, and have been assigned to work during peak evenings and/or weekends in order to provide a visible increase in enforcement with the additional benefit of actually issuing hazardous citations.

Another possible resource involves the use of currently assigned station reserves. Presently, several reserves are assigned to the station and have received traffic and/or radar training. Two of these reserves have expressed interest in working a motor unit. Both are willing to take time off in order to attend the required training. They have even offered to purchase a shared BMW motorcycle if the Department does not have the resources to issue them a motorcycle.

Malibu/Lost Hills Traffic Bureau is currently in the process of obtaining a safety corridor grant from the Office of Traffic Safety. If approved, this grant will allow for additional staffing and could be approved for the 2011/2012 fiscal year.

CHP



The CHP patrols the unincorporated areas that surround The City of Malibu. These highway segments are largely unpopulated, especially to the north. Several housing areas are located off residential side streets to the south. The north end abuts the unincorporated area of Ventura County while the south end leads into the City of Los Angeles.

CHP officers are on 12 hour shifts during peak periods in the West Valley area where 15-16 Officers are deployed in a 400 square miles area. This also includes 33 state office buildings that they also patrol. Their borders are Rinaldi to the north, Universal Studios to the east, I-405 freeway at Mulholland Drive to the south, and the western border is the Ventura County Line.

Traffic statistics for these areas were not available from the CHP, but it can be deduced that the northern area has very few collisions, while the south would have a collision rate comparable to the southern area of Malibu. The majority of these collisions would be attributable to congestion due to the lack of businesses and few cross streets.

Most collisions in these areas are usually dispatched to Malibu/Lost Hills station deputies who will stabilize the situation and await the arrival of CHP to conduct the collision investigation. While the CHP does actively patrol these areas, there do not provide a presence 24/7. Most officers respond from Topanga Canyon or the 101 freeway, and have considerably extended arrival times.

CHP officers often conduct enforcement stops in the city of Malibu while driving to or from their assigned areas. Malibu city officials appreciate this enforcement in their city whenever possible. However, the CHP is prohibited from conducting enforcement operations in the city without a paid contract as specified in the vehicle code.

Both the LASD and CHP often cooperate during emergencies that include fires and floods. During emergencies, consolidated command posts and separate areas of responsibilities provide an almost seamless cooperative effort.

CALTRANS

Caltrans is responsible for maintenance and construction as PCH is designated State Highway 1. This designation has limited the amount of improvements to the highway since Malibu projects must compete with other highway projects throughout the State.



Caltrans uses warrants to establish the feasibility of each construction project. This bureaucratic process has delayed numerous projects within the city for decades. In some specific instances, the city of Malibu has paid for the installation of traffic signals with the expectation of being reimbursed by the state once funding becomes available.

CALIFORNIA COASTAL COMMISSION

Members appointed to the California Coastal Commission have the responsibility of preserving and when possible, providing public access to coastal areas within the state. This commission has been given, and has consistently exercised its authority over construction projects and private property rights throughout the state.



The City of Malibu has attempted to restrict parking in areas where parked vehicles present a hazard to pedestrians exiting the vehicles. In each instance, the coastal commission has prohibited such restrictions under the guise that it limits the public's access to the coastline.

As many of the safety proposals in this document advocate parking restrictions and hardscape modifications, it is anticipated that the California Coastal Commission will be one of the stakeholders whose concerns will need to be addressed.

IV. Traffic Volume & Speed Zones

The posted speed limits are as follows:

- Coastline Drive to Malibu Canyon Road 45 mph
- Malibu Canyon Road to Trancas Canyon 50 mph
- Trancas Canyon to Los Angeles/Ventura County Line 55 mph

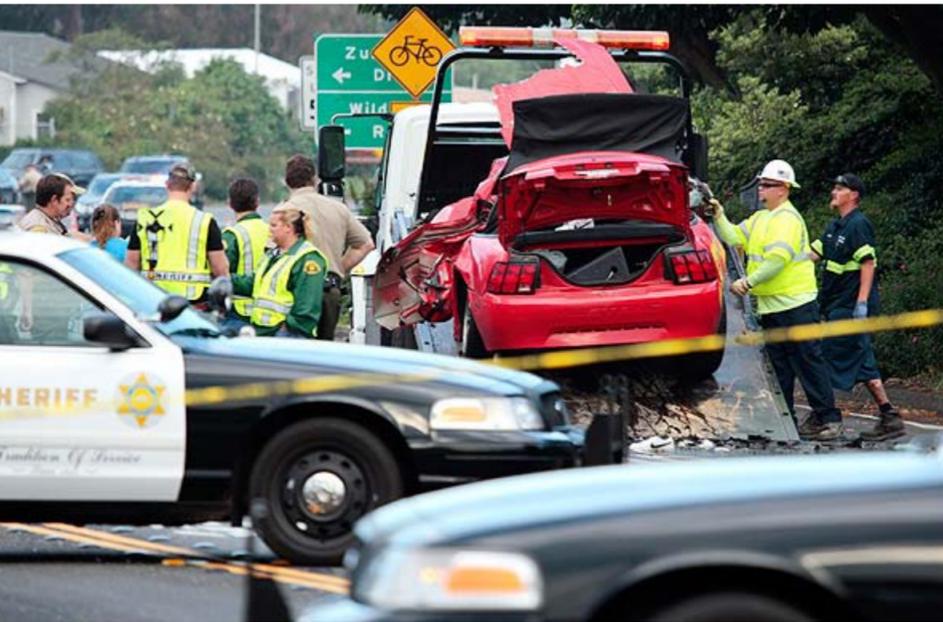
According to the most recent Caltrans Survey, the annual Average Daily Traffic (ADT) for Pacific Coast Highway varies from 53,000 vehicles north of Coastline Drive to 29,000 vehicles north of Zumirez Drive. From Kanan Dume Road to the Los Angeles/Ventura County line, the ADT ranges from 29,000-30,000 annually, to 33,500-34,500 at peak times. During the recreational peak periods, which occur mostly on weekends during the summer months, the traffic may exceed the ADT figures by 20 to 30%. Occasionally, during periods of exceptionally heavy demand, the traffic on this four-lane facility has exceeded 100,000 vehicles per day. As noted above, ADT is the average number of vehicles two-way passing a specific point in a 24-hour period, normally measured throughout a year.



V. Accident Rates

According to the most recent Caltrans Survey for PCH in Malibu, based on the Traffic Accident Surveillance and Analysis System (TASAS), the accident rate and fatality rate are less than the statewide average rate for this type of highway. There was only one segment where the fatality rate was higher than the statewide average. This area is near the Las Flores Canyon and Rambla Vista intersections.

The most frequent Primary Collisions Factors (PCF) for traffic accidents for the last three years are: Unsafe speed (38%), unsafe lane change (15%), right-of-way violation (11%) and improper turning (9%). The most common types of collisions include: Rear-end (49%), sideswipe (21%), and broadside (15%). The extent of injuries include: Non-injury (65%), complaint of pain (17%), injury (17%), and fatal (0.009%). The number of collisions is proportional to the increase in volumes during the summer months and is slightly higher on Friday, Saturday, and Sunday, with the highest number of collisions during the evening commute hours.



VI. Enforcement

YEAR	INJURY CRASH	FATAL CRASH	HAZARD CITATIONS	TOTAL CITATIONS	CRASH HAZARD RATIO	TOTAL CITE RATIO
2010	110	4	12,489	15,098	9.1280	7.550
2009	111	2	11,314	13,448	9.9876	8.4027
2008	125	2	9,885	11,900	12.8477	10.6722
2007	106	3	9,701	10,475	11.2359	10.1457
2006	112	3	11,399	12,095	10.0886	9.508
2005	112	4	9,479	10,496	12.2375	11.0518

Comparison of annual number of traffic collisions to number of citations issued.

Hazard Citation Ratio = injury + fatal collisions / 1,000 hazardous citations.

Total Citation Ratio = injury + fatal collisions / 1,000 total citations.

The injury collision/citation ratios charted above were created to determine if there is any observable correlation of the number of collisions to the number of citations issued. If the assumption is that more citations reduce the number of collisions, the years with the most citations issued should have the lowest number of collisions. However, the year (2007) with the lowest number of total citations issued, also had the lowest number of injury collisions. On the other hand, the year with the highest total number of citations (2010)

did have the lowest Collision/Citation ratio, although the fatality rate equaled the highest rate within the six year period. This result supports the City of Malibu and Malibu/Lost Hills Sheriff's Station multi-faceted approach for PCH safety enhancements.



VII. Traffic Fatal Collision Descriptors

The below information provides a brief description of the above listed traffic fatalities that occurred on PCH. A "Traffic Fatality" is defined as a traffic collision between a motor vehicle and another vehicle, bicycle, pedestrian or other fixed object resulting in a fatality. Additionally, a "Non-Traffic Fatality" is defined as when a vehicle is used to commit or attempt to commit suicide or other criminal act resulting in a fatality. A "Non-Traffic Fatality" is not considered a traffic generated event and is not included in this evaluation.

2010 Fatal Collisions

11.16.10 - 1810 Hrs. - Tuesday Grayfox Dr. at Fernhill Ave.

Solo Vehicle

23152 CVC – DUI

No Criminal Charges Filed

A dirt bike rider was riding an off-road motorcycle on city streets, in the dark, without any lighting and crashed into a legally parked vehicle. The collision killed the motorcycle rider. The motorcycle rider was not wearing a helmet or any other safety gear.

09.17.10 - 1759 hrs. - Friday PCH near Pena Cyn. Rd.

Vehicle vs. Pedestrian

Inattention of Pedestrian

Criminal Charges Rejected by DA

A pedestrian was crossing Pacific Coast Highway after parking his car, when he crossed in front of a vehicle traveling eastbound Pacific Coast Highway. The pedestrian was struck and killed.

04.02.10 - 1616 Hrs. - Friday PCH at Broad Beach Rd. (west)

Vehicle vs. Vehicle

21650 CVC – Drive on Wrong Side of Road

Criminal Charges Filed

Vehicle #1 was traveling westbound on Pacific Coast Highway when the driver allegedly fell asleep while driving. Vehicle #1 crossed over into the on-coming traffic lanes at struck vehicle #2 who was making a right turn onto Broad Beach Rd (west). The driver of vehicle #2 was killed.

03.15.10 - 0627 Hrs. - Monday

PCH near Winding Way

Vehicle vs. Pedestrian

21952 CVC – Jaywalking

Criminal Charges Rejected by DA

A pedestrian was crossing Pacific Coast Highway after leaving work to walk to the bus stop. The pedestrian crossed in front of approaching traffic and was struck by a vehicle traveling westbound on Pacific Coast Highway. The impact launched the pedestrian into the eastbound traffic lanes of Pacific Coast Highway, where the pedestrian was run over by approximately 4 others vehicles. Pedestrian was killed.

2009 Fatal Collisions

06.28.09 - 0120 Hrs. - Sunday PCH near Mulholland Hwy

Vehicle vs. Bicycle

23152 CVC – DUI

Criminal Charges Filed

Two bicycle riders were riding eastbound on Pacific Coast Highway on the shoulder area, while participating in a bicycle event (No LASD Assistance). The bicycle riders were struck from behind by vehicle #1, who was driving on the shoulder of Pacific Coast Highway. After the collision, vehicle #1 fled the accident scene. Bicycle rider #1 was killed. Bicycle rider #2 was injured.

01.12.09 - 2230 Hrs. - Friday PCH at Puerco Cyn Rd.

Vehicle vs. Vehicle

21658 CVC – Unsafe Lane Change

Criminal Charges Filed

Both vehicles were traveling westbound on Pacific Coast Highway approaching Puerco Cyn Rd. Vehicle #1 made an unsafe lane change into right lane, striking vehicle #2. Both vehicles struck, causing vehicle #2 to lose control. Vehicle #2 flipped over and killed the driver.

2008 Fatal Collisions

05.18.08 - 1253 Hrs. - Sunday PCH N/of Puerco Cyn Rd.

Vehicle vs. Tree

Possible Medical Condition

No Criminal Charges Filed

A vehicle was traveling eastbound on Pacific Coast Highway, when it drifted off the roadway into a tree. The driver of vehicle was killed. The collision was caused due to a possible medical condition.

04.08.08 - 2219 Hrs. - Tuesday PCH at Encinal Cyn Rd.

Solo Vehicle

23152 CVC – DUI

No Criminal Charges Filed

A vehicle was traveling eastbound on Pacific Coast Highway at high rate of speed. The vehicle lost control and rolled over ejecting several passengers, who were unbelted. The driver was killed. The passengers were injured.

2007 Fatal Collisions

10.24.07 - 0950 Hrs. - Wednesday Kanan-Dume Rd. at PCH

Vehicle vs. Vehicle

21461 CVC – Fail to Obey Signs

No Criminal Charges Filed

A driver of Semi-truck was traveling southbound on Kanan-Dume Rd. in violation of the posted signs. The Semi-truck was traveling on a weight restricted road limited to a maximum of 8,000 lbs. The Semi-truck lost control, due to over-heated brakes and crashed into two vehicles that were traveling eastbound on Pacific Coast Highway through the intersection of Kanan-Dume Rd. The driver of Semi-truck was killed and the driver of one other vehicle was killed. One other involved vehicle, the driver was injured. The driver of the truck also failed to use the runaway vehicle emergency lane.

06.11.07 - 1140 Hrs. - Monday PCH N/of Decker Cyn Rd.

Vehicle vs. Vehicle

21650 CVC – Drive on Wrong Side of Road

No Criminal Charges Filed

Vehicle #1 was traveling northbound on Pacific Coast Highway, when it crossed over into on-coming traffic lanes and struck vehicle #2 head-on. The drivers of both vehicles were killed. The driver of vehicle #1 had a possible medical condition.

05.18.07 - 1533 Hrs. - Tuesday PCH at Guernsey Rd.

Vehicle vs. Vehicle

22100.5 CVC – Unsafe Turn

Criminal Charges Rejected by DA

Vehicle #1 made an unsafe u-turn from the shoulder area of Pacific Coast Highway. Vehicle #1 was struck by vehicle #2, who was traveling southbound on Pacific Coast Highway. The collision caused the passenger in vehicle #1 to be ejected and killed. The passenger was not wearing a seat belt.

2006 Fatal Collisions

12.12.06 - 1635 Hrs. - Tuesday PCH S/of Guernsey Ave.

Vehicle vs. Vehicle

21651 CVC – Illegal Turn

No Criminal Charges Filed

Vehicle #1 was parked on the shoulder area of Pacific Coast highway and made a u-turn in front of approaching traffic from the shoulder area. Vehicle #1 was struck by vehicle #2. The drivers of both vehicles were killed.

02.09.06 - 1355 Hrs. - Thursday Kanan-Dume at PCH

Vehicle vs. Fixed Object

21461 CVC – Fail to Obey Signs

No Criminal Charges Filed

A driver of Semi-truck was traveling southbound on Kanan-Dume Rd in violation of the posted signs. The Semi-truck was traveling on a weight restricted road limited to a maximum of 8,000 lbs. The Semi-truck lost control, due to over-heated brakes and crashed into the hillside located through the intersection of Kanan-Dume Rd and Pacific Coast Highway. The driver of Semi-truck was killed. The driver of the truck also failed to use the runaway vehicle emergency lane.

2005 Fatal Collisions

09.10.05 - 1005 Hrs. - Saturday PCH at John Tyler Rd.

Vehicle vs. Bicycle

22350 CVC – Unsafe Speed

Criminal Charges Filed

A driver of a catering truck was traveling eastbound on Pacific Coast Highway when it struck two bicycle riders, who were riding eastbound on Pacific Coast highway. Both bicycle riders were killed.

06.10.05 - 2246 Hrs. - Friday PCH at Serra Rd.

Vehicle vs. Vehicle

21651 CVC – Illegal Turn

No Criminal Charges Filed

Vehicle #1 was making an illegal u-turn from the shoulder, when it was struck by vehicle #2, who was traveling eastbound on Pacific Coast Highway. The driver of vehicle #1 was killed.

03.01.05 - 0304 Hrs. - Tuesday PCH at Cross Creek Rd

Vehicle vs. Pedestrian

Inattention of Pedestrian

No Criminal Charges Filed

Vehicle #1 was traveling southbound on Pacific Coast Highway and struck a pedestrian, who was crossing Pacific Coast Highway in the dark. The pedestrian was jaywalking.

01.09.05 - 0720 Hrs. - Sunday PCH at Big Rock Dr.

Vehicle vs. Pole

22350 CVC – Unsafe Speed

No Criminal Charges Filed

A solo vehicle was traveling at unsafe speed for conditions, heavy rain and wet roadway. The vehicle lost control and crashed into a telephone pole. A passenger was ejected from the vehicle and killed. The passenger was not belted.

VIII. Individual Intersection Analysis

Intersection collision data was analyzed for a three year period focusing on injury and fatal collisions from the LASD Crossroads data base. Intersections that did not have any injury collisions for that period are not included. Intersections with three or less injury accidents were listed as low accident rate, four to nine was moderate, and ten or more were considered to have a high accident rate. These numbers and descriptors were based on statistical breaks occurring between the number of three and nine traffic collisions.

Recommended design improvements for intersections are general in nature and do not reflect the actual engineering and design requirements. It is also important to note the small sample size can skew the analysis of necessary improvements, so that in some cases, the day to day known characteristics of the intersection are taken into account and statistical anomalies are ignored.

In many cases, these recommendations may not be seen as plausible due to right of way, Caltrans standards, and environmental laws. However, the purpose here is to project the possibilities of reducing collisions and improving safety regardless of self-imposed restrictions. Since all of the Caltrans standards were codified, it is reasonable to change these standards to for the unique properties of PCH in Malibu in order to improve safety.

The most common improvements suggested for intersections include: Improved lighting, construction of acceleration and deceleration lanes, and protected center turn lanes with median modifications. The lighting improvements should improve visibility and bring the existing systems up to current standards using low energy LED or similar devices. The recommendation of adding acceleration and deceleration lanes is universal in light of the most common collisions consisting of rear-end and turning movements. Once installed, these acceleration/deceleration lanes will provide the added benefit of relieving congestion by removing slow vehicles from the travel lanes.

Median modifications, including dividing the highway with a barrier, are recommended to eliminate U-turns and unsafe turning movements. Additionally, these medians will force pedestrians to use designated crossings rather than attempting unsafe midblock crossings.





[DECKER CANYON ROAD]

T-Intersection, low accident rate, no signal

Total Collisions: 2

Most Frequent PCF: Broadside 50% (Turning)

Injury Rate (Including Fatal): 0% | Day/Night: 100% day

Improvements Needed:

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This low volume semi-rural intersection is almost unrecognizable in darkness. Although a traffic signal is not warranted, it would better identify the intersection to passing motorists. Larger signage that conforms to current standards would also warn drivers of the possibility of cross traffic.



[ENCINAL CANYON ROAD]

T-Intersection, low accident rate, no signal

Total collisions: 3

Most Frequent PCF: Head on 66% (Passing)

Injury Rate (Including Fatal): 66% | Day/Night: 67% / 33%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

Similar to Decker Canyon, Encinal Canyon is a low volume semi-rural road. The addition of a traffic signal would improve visibility with the addition of larger street signs which are the current standard.



[BROAD BEACH ROAD]

T-Intersection, low accident rate, no signal

Total Collisions: 1

Most Frequent PCF: Broadside (Turning)

Injury Rate (Including Fatal): Fatal 100% | Day/Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This intersection connects the residential Broad Beach neighborhood to PCH. There is also a southern terminus at the Trancas Canyon intersection. A traffic signal could provide protection for left turns in and out of this street, as most residents enter via a left turn and exit by turning right. There is currently space to widen the center of the intersection to provide for a left turn pocket exiting the neighborhood. The current limited sight lines force residents to place the nose of their vehicle in traffic in order to safely exit right or left.



[LUNITA ROAD]

T-Intersection, low accident rate, no signal

Total Collisions: 2

Most Frequent PCF: Broadside 50% (Turning)

Injury Rate (Including Fatal): 0 | Day/Night: 100% day

Improvements needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This street accesses approximately a dozen homes of the north side of PCH. It is not well marked and approaching vehicles do not recognize it as an intersection. Although protected left turn pockets would improve safety since the majority of the movements exiting the neighborhood are left turns, it would be more economical to force a right turn exit and have residents make a U-turn in a safe location. Lastly, the addition of a traffic signal may also increase the safety of entering PCH.



[TRANCAS CANYON ROAD]

4-Way intersection, moderate accident rate, existing signals

Total Collisions: 5

Most Frequent PCF: Various

Injury Rate (Including Fatal): Injury 40% | Day/Night: Day 100%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes (Note: improvement project in design)
- Widening of approach

This intersection provides access to PCH for Broad Beach Residents and homes to the north adjacent to Trancas Canyon. It is also adjacent to the major retail area for the north portion of Malibu. During the summer months, it is heavily used by pedestrians from Zuma Beach and is used by north-bound vehicles who turn right and subsequently turn around to travel south on PCH.

There is a current proposal to add deceleration lanes as part of remodeling of the retail establishments. This will significantly improve the current configuration along the lines of the recommendations in this report. One of the conditions of the construction project calls for a painted bike lane to allow cyclists to separate between the through lane and the right turn pocket. Caltrans is opposed to this configuration since the bike lane is not contiguous to the rest of the highway.

The high volume of pedestrian traffic combined with vehicles turning onto and off PCH warrants the addition of an overhead crossing. This would eliminate the constant conflict during peak periods in the summer when vehicles cannot complete their turning movements during the signal cycle due to the large number of pedestrians.



[GUERNSEY AVENUE]

T-Intersection, low accident rate, no signal (potential school access)

Total Collisions: 3

Most Frequent PCF: Rear-end 66% (Speed)

Injury Rate (Including Fatal): 0 | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3
- Signalization
- Widening of approach, improve sightlines

This roadway provides access to PCH for residents living north of PCH. The approach has hills on each side so the sight distance is very limited. There is no crosswalk, but is heavily utilized during the summer by beachgoers seeking free parking on the residential streets.

Guernsey Ave. connects with Morning View Dr. as the only access route to the Malibu Schools. Although the schools are much closer to Morning View Dr. than Guernsey Ave., it is recommended that both roadways be converted to one-way streets where vehicles would enter the schools and residential areas from Morning View Dr., and exit via Guernsey Ave. This would require the installation of a signal at Guernsey Ave. to allow motorists to complete the natural loop from north to south.

Part of this recommendation would eliminate most of the street parking on the roadways, near PCH in order to discourage beach parking. In addition to making the intersections safer, it would greatly improve the safety and efficiency of the school drop off and pick up. A pedestrian crossing should be located in the intersection, as it can be anticipated Zuma beach patrons will attempt to cross PCH to access the shopping area to the north off Trancas Canyon. An alternate would be to prohibit pedestrian crossing forcing them to use the proposed overcrossing at Trancas Canyon.



[MORNING VIEW DRIVE]

T-Intersection, moderate accident rate, signalized (school access)

Total Collisions: 5

Most Frequent PCF: Rear-end 60% (Speed)

Injury Rate (Including Fatal): Injury 20% | Day / Night: 80% / 20%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Widening of approach, improve sightlines
- School crossing signs, crosswalk

This intersection is mostly utilized by residents and for school access. Three schools are comingled at the top of Morning View Dr. There should be a left turn pocket for the street as it handles large volumes of traffic during school hours.

In order to improve safety and efficiency during school drop off and pick up hours, Morning View Dr. could be converted to a one way street allowing ingress with Guernsey Ave. completing the loop as the point of egress. It is possible to maintain it as a standard intersection while converting Morning View Dr. to a one-way street at residential intersection prior to entering the school zone. This option may be preferable to some residents who currently exit neighborhoods south of the schools to access PCH.

As the major school access point and summertime parking area for Zuma Beach this intersection could benefit from a pedestrian overcrossing. Many summer visitors park in and around the schools in search of free parking. Such a crossing would make it safer for students to cross PCH and would allow the utilization of the Zuma Beach parking lots as a drop off area for parents who wish to avoid the congestion immediately adjacent to the schools.



[BUSCH DRIVE]

T-Intersection, moderate accident rate, signalized

Total Collisions: 6

Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): Injury 17% | Day / Night: 83% / 17%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Access via Zuma Beach undercrossing

Busch Dr. provides access to residents north of PCH. There is a small retail mall on the northwest corner. Most important, Busch Dr. is utilized for the Zuma Beach undercrossing that access the only parking lot entrance.

The Zuma Beach undercrossing is vital to maintaining a safe and efficient entrance to the main parking lot. It allows stacking of numerous vehicles waiting to enter the lot during peak demand. Without it, a left turn lane would have to be constructed in the center of PCH along with a long storage pocket that would interfere with two intersections east of Busch Dr.

The current undercrossing is adjacent to a small stream that allows for drainage from the canyons above. Often this stream flows in to the undercrossing roadway, which if the stream causes the closure of the access road; increased traffic would impact on PCH. would be a disaster for PCH. It would create incredible gridlock on the highway during peak summer periods and would eliminate some access to the streets east of Busch Dr. Maintenance of this undercrossing is probably the most important project that would impact the safety of the highway in this area.



[WESTWARD BEACH ROAD]

T-Intersection, high accident rate

Total Collisions: 10

Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): Injury 50% | Day / Night: 90% / 10%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Access via Zuma Beach undercrossing, (see notes)
- Right turn only access to PCH

Westward Beach Rd. provides access to the parking lot and restaurant at the end of the road. It is also used as the main exit from the Zuma Beach parking area. During the peak summer months, it becomes heavily congested and is often gridlocked. Deputies often close the road when the beach parking lots close. Along the beach, both sides of this road are used for free parking.

The safety of this intersection will be greatly improved by the addition of a traffic signal. Also, the bus bench on the center median should be moved north of the intersection with a bus turn out for additional safety. This would require covering the stream that passes next to Busch Drive under the highway, which is necessary to control the flow of the currently wayward stream. Also the current exit from Zuma Beach should be elevated (Arizona Crossing) above the natural level of the stream.

The majority of the congestion can be attributed to the lack of beach parking and overcrowding of this street. Both the Zuma and Westward beach parking lots could easily be expanded and re-designed to allow for additional parking and more efficient ingress and egress. An overhead digital sign similar to those used in parking garages could display the number of available spaces in the parking lots to vehicles on PCH. Finally, parking on Westward Beach Rd. should be eliminated unless the road is substantially widened with marked diagonal parking spaces on the beach side only.

The existing conditions of parallel parking on both sides of the roadway where pedestrians walk in the roadway and cross at every possible location contribute to making this the most hazardous area in Malibu that is not on PCH.



[BONSCALL DRIVE]

T-Intersection, low accident rate, no signal

Total Collisions: 1

Most Frequent PCF: Other

Injury Rate (Including Fatal): 0 | Day / Night: 100% night

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

Bonsall Dr. provides access to residents north of PCH. There is also access to Busch Dr. via a cross street north of PCH. The City of Malibu had limited traffic to northbound at PCH due to the lack of sight distance. The narrow substandard lanes are bracketed by high trees forcing vehicles to nose onto PCH in order to safely exit. Often the intersection is gridlocked in the peak summer periods.

This is the first of three intersections spaced extremely close to one another. Installation of a traffic signal is not recommended due to its proximity to Busch Dr. Thus if it is to be utilized as an exit on to PCH, vehicles should be limited to making a right turn only. Residents wishing to exit left should be encouraged to use the signal at Busch Dr. Since the access to Busch Dr. is via a cross street that is often impassable due to the overflow to the stream, that crossing should be improved to allow access at all times. This should be completed as part of the enclosing of the stream adjacent to Busch Dr. impacting the Zuma Beach undercrossing.



[HEATHERCLIFF DRIVE]

T-Intersection, high accident rate

Total Collisions: 10

Most Frequent PCF: Rear-end 40% (Speed)

Injury Rates (Including Fatal): Injury 10% Day / Night: 90% / 10%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Improved crosswalks, sidewalks

Heathercliff Dr. is the major access route to the Point Dume residential area and a shopping area on the southwest corner of PCH. This location was recently scrutinized when a local teenager was killed by a suicidal driver. It is often impacted by heavy congestion since it is between Zuma Beach and Kanan Dume Rd. which is the main exit route from that recreational area.

The addition of sidewalks and improved markings of crosswalks will provide a safe area for pedestrians who congregate here to catch the bus. Signal timing should be improved as there tends to be a large back up of vehicles eastbound and less congestion east of the intersection. This should reduce the number of rear-end collisions.



[CAVALLERI ROAD]

4-way Intersection, moderate accident rate, no signal

Total Collisions: 6

Most Frequent PCF: Broadside 66% (Turning)

Injury Rate (Including Fatal): Injury 17% | Day / Night: 83% / 17%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Signalization

This street accesses residential areas north of PCH. There is no through traffic and it is used by residents only. A signal could be beneficial, but may not be practical due to the close proximity to Kanan Dume Rd. Accidents could most likely be reduced by the addition of a safety lane in the middle of PCH that requires drivers making a left turn onto PCH to only clear one direction of traffic at a time.



[PORTSHEAD ROAD]

4-way Intersection, low accident rate, no signal

Total Collisions: 3

Most Frequent PCF: Rear-end 66% (Speed)

Injury Rate (Including Fatal): Injury 33% | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This street accesses residential areas south of PCH. It is across from Cavalleri Rd. forming the 4-way intersection. The safety of this intersection would be improved by the protected center turn area described above and in Figure 3.



[KANAN DUME ROAD]

T-Intersection, high accident rate

Total Collisions: 19

Most Frequent PCF: Rear-End 41% (Speed)

Injury Rate (Including Fatal): 5% Fatal, 16% Injury | Day / Night: 53% / 47%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Additional left turn lane (eastbound)
- Removal of runaway vehicle median, widen approach

This road is a major canyon route between the Conejo Valley and Malibu. It is a commuter route that is very heavily used and often becomes congested during peak summer hours. Rear end collisions are a result of heavy congestion. Over the years, several fatal collisions resulted from trucks illegally using Kanan Dume as a route to Malibu and subsequently losing braking ability.

Although there is a hillside south of the intersection and businesses north of PCH, the roadway needs to be widened to allow for double left turns from eastbound PCH to northbound Kanan Dume Rd. This will alleviate much of the congestion that causes the collisions. The addition of "Smart" signal technology will allow the left turn arrow to remain green longer during peak periods.

The truck escape median on Kanan Dume Rd. should be removed since trucks can no longer legally use it as an alternate route. Also, trucks that have crashed as a result of loss of braking ability have never utilized it. Removing the median will allow for additional width on Kanan Dume Rd. to accommodate the double left turns once PCH is improved to allow for this movement.





[ZUMA MESA DRIVE]

T-Intersection, low accident rate

Total Collisions: 1

Most Frequent PCF: Rear-end 100% (Speed)

Injury Rate (Including Fatal): 0 | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This roadway provides access to about a dozen residences north of PCH. Due to its close proximity to Kanan Dume Rd., it is conceivable that residents wishing to turn left onto PCH could easily turn right toward Kanan Dume Rd. and then execute a U-turn to proceed south on PCH. This will not be possible until the Kanan Dume Rd. intersection is improved. If that is not possible, the addition of protected center turn lanes would benefit vehicles exiting to make a left turn.



[ZUMIREZ DRIVE]

4-way Intersection, moderate accident rate, signalized

Total collisions: 5

Most Frequent PCF: Rear-end, 40% (Speed)

Injury Rate (Including Fatal): 20% injury | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Sidewalk and median

This road accesses residences north and south of PCH. The southern portion is a secondary route to the Point Dume area. The southern portion was re-aligned to create a 4-way intersection. Due to a curve of PCH north of the intersection, southbound drivers have complained they cannot see the signal until they are too close to stop safely.

It is recommended a sign advising motorists of the signal be placed north of the intersection to better alert southbound drivers of the traffic signal.



[RAMIREZ MESA DRIVE]

RAMIREZ MESA DRIVE

T-Intersection, moderate accident rate

Total Collisions: 4

Most Frequent PCF: Broadside 50% (Turning)

Injury Rate (Including Fatal): Injury 25% | Day / Night: 75% / 25%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road provides access to residences north of PCH. Due to the speeds on PCH, the addition of a center turn lane will assist drivers when exiting the location to make a left turn. Turn pockets will provide a safe area for vehicles waiting to turn. Signage alerting drivers to the location of the intersection should also provide an additional level of safety.



[PARADISE COVE ROAD]

T-Intersection, high accident rate, signalized

Total collisions: 16

Most Frequent PCF: Rear-end 63% (Speed)

Injury Rate (Including Fatal): Injury 25% | Day / Night: 94% / 6%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes (extended for beach access)
- Improved crosswalks, sidewalks, signage
- Widen approach, dedicated turn lanes upon exit
- Open alternate entrance for residents only

This road provides access to the Paradise Cove Beach Café and resort area. It is also the only access road to the mobile home park adjacent to Paradise Cove. Most of the collisions are a result of traffic congestion attempting to enter the beach area during peak summer periods. Often left turn traffic cannot clear the intersection and it creates gridlock. Employees attempt to turn away vehicles when the parking lot fills, but vehicles continue to enter including residents attempting to return home.

Some visitors attempt to park on PCH and walk into the resort area. Sidewalks should be installed on PCH as well as Paradise Cove Rd. which is too narrow and needs to be widened. Patrons must be processed faster during peak periods and the Paradise Cove Beach Café should be required to post a sign indicating when the parking lot is full.

Most important would be to provide a separate entrance to the mobile home park. There is an existing gate facing PCH, but it is not opened in order to save the expense of staffing it or paying for an automatic gate along with lane modifications to make it safe to use.



[SEA LANE DRIVE]

4-Way Intersection, low accident rate

Total Collisions: 3

Most Frequent PCF: Broadside 67% (Turning)

Injury Rate (Including Fatal): 0 | Day / Night: 67% / 33%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road is the southern portion of Winding Way (w), creating a 4 way intersection. It provides residential access only and is not usually travelled by visitors. The greatest safety improvement will be the addition of a protected center turn lane. A signal would not necessarily be warranted.



[WINDING WAY (WEST)]

4-Way Intersection, low accident rate

Total Collisions: 3

Most Frequent PCF: Broadside 67% (Turning)

Injury Rate (Including Fatal): 0 | Day / Night: 67% / 33%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This is the north portion of the 4-way intersection with Sea Lane Dr. The accident data and recommendations are exactly the same as Sea Lane Dr.



[MEADOW COURT]

T-Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Other

Injury Rate (Including Fatal): 0 | Day / Night: 0 / 100%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road allows access to a residential area north of PCH. Due to the low traffic volume, the addition of a protected center turn lane should provide an additional level of safety for vehicles turning right onto PCH.



[ESCONDIDO BEACH ROAD]

T-Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Broadside (Turning)

Injury Rate (Including Fatal): Injury 100% | Day / Night: 50% / 50%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This roadway provides access to the residential area south of PCH. The addition of a center left turn lane would provide an extra level of safety for vehicles turning left.



[MALIBU COVE COLONY DRIVE]

4-Way Intersection, moderate accident rate

Total Collisions: 4

Most Frequent PCF: Broadside 50% (Turning)

Injury Rate (Including Fatal): Injury 50% | Day / Night: 75% / 25%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This is the south portion of the 4-way intersection created by Via Escondido to the north. It is exclusively for residential access and would benefit from a protected center turn lane.



[VIA ESCONDIDO]

4-Way Intersection, moderate accident rate

Total Collisions: 4

Most Frequent PCF: Broadside 50% (Turning)

Injury Rate (Including Fatal): 0 | Day / Night: 75% / 25%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This is the northern portion of the 4-way intersection formed with Malibu Cove Colony and the accident data and recommendations are the same as above.



[SEA VISTA DRIVE]

4-Way Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Rear-End 50% (Speed)

Injury Rate (Including Fatal): Injury 100% | Day / Night: 50% / 50 %

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

Sea Vista Drive leads to a residential area north of PCH. It intersects with Seagull Dr. on the south which forms a 4-way intersection. The addition of protected center turn lanes would improve the safety of this intersection.



[SEAGULL DRIVE]

4-Way Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Broadside 50% (Turning)

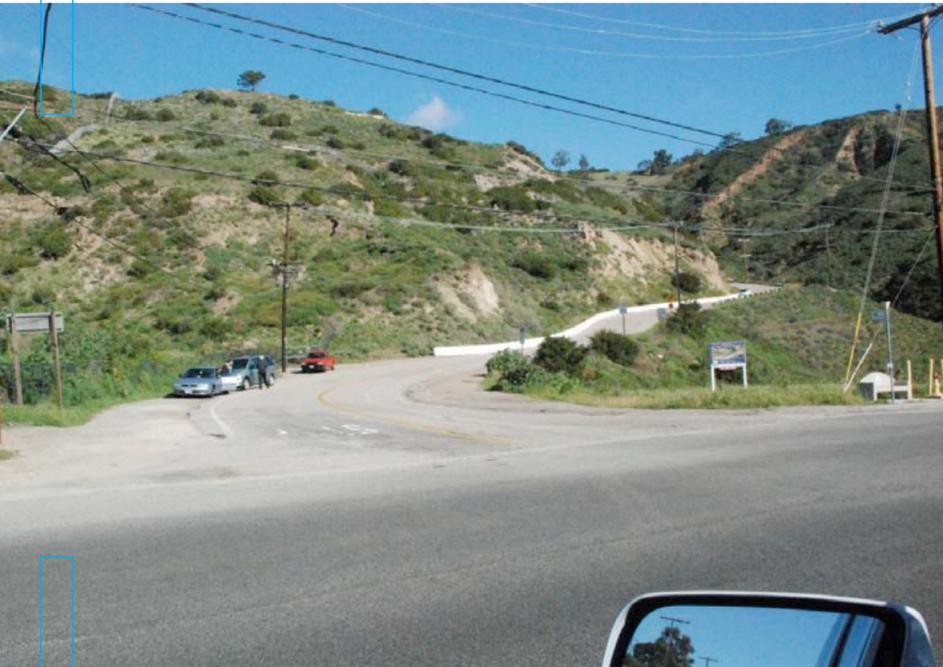
Injury Rate (Including Fatal): 0 | Day / Night: 50% / 50%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This is the southern portion of the Sea Vista Dr. 4-way intersection. The statistics and recommendations are the same as Sea Vista Drive.





[LATIGO CANYON ROAD]

T-Intersection, low accident rate

Total Collisions: 3

Most Frequent PCF: Broadside 67% (Turning)

Injury Rate (Including Fatal): Injury 33% | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

Latigo Canyon Rd. provides access to residential areas north of PCH and connects to Kanan Dume Rd. at the top. It bisects a portion of PCH that is considered a fast downhill southbound. The addition of a traffic signal would most likely reduce the broadside collisions that result from the high speeds on PCH. If a traffic signal is not feasible, the use of protected center turn lane would assist the majority of the drivers who are turning south on PCH from Latigo Canyon.

[CORRAL CANYON ROAD]

T-Intersection, high accident rate, signalized

Total Collisions: 10

Most Frequent PCF: Broadside 67% (Turning)

Injury Rate (Including Fatal): Injury 30% | Day / Night: 100% day

Improvements needed:

- Lighting
- Acceleration/Deceleration lanes
- Widen approach, add sidewalks
- Install pedestrian undercrossing in existing nearby drainage

Corral Canyon Rd. provides access to a residential area north of PCH. It also leads to Solstice Canyon Park. Many visitors utilize the Solstice Canyon parking lot and walk across PCH to the Dan Blocker Beach area. There are also several businesses on each side of Corral Canyon Rd.

A drainage channel runs under PCH on the south side of Corral Canyon. Many visitors use this for safe passage under the highway. Rather than upgrading the crosswalk at the signal, it is recommended that a pedestrian undercrossing be constructed in conjunction with the existing drainage channel. By removing pedestrians from the highway, they can be kept virtually immune from traffic hazards.

Improved directional signage will allow visitors to access the beaches and parks with little difficulty and eliminate unnecessary U-turns for lost tourists.



[MALIBU ROAD (WEST)]

T-Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Broadside 100% (Turning)

Injury Rate (Including Fatal): 0 | Day / Night: 50% day / 50% night

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3
- Reconfigure to allow for entrance

Malibu Road (W) is a single lane exit for the residential area on Malibu Road. Drivers cannot see PCH until they move their vehicle onto the highway since the road begins well below PCH.

This intersection should be reconfigured to a two-way standard T configuration where left turns could be allowed with the addition of a protected center lane. It is not clear why this portion of Malibu Rd. was restricted to an exit only, but most likely this was done to restrict non-residential access to what was a private beach area at one time. Now that public access is now mandated, the reconfiguration will make the intersection safer and allow motorists to make legal turns onto Malibu Rd. where they currently make unsafe, illegal driving maneuvers.



[PUERCO CANYON ROAD]

T-Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): fatal 50% | Day / Night: 50% / 50%

Improvements needed:

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road leads to a small residential area north of PCH. The addition of a protected center turn lane would increase the safety of this intersection. The sole fatality was a result of a sideswipe where the victim's vehicle slid on its side into the poles in the photo.



[JOHN TYLER DRIVE]

T-Intersection, high accident rate, signalized

Total Collisions: 16

Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): Injury 37% | Day / Night: 56% / 44%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Sidewalks

This road provides access to residences north of PCH and is one of the two entrances to Pepperdine University. It is probably one of the better lit and signed intersections in Malibu. Unfortunately, it is located just west of Malibu Canyon, a major commuter route to PCH. The high accident rate is a result of the very high volume of traffic and inattention of visitors gazing at the ocean and the University.



[MALIBU CANYON ROAD]

4-Way intersection, high accident rate, existing signals

Total Collisions: 23

Most Frequent PCF: Rear-end 70% (Speed)

Injury Rate (Including Fatal): Injury 34% | Day / Night: 74% / 26%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Improved signal timing
- Add sidewalks

Malibu Canyon is the major access to PCH from the 101 freeway. It is used by commuters, tourists, and trucks. It has the highest traffic volume in the city, and hence the second highest number of collisions. As the common themes on PCH, most of the collisions are low speed, rear-end collisions during peak commute and tourist hours. One area of concern is the lack of signal timing and the failure of Caltrans to use "Smart" signal technology that would automatically adjust signal timing to reflect the actual traffic usage of the roadways. On a daily basis, traffic turning south on PCH from Malibu Canyon Rd. is backed up for one-half mile while southbound lanes on PCH are virtually empty. With smart technology or the even better option of visual monitoring from the Traffic Center, the efficiency and congestion at this intersection could be improved and possibly reduce the number of collisions.



[CIVIC CENTER WAY]

T-intersection, low accident rate

Total Collisions: 1

Most Frequent PCF: Pedestrian/Bike 100% (Speed)

Injury Rate (Including Fatal): Injury 100% | Day / Night: 100% night

Improvements Needed

- Removal

This appears to be an old on ramp to the highway from Civic Center Way, a street that parallels PCH. This ramp epitomizes the lack of maintenance and modernization by Caltrans and the City of Malibu.



[WEBB WAY]

4-Way intersection, high accident rate, existing signals

Total Collisions: 18

Most Frequent PCF: Rear-end 44% (Speed)

Injury Rate (Including Fatal): Injury 33% | Day / Night: 72% / 28%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Widening of approach
- Add sidewalks

This road provided access to Malibu Rd. and the major shopping area of Malibu. There is often congestion during peak periods which is exacerbated by the lack of storage space on the south leg of Webb Way. Additionally, vehicles turning left from the south leg do not have a green arrow, even though southbound traffic is stopped.

The addition of a green arrow for left turns from northbound Webb Way will improve the efficiency of the intersection. Also, both north and south turn pockets of PCH should be lengthened to allow for additional storage during peak times. Once again, smart signal technology should make the intersection more efficient.

Pedestrians on the south side of Webb Way have access to sidewalks, but once they cross to the north side of PCH, they are literally left in the dirt.



[CROSS CREEK ROAD]

4-Way intersection, high accident rate, existing signals

Total Collisions: 14

Most Frequent PCF: Rear-end 43% (Speed)

Injury Rate (Including Fatal): Injury 21% | Day / Night: 79% / 21 %

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks
- Improve crosswalk
- Signal timing

Cross Creek Road provides access to a major retail area in Malibu. It is often used as a short cut around PCH to Malibu Canyon Road. To the south is the entrance to Malibu Lagoon which lacks sidewalks and improved smart type crosswalk. Improving these aspects will add to pedestrian safety.

The major issue with this intersection is the timing of the signal. PCH will be completely gridlocked south of the intersection, while to the north, the highway is almost empty. Serious attention to this signal timing issue could greatly improve the efficiency of the highway which is the leading causal factor for the rear end collisions.



[SERRA ROAD]

T-Intersection, moderate accident rate

Total Collisions: 6

Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): Injury 17% | Day / Night: 83% / 17%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3
- Add traffic signal

This roadway leads to a large residential area north of PCH. There is an additional access road via Civic Center Way. This area of PCH experiences a large amount of congestion resulting from high volume and poor signal timing at Cross Creek Rd. The high volume of stopped vehicles can make it extremely difficult to turn left during peak commute hours.

The left turn pocket into Serra Rd. competes with a left turn into the beach parking lot entrance west of Serra Rd. This creates the potential for a head on collision in the two way left turn lane. In order to remedy this situation, the entrance to the parking lot should be moved east to become a 4-way intersection with Serra Rd. For complete safety, the addition of a signal would be necessary. Since the volume of cross traffic is not significant, the addition of the signal should not impact traffic on PCH. A smart signal would eliminate unnecessary delays in PCH traffic.

If the addition of a traffic signal is not feasible, the center turn lane needs to provide a safe area for left turns. Unfortunately, the left turn into the beach parking lot would have to be eliminated requiring visitors to make a U-turn at Cross Creek.





[SWEETWATER CANYON DRIVE]

T-Intersection, moderate accident rate

Total Collisions: 6

Most Frequent PCF: Rear-end 33% (Speed)

Injury Rate (Including Fatal): Injury 17% | Day / Night: 50% / 50%

Improvements Needed

- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road leads to a residential area north of PCH. The major concern here involves the limited sight lines and street parking for the businesses on PCH. The addition of acceleration/deceleration lanes with the protected center turn lane will improve the safety at this intersection.



[CARBON MESA]

T-Intersection, low accident rate

Total Collisions: 2

Most Frequent PCF: Rear-end 100% (Speed)

Injury Rate (Including Fatal): 0 | Day / Night: 50% / 50%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Protected center lane turn area with delineators, see Figure 3

This road leads to a residential area north of PCH. Like most intersections south of Malibu Canyon, the most frequent collisions are non-preventable resulting from congestion. This more resembles a driveway more than a roadway, and should be improved to meet current standards for intersections entering a highway.



[CARBON CANYON ROAD]

T-Intersection, high accident rate, signalized

Total Collisions: 12

Most Frequent PCF: Rear-end 75% (Speed)

Injury Rate (Including Fatal): Injury 8% | Day / Night: 83% / 17%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

Carbon Canyon Road leads to a residential area north of PCH. Keeping with the common theme for this portion of the highway, the collisions are non-preventable rear end due to congestion during peak commute hours.



[RAMBLA VISTA (WEST)]

T-Intersection, low accident rate

Total Collisions: 2

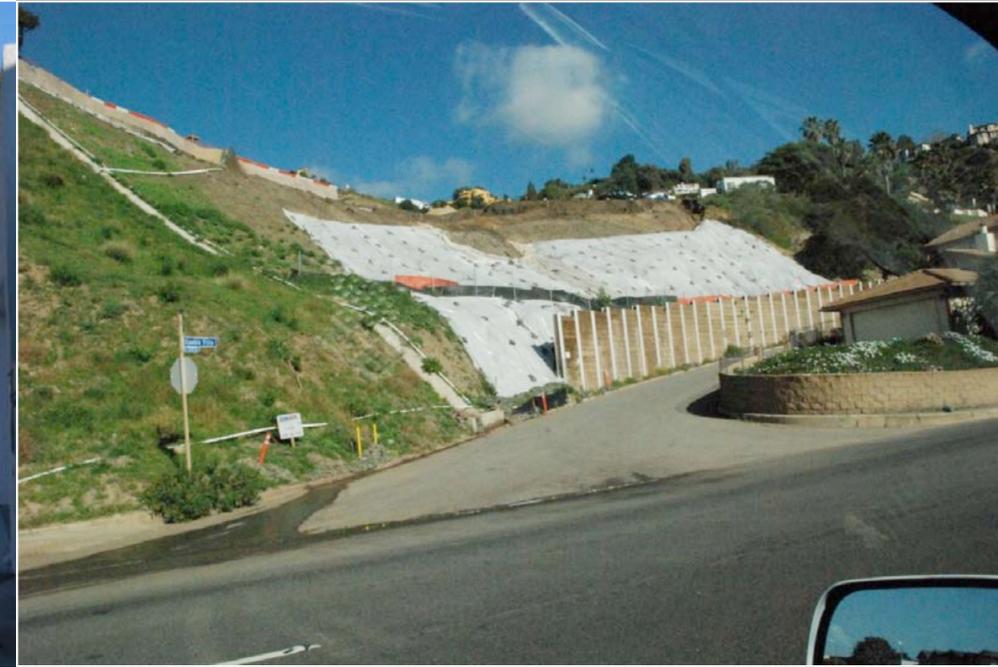
Most Frequent PCF: Rear-end 50% (Speed)

Injury Rate (Including Fatal): 0 | Day / Night: 100% day

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

As part of the Rambla Vista loop, it is suggested that Rambla Vista become a one way street where it crosses PCH. The east loop will be a one way entrance and the west loop will be a one way exit.





[RAMBLA VISTA (EAST)]

T-Intersection, high accident rate

Total Collisions: 8

Most Frequent PCF: Broadside 50% (Speed)

Injury Rate (Including Fatal): Injury 50% | Day / Night: 88% / 12%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

Rambla Vista connects with PCH at two locations. This street exits next to an off street parking area where the merge is not delineated and conflicts with traffic turning right from PCH. This section enters PCH within 100 yards of two other intersections. This design contributes to the highest accident rate in Malibu at Las Flores Canyon.

Despite the recommendations above, these three intersections will continue to contribute to the high accident rate unless they are redesigned into two distinct intersections further apart.

Absent the redesign of the intersections, consideration should be given to making the lower portions of Rambla Vista one way. The east leg of Rambla Vista leads itself as a natural entrance, while the west portion faces north and should be the one way exit.



[RAMBLA PACIFICO STREET]

T-Intersection, low accident rate, signalized

Total Collisions: 10

Most Frequent PCF: Rear-end 70% (Speed)

Injury Rate (Including Fatal): Injury 40% | Day / Night: 80% / 20%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

Rambla Pacifico is a relatively short street north of PCH that leads to a small number of residences. It may be possible to access these residences via Las Flores Rd. with the repair of an existing cross street north of PCH. This would alleviate the backup caused by the close proximity to the Las Flores intersection signal. If none of these solutions are adopted, the coordination of the two signals could improve safety in this area.



[LAS FLORES CANYON ROAD]

T-Intersection, high accident rate, signalized

Total Collisions: 26

Most Frequent PCF: Rear-end 58% (Speed)

Injury Rate (Including Fatal): Injury 35% | Day / Night: 77% / 23%

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

Las Flores Canyon leads to residences north of PCH and connects with other canyon roads that lead towards the 101 freeway. Due to its narrow and winding path, it is not considered a commuter route to anyone other than residents of the canyons. As previously mentioned, it could provide access to Rambla Vista and thus eliminate the dueling signals at those intersections.

This intersection has the highest number of collisions on PCH, most of which consist of non-preventable rear end incidents. This is a result of congestion and poor signal timing.



[BIG ROCK DRIVE]

T-Intersection, high accident rate, signalized

Total Collisions: 7

Most Frequent PCF: Rear-end 43% (Speed)

Injury Rate (Including Fatal): Injury 57% | Day / Night: 86% / 14 %

Improvements Needed

- Lighting
- Acceleration/Deceleration lanes
- Add sidewalks, median barrier

This road leads to a residential area north of PCH. This is used exclusively by residents as there is no other exit. The addition of deceleration lanes and improved signal timing could reduce rear end collisions and lead to more efficient operation of the intersection.



[TUNA CANYON ROAD]

T-Intersection, exit only, moderate accident rate

Total Collisions: 5

Most Frequent PCF: Rear-end 40% (Speed)

Injury Rate (Including Fatal): Injury 60% | Day / Night: 60% / 40 %

Improvements Needed

- Lighting
- Acceleration lane
- Median barrier
- Right turn only, no entrance

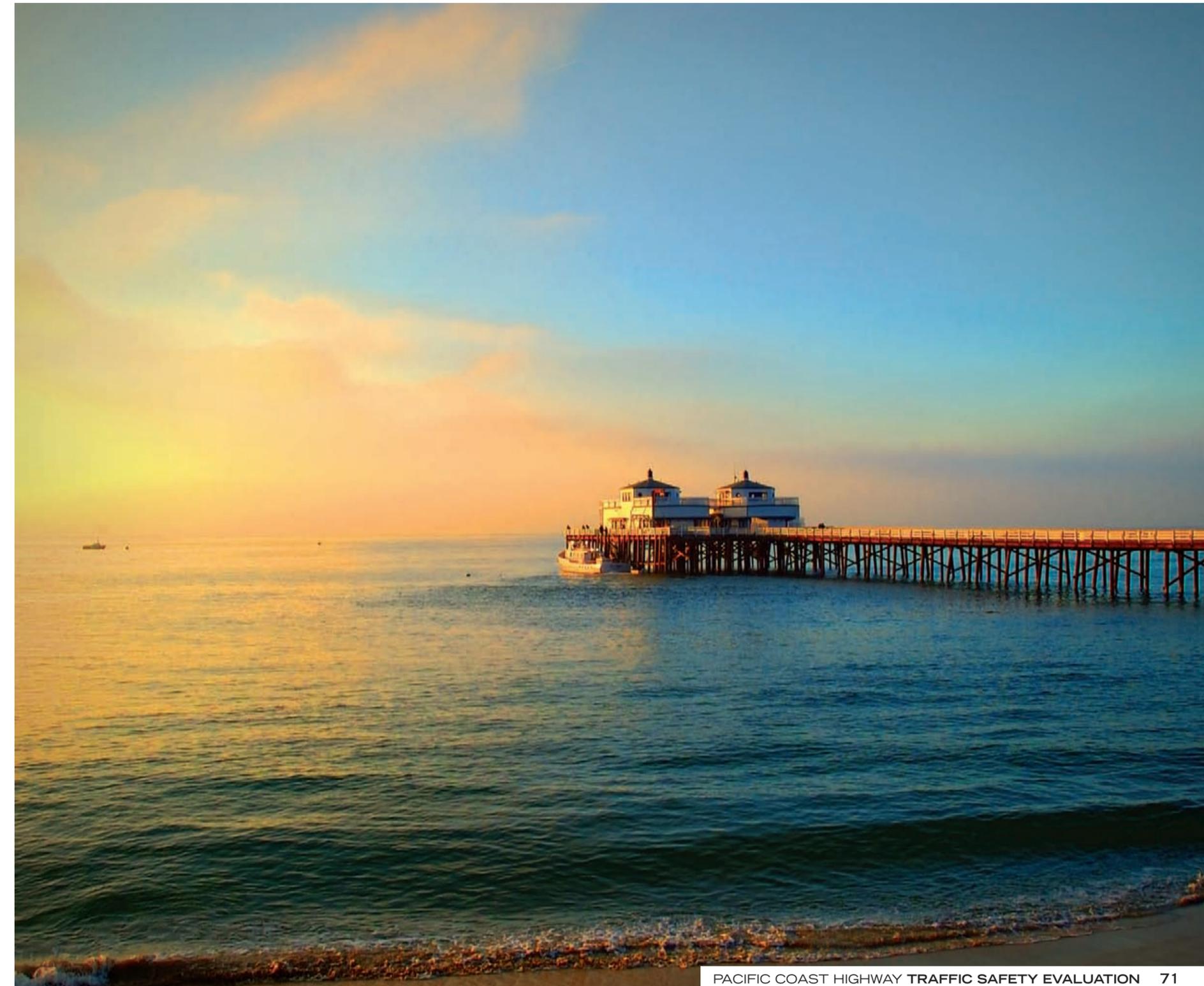
This road is a one way exit only. There is a small portion for several hundred feet north of PCH that allows northbound traffic. This should be eliminated and the road should be signed to prohibit entrance from PCH. Tuna Canyon Road could be widened to allow for two way traffic, but that is unlikely to occur.

[INTERSECTION COLLISION CHART]

INTERSECTION	3 YEAR	FATAL	INJURY	BROADSIDE	HEAD ON	REAR END	SIDE SWIPE	PED BIKE	DAY/NIGHT	TRAFFIC SIGNAL	Y/N/ADD
DECKER CANYON RD.	2	0	0	1 / 50%	0	0	0	0	100% / 0%	N	
ENCINAL CANYON RD.	3	0	2	1 / 33%	2/66%	0	0	0	67% / 33%	N	
BROAD BEACH	1	1	0	1 / 100%	0	0	0	0	100% / 0%	N	
LUNITA RD.	2	0	0	1 / 50%	0	1 / 50%	0	0	100% / 0	N	
TRANCAS CANYON RD.	5	0	2	0	1/2 0%	1 / 20%	1 / 20%	1 / 20 %	100% / 0%	Y	
GUERNESY AVE.	3	0	0	1 / 33%	0	2 / 66%	0	0	100% / 0%	N	
MORNING VIEW DR.	5	0	1	1 / 20%	0	3 / 60%	0	0	80% / 20%	Y	
BUSCH DR.	6	0	1	0	0	3 / 50%	2 / 33%	0	83% / 17%	Y / NOTE	
WESTWARD BEACH RD.	10	0	5	2 / 20%	1 / 10%	5 / 50%	0	0	90% / 10%	N / NOTE	
BONSALL DR.	1	0	1	0	0	0	0	0	0 / 100%	N	
HEATHERCLIFF	10	0	1	3 / 30%	0	4 / 40%	1 / 10%	0	90% / 10%	Y	
CAVALLERI RD.	6	0	1	4 / 66%	0	2 / 33%	0	0	83% / 17%	N	
PORTSHEAD	3	0	1	0	0	2 / 66%	1 / 33%	0	100% / 0%	N	
KANAN DUME RD.	19	1	3	3 / 16%	0	8 / 42%	4 / 21%	1 / 5%	53% / 42%	Y / NOTE	
ZUMA MESA DR.	1	0	0	0	0	1 / 100%	0	0	100% / 0%	N	
ZUMIREZ DR. (E)	5	0	1	1 / 20%	0	2 / 40%	0	0	20% / 80%	Y	
RAMIREZ MESA	4	0	1	2 / 50%	0	1 / 25%	1 / 25%	0	75% / 25%	N	
PARADISE COVE RD.	16	0	4	1 / 6%	0	10 / 63%	3 / 19%	0	94% / 6%	Y	
SEA LANE DR.	3	0	0	2 / 67%	0	0	1 / 33%	0	67% / 33%	N	
WINDING WAY (W)	3	0	0	2 / 67%	0	0	1 / 33%	0	67% / 33%	N	
MEADOWS CT.	2	0	0	0	0	0	0	0	0 / 100%	N	
ESCONDIDO BEACH RD.	2	0	2	1 / 50%	0	0	1 / 50%	0	50% / 50%	N	
MALIBU COVE COLONY DR.	4	0	2	2 / 50%	1 / 25%	0	1 / 25%	0	75% / 25%	N	
VIA ESCONDIDO	4	0	2	2 / 50%	1 / 25%	0	1 / 25%	0	75% / 25%	N	

[INTERSECTION COLLISION CHART - CONTINUED]

INTERSECTION	3 YEAR	FATAL	INJURY	BROADSIDE	HEAD ON	REAR END	SIDE SWIPE	PED BIKE	DAY/NIGHT	TRAFFIC SIGNAL Y/N/ADD
SEA VISTA DR.	2	0	0	1 / 50%	0	1 / 50%	0	0	50% / 50%	N
SEAGULL DR.	2	0	0	1 / 50%	0	1 / 50%	0	0	50% / 50%	N
LATIGO CANYON RD.	3	0	1	2 / 67%	0	1 / 33%	0	0	100%	N / ADD
CORRAL CANYON RD.	10	0	3	3 / 30%	0	5 / 50%	1 / 10%	0	100%	Y
MALIBU RD. (W)	2	0	0	2 / 100%	0	0	0	0	50% / 50%	N / NOTE
PUERCO CANYON RD.	2	1	0	0	0	1 / 50%	1 / 50%	0	50% / 50%	N
JOHN TYLER	16	0	6	5 / 31%	3 / 19%	8 / 50%	0	0	56% / 44%	Y
MALIBU CANYON RD.	23	0	8	3 / 13%	0	16 / 70%	3 / 13%	0	74% / 26%	Y
CIVIC CENTER WAY	1	0	1	0	0	0	0	1	0 / 100%	N
WEBB WAY	18	0	6	7 / 39%	1 / 6%	4 / 44%	2 / 11%	0	72% / 28%	Y
CROSS CREEK	14	0	3	4 / 29%	0	6 / 43%	4 / 29%	0	79% / 21%	Y
SERRA RD.	6	0	1	2 / 33%	0	3 / 50%	1 / 17%	0	83% / 17%	N / ADD
SWEETWATER CANYON RD.	6	0	1	1 / 17%	0	2 / 33%	2 / 33%	0	50% / 50%	N
CARBON MESA	2	0	0	0	0	2 / 100%	0	0	50% / 50%	N
CARBON CANYON RD.	12	0	1	0	0	83% / 17%	0	83% / 17%	83% / 17%	Y
RAMBLA VISTA (E)	8	0	4	4 / 50%	0	3 / 38%	1 / 13%	0	88% / 12%	N
RAMBLA VISTA (W)	2	0	0	0	0	1 / 50%	0	0	100% / 0%	N
RAMBLA PACIFICO	10	0	4	2 / 20%	0	7 / 70%	0	1 / 10%	80% / 20%	Y
LAS FLORES CANYON RD.	26	0	9	7 / 27%	2 / 8%	15 / 58%	1 / 4%	0	77% / 19%	Y
BIG ROCK DR.	7	0	4	2 / 29%	1 / 14%	3 / 43%	1 / 14%	0	86% / 14%	Y
PENA RD.	1	0	0	0	0	0	0	0	0 / 100%	N
TUNA CANYON	5	0	3	0	0	2 / 40%	2 / 40%	0	60% / 40%	N / NOTE



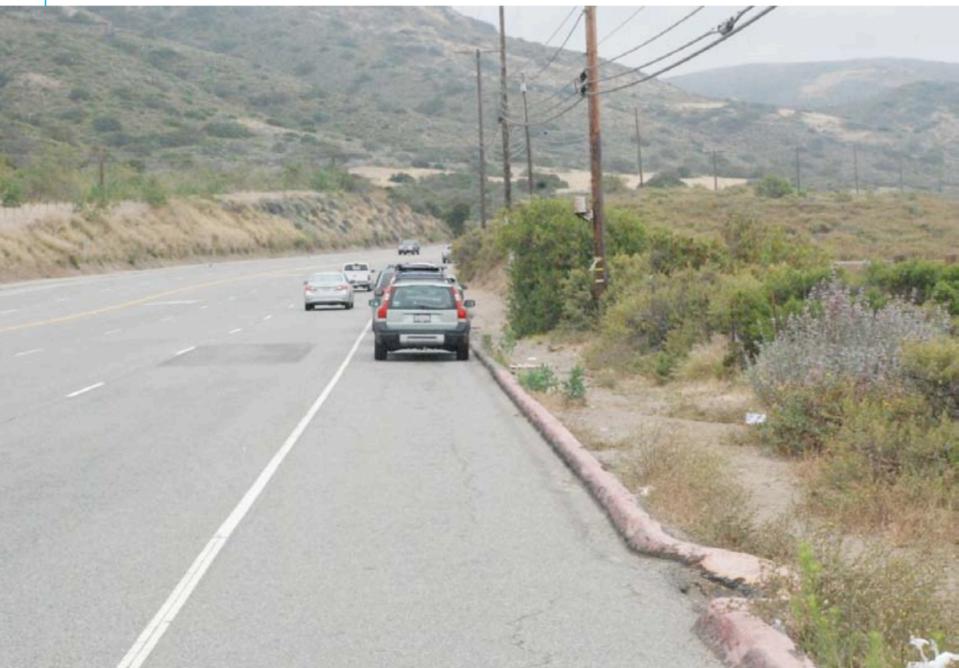
IX. Mid Block Segment Analysis

Roadway segments are generalized as rural, residential, business and combination of these types. Generally speaking, the right of way for the Pacific Coast Highway through Malibu is about eighty feet in width with an additional ten feet of shoulder space on the northern portion of the highway.

Reconfiguration of the highway will require easements from business and property owners as well as the utilization of the full right-of-way. It can be anticipated that much of the State's right-of-way has been encroached upon, especially in the southern end of the highway. While concerns of residents along the highway should be acknowledged, the fact they purchased land along said highway should not absolve them from certain inconveniences to make the highway safer and allow for smoother traffic flow.

Most of the recommendations include the addition of a median barrier, bicycle lanes and sidewalks. Removal of street parking from the land side of the highway in non-business areas for pedestrian safety is a second component of this plan. Infrastructure modifications should be based on current engineering design requirements, as this document is not intended to be a technical model.





[MULHOLLAND HWY TO DECKER CANYON ROAD]

Length: 2.4 Miles
 Injury Collisions Per Mile: 1.25
 Pcfs: Speed / Turning

This section of PCH is semi-rural and lightly populated. It encompasses Leo Carillo State Beach and campground. There is a two-way center turn lane and no sidewalks. All parking is on the street, which is lightly used since there is limited beach access.

Currently, \$900,000 is designated for this area for the addition of bicycle lanes. A bicycle lane will improve the safety for cyclists by more clearly defining a safe route of passage and will provide separation between parked vehicles and the traffic lane. It is recommended that the full right-of-way be utilized when this construction begins.

As for this and the roadway segments north of Trancas Canyon, speed enforcement is a primary concern. However, due to the lack of traffic collisions in this area, the enforcement level is much lower than the south section of Malibu. This dearth of enforcement has not resulted in an increase in the accident rate, as the volume remains low in comparison to other areas of the city. The lower enforcement rate is a result of the concentration of enforcement on the more heavily travelled areas of the highway.

Other than the proposed bicycle lanes, there are not really any infrastructure problems in this area. Issues relating to intersections will remain the major issues for roadway modifications. Only an increase of personnel would allow for additional enforcement in this area.

[DECKER CANYON ROAD TO ENCINAL CANYON ROAD]

Length: 0.53 Miles
 Injury Collisions Per Mile: 1.06
 Pcfs: Lane Change / Unsafe Speed
 This section of roadway is almost identical to the above.

[ENCINAL CANYON ROAD TO BROAD BEACH ROAD]

Length: 0.96 Miles
 Injury Collisions Per Mile: 1.04
 Pcfs: DUI / Lane Change (One Fatal)
 This section of roadway is identical to the above. The fatality was due to a DUI. This is an excellent example of how the small amount of statistics skews the data.

[BROAD BEACH ROAD TO TRANCAS CANYON ROAD]

Length: 1.56 Miles
 Injury Collisions Per Mile: 1.28
 Pcfs: Speed / Lane Change
 This section of roadway is identical to the above. Note the recommendations for the Trancas Canyon intersection.



[TRANCAS CANYON ROAD TO BUSCH DRIVE]

LENGTH: 1.83 miles

INJURY COLLISIONS PER MILE: 8.74

PCFS: speed / Lane change

This section of the roadway encompasses the entire length of Zuma Beach. There is a retail market and shops on each end of this section. There had been several serious and fatal accidents in the past, recently Caltrans added delineators in the center turn lane. Since that time (last three years) there have not been any fatal or serious injuries related to unsafe turns.

Based on the above, beginning at Trancas Canyon Road to the city limit south, the addition of a center median would prevent serious collisions related to unsafe turning movements. As can be seen by the addition of delineators, the opportunity to make the unsafe movement has been eliminated. The addition of this center median has the added benefit of adding width to the roadway which should be used for Type II bicycle lanes that will connect to the proposed lanes north of Trancas Canyon.

Even though the demand for parking exceeds the supply during peak summer periods, the elimination of street parking on the highway will greatly improve pedestrian safety. The new median will have the added benefit of preventing midblock uncontrolled pedestrian crossings. At the very least, parking on the north side of PCH should be eliminated. As noted on the intersection details, the sidewalks should extend to the neighborhood streets to allow for residents to walk safely to the local retail establishments while being afforded some protection.

If the street parking is eliminated, and the full right of way is utilized, there may be additional space on the beach side of the highway to allow for improvements to the county run parking lot. This lot is quite expansive, yet poorly designed and underutilized. By expanding towards the highway and slightly towards the beach, hundreds of parking spaces could be gained. This includes the parking on Westward Beach road and the parking lot to the south.

Even with an expanded parking lot, visitors will continue to park on the streets and the public school lots north of the highway. While the proposed median will eliminate midblock crossing, there must be a new crossing at Guernsey Ave. for a marked crosswalk to the beach. Any pedestrian crossing PCH should utilize red lights to stop vehicles instead of the flashing yellows that are currently used on crosswalks.

Drivers are acutely aware that a red light means stop. There seems to be some confusion as to flashing yellow lights in crosswalks. For safety, all crossing should use pedestrian and vehicle red lights to indicate when it is safe to cross and to make it clear when vehicles must stop. This recommendation includes all intersections and midblock crossings along the highway.



[BUSCH DRIVE TO HEATHERCLIFF ROAD]

Length: 0.67 Miles

Injury Collisions Per Mile: 10.44

Pcfs: Speed / Lane Change

This section of highway is on a constant grade with Zuma Beach on the north and a shopping center at Heathercliff Road. There are few residences abutting the roadway and parking is restricted on the north side. Parking is limited on the south side of the road where there is a restaurant with a parking lot.

Due to the lack of parking on the north side of PCH, drivers regularly make U-turns when they see a parking spot on the south side. The extension of the center median will prevent dangerous turns and prevent pedestrians from crossing the highway when dropped off on the north side. The median installation will provide additional usable right of way for bicycle lanes.

Except for the restaurant on the south side of the highway, the roadsides are generally undeveloped. This right of way could be used for the installation of bike lanes and sidewalks on both sides. This will provide safety for the pedestrians who park on the south side of the road and walk to the public beaches. Crosswalk installations mentioned in the intersection portion of this report will provide safe highway crosswalks.



[HEATHERCLIFF ROAD TO KANAN DUME ROAD]

Length: 0.36 Miles

Injury Collisions Per Mile: 5.55

Pcfs: Speed / Lane Change

This section of highway consists of open space with shopping areas on each end. The Kanan Dume intersection becomes very congested in the summer months and a large amount of traffic utilizes Kanan Dume as a commute and beach access route. Also, a larger number of cyclists use Kanan Dume to enter PCH.

The continuation of the proposed center median, bicycle lanes, and sidewalks as illustrated in Figure 1 will improve safety for commuters and pedestrians. The bus stop just south of Heathercliff is heavily used and could be improved like many of the others along the highway. Since there is no demand for on street parking in the area, parking should be prohibited and the extra right of way could be used for bicycle lanes and sidewalks.

The most common collision in this area is the rear-end type and occurs on week days during the heavy beach commute hours. The addition of "Signal Ahead" and "Slow Traffic" signs would advise the high volume of beach visitors to use caution and could reduce the number of collisions.



[KANAN DUME ROAD TO PARADISE COVE ROAD]

Length: 0.98 Miles

Injury Collisions Per Mile: 7.14

Pcfs: Speed / Follow Too Close

This section of roadway consists of a small shopping center on the north end and the entrance to the Paradise Cove Beach recreational area. While Kanan Dume is heavily utilized as a daily commuter route, Paradise Cove often becomes gridlocked on summer weekends. It is also an access road for the Paradise Cove residential mobile home park.

The modifications recommended are consistent with the previous sections of the highway, however if right of way issues can be mitigated, additional parking depicted in Figure 3 could be constructed to alleviate the overcrowding of the Paradise Cove parking lot. This modification is necessary as traffic gridlocks at the intersection when the parking lot fills. Parking attendants stack cars along the highway in order to keep the access road open for residents who share the entrance. Utilization of usable right of way for a staging area or parking would reduce congestion and eliminate the existing hazards created by stopped vehicles.

Even though there are existing crosswalks at the Paradise Cove intersection, parking should be restricted to the south side of the highway to reduce the number of pedestrians crossing during peak periods. The addition of a median will prohibit residents from crossing the highway when exiting driveways in this area. It is safer for these residents and visitors to utilize signalized intersections to make protected U-Turns rather than mid-block turns.

One of the most beneficial improvements to this area would be the addition of a second entrance to the mobile home park that shares the entrance to Paradise Cove. There are several available areas along the highway for a new entrance.



[PARADISE COVE ROAD TO LATIGO CANYON ROAD]

Length: 1.93 Miles

Injury Collisions Per Mile: 5.70

Pcfs: Speed / Turning

This section of highway has several residential roads bisecting what appears to be a rural area. A portion of the roadway already has a median barrier which should be replaced with the more permanent concrete type 60 barrier recommended for the entire southern section of the highway. The lone fatal collision was a result of a pedestrian crossing mid-block before sunrise in the typical unlighted roadway segment.

There is little demand for street parking in this area, other than overflow for residential areas and Geoffrey's restaurant. The modifications could allow for parking on both sides of the highway, where the proposed median barrier would prevent mid-block crossings. Additional pedestrian crossing could be added at residential intersections, but they must use red lights and flashing no crossing indicators so there is no confusion as the when it is legal to cross and when vehicles are required to stop.



[LATIGO CANYON ROAD TO CORRAL CANYON ROAD]

Length: 0.69 Miles

Injury Collisions Per Mile: 8.70

Pcfs: Speed / Lane Change

This section of highway consists of slight grade at Latigo Canyon with a uninhabited hillside along the inland side of the road. Dan Blocker Beach and several residents dot the coastline which is mostly uninhabited. A small business area and gas station are at the Corral Canyon intersection.

The continuation of the proposed type 60 median barrier and the elimination of parking on the inland side of the highway will keep pedestrians out of traffic and improve safety in an area that is heavily enforced for speeding. Due to the hillside, it is unlike there is sufficient space for a sidewalk next to the hillside, but it would be unnecessary once the parking is eliminated and a bike lane is added.

Recently, the County of Los Angeles proposed a small parking lot for the Dan Blocker Beach area where there is only an unmarked dirt shoulder. As part of the environmental review, the traffic sergeant for the Malibu/Lost Hills Station recommended acceleration and deceleration lanes to reduce rear-end collisions, one of the leading causes of traffic collisions.



[CORRAL CANYON ROAD TO MALIBU CANYON ROAD]

Length: 2.30 Miles
 Injury Collisions Per Mile: 4.78
 Pcfs: Speed / Follow Too Close

This section of highway consists of a small retail area on the north and the major commute intersection and Pepperdine University on the south. Several residences have direct access to the highway along with some residential intersections and the proposed additional intersection at Malibu Canyon Road (west).

The continuation of the median barrier and better crosswalks at the intersections will improve pedestrian safety. The undersized parking lot at Malibu Seafood requires a large number of vehicles to park on the highway during peak summer months. This creates a major safety hazard for pedestrians exiting vehicles and crossing the roadway.

Recommendations include the expansion of the Malibu Seafood parking lot and elimination of street parking on the inland side of the roadway. Obviously, if right of way issues could be mitigated, a parking solution depicted in Figure 3 could better utilize existing space. There is sufficient inland space to increase the existing parking lot, but environmental preservation issues commonly overrule safety concerns.

Another alternative for pedestrian crossing could be the installation of an overhead crossing. Also, there is and very large existing drainage channel under the roadway that some residents utilize to cross the highway. It may be possible to modify the drain to accommodate pedestrians in summer months when demand is highest.

The only fatal collision in this segment was a result of one vehicle changing lanes unsafely. This forced the second vehicle to overturn and strike some poles protecting a fire hydrant. Older fatal collisions were related Caltrans lane closures and bicycles merging into traffic lanes.



[MALIBU CANYON ROAD TO CROSS CREEK ROAD]

Length: 1.05 Miles
 Injury Collisions Per Mile: 16.19
 Pcfs: Speed / Lane Change

This section of highway constitutes the beginning of the major commuter route as depicted by the quadrupling of the number of collisions per mile. There is a grade on the north end and the major shopping area for the City of Malibu from the midpoint to the south. In excess of 50,000 vehicles travel this roadway each day.

Most of the improvements consist of intersection modification combined with the addition of the permanent median barrier. Sidewalks and bicycle lane will complete the safety improvements connecting the intersections. Access to the parks and beach areas will be controlled at the intersections, rather than random mid-block crossings.



[CROSS CREEK ROAD TO CARBON CANYON ROAD]

Length: 2.11 Miles

Injury Collisions Per Mile: 27.96

Pcfs: Speed / Lane Change

This section of highway consists of mixed residential and business areas that predominates the southern portion of the roadway. It is also the second highest area for traffic collisions per mile. There are existing sidewalks on and street parking on both sides.

The addition of the median barrier in this area will force vehicles to make turns at intersections using protected arrows. Pedestrians will be required to use intersections with red lights to warn drivers. Many of the rear-end collisions can be attributed to traffic stopping suddenly for vehicles making turns and unexpected pedestrian mid-block crossings. Existing mid-block crossings should be modified to utilize red rather than yellow flashing lights for crossings and locations should be evaluated to allow pedestrian access to public beach entrances, rather than politically motivated installations.

While the installation of the median barrier will provide some additional space for bicycle lanes, the object should be to eliminate all on street parking as depicted in Figure 3. This can be achieved only with the cooperation of residents, business, and the City of Malibu working together to utilize and purchase empty spaces for replacement parking areas. Some businesses will most likely have to share parking with neighboring owners, but the objective is to reduce the number of entrances to the highway from driveways, directing vehicles to a common entrance with deceleration lanes that will reduce the impacts on commuter traffic.

Many single family residences exist on the beach side of the highway as a result of the relocation of PCH inland many years ago. The state was forced to sell the land and hence, the existence of private residences on the beach. This event took place before public beach access and environmental laws came into effect. This resulted in the current condition where the houses abut a major highway, forcing residents to literally pull out of their driveway into high speed traffic.

A larger number of these residences have been converted into rental properties and divided into separate living areas. Some have converted their garages into apartments as well. The result is street parking is insufficient and renters park on both sides of the streets. If the proposes modifications are implanted, much of the residential street parking would be converted to off street parking (Figure 3).



[CARBON CANYON ROAD TO LAS FLORES CANYON ROAD]

Length: 0.83 Miles

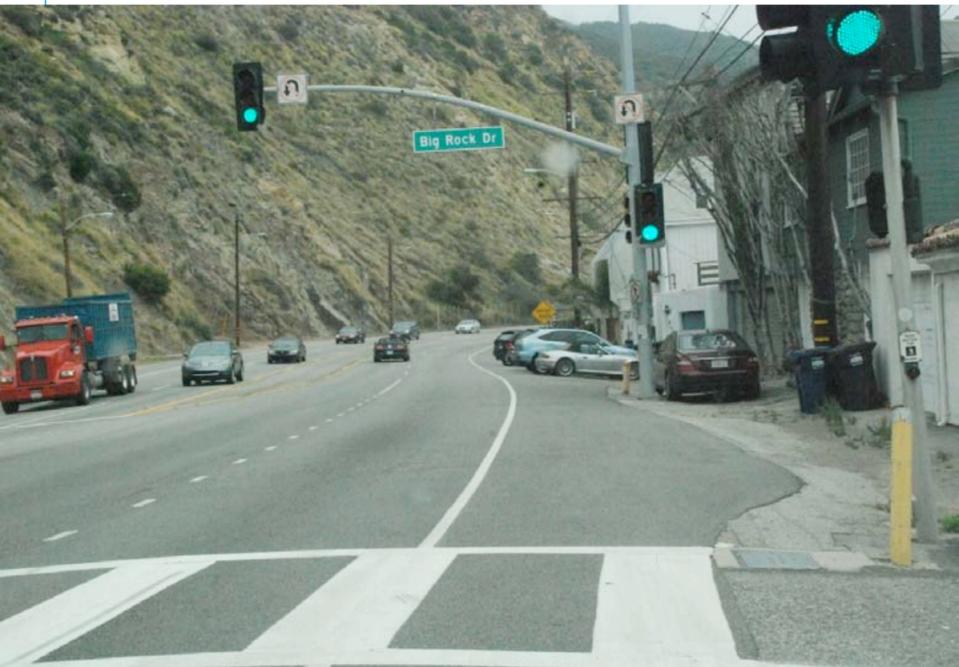
Injury Collisions Per Mile: 48.19

Pcfs: Speed / Lane Change

This section of highway continues the mixed business and residential areas similar to the previous segment. As recommended above, the current two-way left turn lane should be converted to a center median, possibly shifting the highway to provide space for off street parking and the addition of marked bicycle lanes. The objective is to reduce the number of entrance/exit points onto the highway with sidewalks for pedestrians.

This segment of roadway has the highest number of accidents per mile on PCH. This is a result of congestion and poorly timed signals causing extreme delays resulting in the high number of non-preventable rear-end collisions. Intersection improvements previously noted and the highway configuration proposed in Figure 3 will help reduce the number of collisions and improve safety.

There is a mid-block crosswalk that is not signalized. The location is in front of a private beach club and does not provide any public benefit other than to members of that club. Any mid-block crosswalks should be evaluated based on public access points far from intersections and if necessary, they must use red signals rather than flashing yellow lights. Also, their timing must match the traffic signals to reduce congestion.



[LAS FLORES CANYON ROAD TO BIG ROCK DRIVE]

Length: 1.64 Miles
 Injury Collisions Per Mile: 10.37
 Pcfs: Speed / Lane Change

This section of roadway consists of hillside on the inland side of the roadway and single family residences on the beach. There are approximately a dozen homes on the inland side and all of the homes on the beach side were once part of the old PCH land that was sold off as surplus property when the highway was relocated inland.

To the detriment of those houses on the inland side of the roadway, the parking could be eliminated on that side of the roadway, providing enough room for off street parking (Figure 3) on the beach side of the highway. It may be necessary to utilize some of the inland hillside, but there would be the benefit of the installation of a retaining wall to reduce the number of rock slides that are common in the area, especially during and after the rainy season.

Currently, many of these beachfront homes are divided into apartments and used as summer rentals as previously mentioned. The median barrier would prohibit pedestrian crossings that often contribute to traffic stopping suddenly for wayward pedestrians. A sidewalk to nowhere is not necessary for the inland side of the highway, which will contribute to an increased right-of-way once a retaining wall is installed.



[BIG ROCK DRIVE TO TUNA CANYON ROAD]

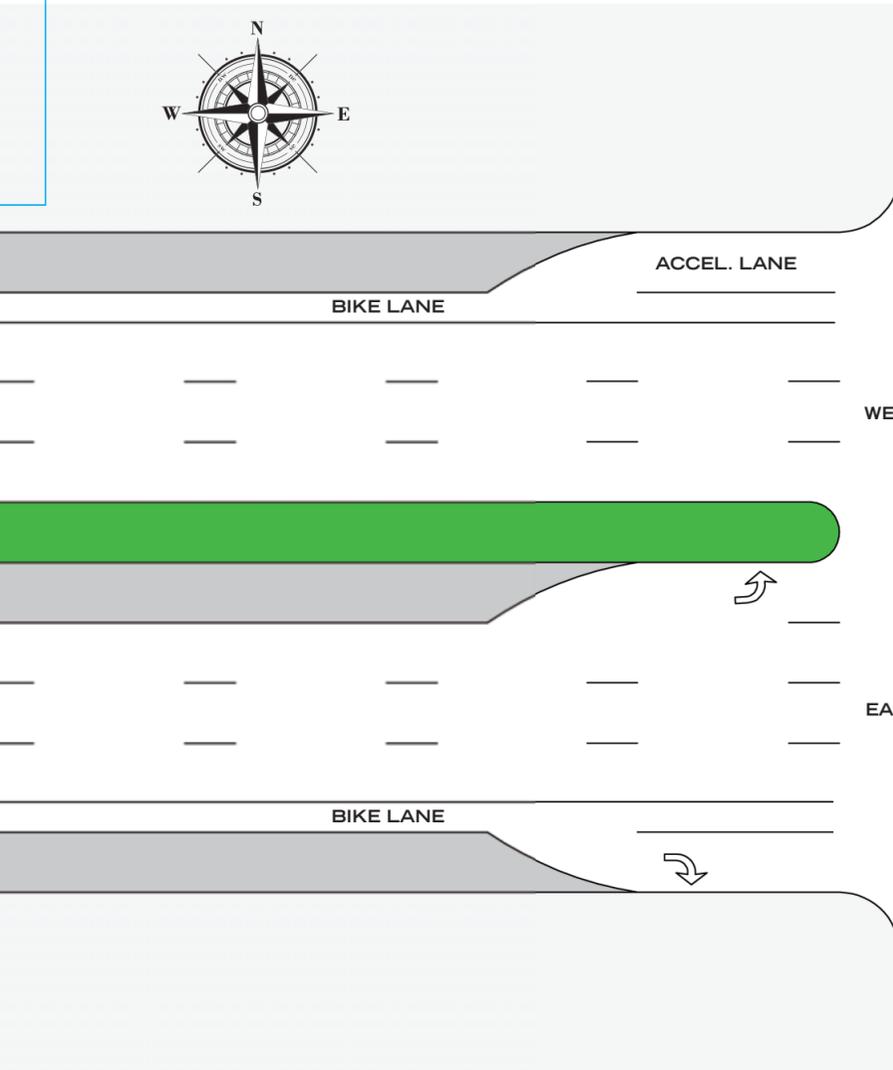
Length: 1.11 Miles
 Injury Collisions Per Mile: 20.72
 Pcfs: Speed / Lane Change

This section of highway consists of beach front homes and open spaces. Most of the inland side of the roadway is hillside that is famous for frequent rock slides. Modifications recommended are similar to the previous section.

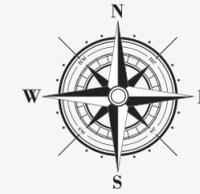
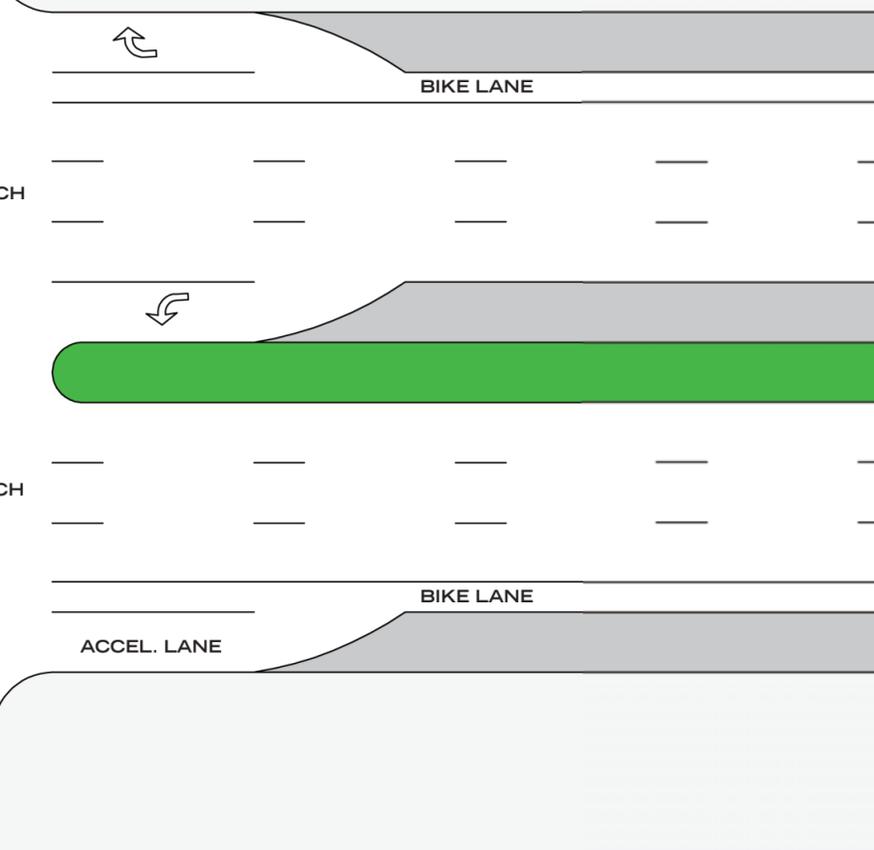
The accident rate here is remarkably high compared to the number of residences in the area. Much of this can be attributed to the winding roadway and the beginning of the major congested area of Malibu. Portions of PCH to the south in the cities of Los Angeles and Santa Monica are three lanes which reduce down to two lanes in Malibu.

This area is essentially the southern city limit that transitions into the unincorporated area patrolled by the California Highway patrol.

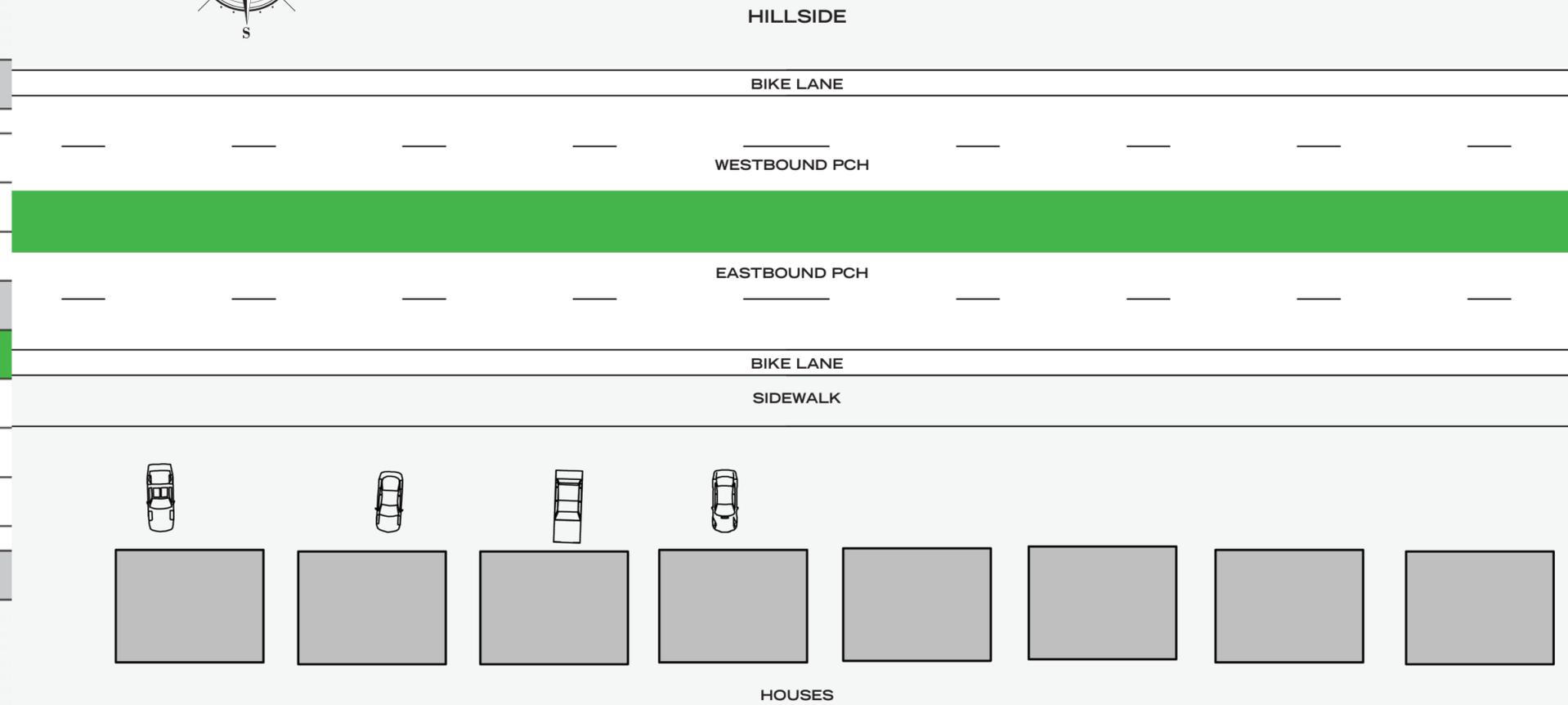
X. Attachments



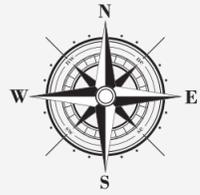
PCH Safety Project (Four Way Intersection)
Figure 1



PCH Safety Project (Hillside)
Figure 2



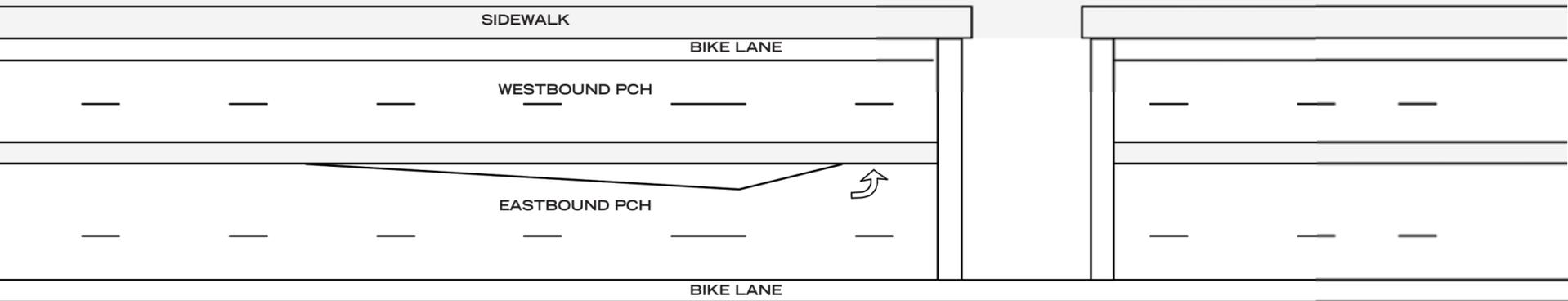
HOUSES



PCH Safety Project (Hillside)
Figure 3



BUSINESS PARKING LOT



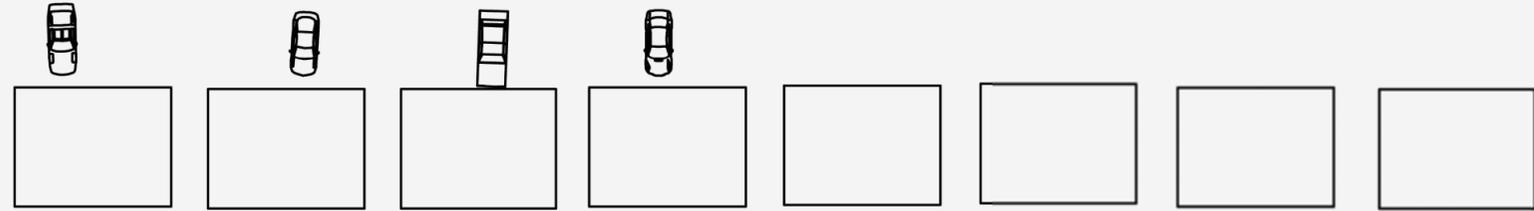
SIDEWALK

BIKE LANE

WESTBOUND PCH

EASTBOUND PCH

BIKE LANE



HOUSES



