CITY OF MANHATTAN BEACH

ENGINEERING
AND TRAFFIC SURVEY

AUGUST 2016

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INTRODUCTION

This Engineering and Traffic Survey is intended to be the basis for the establishment, revision, and enforcement of speed limits for selected streets within the City of Manhattan Beach. This Engineering and Traffic Survey presents recommended speed limits for two (2) street segments in the City of Manhattan Beach. Engineering and Traffic Surveys are required by the State of California to establish intermediate speed limits on local streets and to enforce those limits using radar or other speed measuring devices. These surveys must be updated every 5 or 7 years to ensure the speeds reflect current conditions as dictated by the California Vehicle Code (CVC). The CVC also requires that the surveys be conducted based on the methodology required by The California Manual on Uniform Traffic Control Devices (California MUTCD) dated November 2014.

The survey was requested by the City for the proper posting of speed limits and to enable the Manhattan Beach Police Department to utilize radar or other electronic speed measuring devices for speed enforcement. CVC Sections 40801 and 40802 require Engineering and Traffic Surveys that verify the prima facie speed limit before enforcement by such a device is legal. The law further specifies that these surveys be conducted every 5 years. The surveys can be extended to 7 years provided the City's police officer(s) have completed a 24-hour radar operator course [CVC 40802(c)(2)(B)(i)(I)]. Additionally, some surveys may be extended to 10 years if a traffic engineer certifies that no changes in roadway or traffic conditions have occurred [CVC 40802 (c)(2)(B)(i)(II)]. These provisions assure that posted speed limits are kept reasonably current.

The Engineering and Traffic Surveys for the City were conducted in accordance with procedures outlined in the California Manual on Uniform Traffic Control Devices (California MUTCD) dated November 2014 and as required by Section 627 of the California Vehicle Code. The Code further describes three elements of an engineering and traffic survey:

1. Measurement of prevailing speed;
2. Accident history; and
3. Roadway characteristics <u>not</u> readily apparent to the motorist.

Posted speed limits are established primarily to protect the general public from the reckless and unpredictable behavior of dangerous drivers. They provide law enforcement with a clearly understood method to identify and apprehend violators of the basic speed law (CVC Section 22350). This law states that "No person shall drive a vehicle on a highway at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of the highway, and in no event at a speed which endangers the safety of persons or property." The posted speed limit gives motorists a clear warning of the maximum speed that is reasonable and prudent under typical driving conditions.

The basic fundamentals for establishing speed limits recognize that the majority of drivers behave in a safe and reasonable manner, and therefore, the normally careful and competent actions of a reasonable driver should be considered legal. Speed limits established on these fundamentals conform to the consensus that those who drive the highway determine what speed is reasonable and safe, not on the judgment of one or a few individuals. A radar speed study is usually used to record the prevailing speed of reasonable drivers.

Speed limits are also established to advise drivers of conditions which may not be readily apparent to a reasonable driver. For this reason, accident history, roadway conditions, traffic characteristics, and land use must also be analyzed before determining speed limits. Speed limit changes are usually made in coordination with physical changes in roadway conditions or roadside developments. Unusually short zones of less than one-half mile in length should be avoided to reduce driver confusion.

Additionally, it is generally accepted that speed limits cannot be successfully enforced without voluntary compliance by a majority of drivers. Consequently, only the driver whose behavior is clearly out of line with the normal flow of traffic is usually targeted for enforcement.

ELEMENTS OF THE ENGINEERING AND TRAFFIC SURVEY

The California Manual on Uniform Traffic Control Devices (California MUTCD) dated November 2014 specifies the methodology to be used for completing Engineering and Traffic Surveys. This methodology includes an evaluation of current vehicle speeds, accident history and conditions not readily apparent to motorists. The basic elements of the Engineering and Traffic Survey are discussed in more detail as follows:

Speed Sampling

Existing vehicle speeds are surveyed by a certified radar operator with a calibrated radar unit in an unmarked vehicle. Speed samples are taken for each segment representing a statistically significant sample of current traffic. This data is then evaluated to identify the distribution of speeds. A key element in the evaluation is the identification of the 85th percentile speed. The 85th percentile speed is the speed at or below which 85 percent of the traffic travels. This threshold represents what is historically found to be a safe and reasonable speed for most drivers based on common roadway conditions. Therefore, a speed limit is established at the nearest 5-mile per hour (mph) increment to the 85th percentile speed, except as shown in the two options below.

Options:

1. The posted speed may be reduced by 5 mph from the nearest 5 mph increment of the 85th-percentile speed, in compliance with CVC Section 627 and 22358.5.
2. For cases in which the nearest 5 mph increment of the 85th-percentile speed would require a rounding up, then the speed limit may be rounded down to the nearest 5 mph increment below the 85th percentile speed, if no further reduction is used. Refer to CVC Section 21400(b).

If the speed limit to be posted has had the 5 mph reduction applied, then an E&TS shall document in writing the conditions and justification for the lower speed limit. The reasons for the lower speed limit shall be in compliance with CVC Section 627 and 22358.5

The following examples are provided to explain the application of these speed limit criteria:

A. Using Option 1 above and first step is to round down: If the 85th percentile speed in a speed survey for a location was 37 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 37 mph speed. As indicated by the option, this 35 mph established speed limit could be reduced by 5 mph to 30 mph if conditions and justification for using this lower speed limit are documented in the E&TS.
B. Using Option 1 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, then the speed limit would be established at 35 mph since it is the closest 5 mph increment to the 33 mph speed. As indicated by the option, this 35 mph speed limit could be reduced by 5 mph to 30 mph if the conditions and justification for using this lower speed limit are documented in the E&TS.
C. Using Option 2 above and first step is to round up: If the 85th percentile speed in a speed survey for a location was 33 mph, instead of rounding up to 35 mph, the speed limit can be established at 30 mph, but no further reduction can be applied.

Collision History

Reported collisions are reviewed for each street segment to determine if there is a higher than average rate of collisions. A segment that has an above-average collision rate typically suggests conditions that are not readily apparent to motorists.

A summary of the collision rates for the two (2) surveyed street segments is provided in Appendix B.

Conditions Not Readily Apparent To Motorists

Each street segment is field inspected to identify roadway conditions that may not be readily apparent to motorists. A determination is made whether any conditions are significant and warrant the recommendation of the speed limit 5 mph or more below the basic speed limit. It is important to note that The California Manual on Uniform Traffic Control Devices (California MUTCD) dated January 2012 recommends exercising great care when establishing speed limits 5 mph or more below the basic speed limit.

SURVEY CONDITIONS

SURVEY LOCATIONS

The procedures described below describe the criteria and methods used to survey selected streets within the City of Manhattan Beach. The specific location of the radar speed survey for each street segment was selected after considering the following:

1. Minimum stop sign and traffic signal influence.
2. Minimum visibility restrictions.
3. Non-congested traffic flow away from intersections and driveways.
4. Minimum influence from curves or other roadway conditions that would affect the normal operation of a vehicle.

DATA COLLECTION

Data of existing conditions was obtained including prevailing speed of vehicles, traffic collisions, visibility restrictions, and roadway conditions within the community. Speed data and field reviews were conducted at two (2) locations during June 2016.

Speed Data

Radar speed measurements were conducted at two (2) locations during June 2016. All surveys were conducted in good weather conditions, during off-peak hours on weekdays. The radar unit was operated from an unmarked vehicle to minimize any influence on driver behavior. Typically, a sample size of 100 vehicles or the total samples during a maximum period of 2 hours were obtained for each segment. Traffic speeds in both directions were recorded for individual segments.

Collision Data

Collision data was obtained from the City's SWITRS electronic collision database. For this study, collision data was used from the latest 4 years of reported accidents from January 1, 2011 to December 31, 2014. The collision rates for the two segments are expressed in accidents per million vehicle miles (A/MVM). To calculate these rates, 24-hour traffic volumes were collected for each street segment. This information was then entered into the following formula to determine the collision rate:

$$R = \frac{Ax1{,}000{,}000}{tx365\frac{days}{year}xlxv}$$

A = Number of midblock collisions over time period
R = Collision Rate (accidents/million vehicle miles)
t = Time Period Covered (in years)
l = Length of Segment (miles)
v = Traffic Volume (average daily traffic)

The segment collision rate was then compared to the average statewide collision rate. The average statewide collision rates were obtained from 2009 Collision Data on California State Highways published by Caltrans.

Field Review Data

A field review was conducted for each of the selected street segments in the City with consideration for the following factors:

1. Street width and alignment (design speed);
2. Pedestrian activity and traffic flow characteristics;
3. Number of lanes and other channelization and striping patterns;
4. Frequency of intersections, driveways, and on-street parking;
5. Location of stop signs and other regulatory traffic control devices;
6. Visibility obstructions;
7. Land use and proximity to schools;
8. Pedestrian and bicycle usage;
9. Uniformity with existing speed zones and those in adjacent jurisdictions; and
10. Any other unusual condition not readily apparent to the driver.

ANALYSIS

CRITERIA

Survey data was complied and analyzed to determine the recommended speed limit in accordance with several criteria contained in The California Manual on Uniform Traffic Control Devices (California MUTCD) dated November 2014. Some of the criteria used are:

A. The critical speed or 85th percentile speed is that speed at or below which 85 percent of the traffic is moving. This speed is the baseline value in determining what the majority of drivers believe is safe and reasonable. Speed limits set higher than the critical speed are not considered reasonable and safe. Speed limits set lower than the critical speed make a large number of reasonable drivers "unlawful," and do not facilitate the orderly flow of traffic. The “basic speed limit” is the nearest 5 mph increment to the 85^{th} percentile speed.

B. The 10 mile per hour (mph) pace speed is the 10 mph increment that contains the highest percentage of vehicles. It is a measure of the dispersion of speeds across the range of the samples surveyed. An accepted practice is to keep the speed limit within the 10 mph pace while considering the critical speed and other factors that might require a speed lower than the critical speed.

C. The collision rate for each street segment is compared to average collision rates that can be reasonably expected to occur on streets and highways in other jurisdictions, in proportion to the volume of traffic per lane mile. These average collision rates have been developed by the State of California and are considered reasonable for use in the City of Manhattan Beach.

RESULTS AND RECOMMENDATIONS

The Engineering and Traffic Survey Forms, presented in Appendix A, illustrate results of a thorough evaluation of the available data and recommend a speed limit for each street segment surveyed. A complete summary of all recommendations is shown in Table 2. In each case, the recommended speed limit was consistent with the prevailing behavior as demonstrated by the radar speed measurements. Typically, a speed limit in the upper range of the 10-mile pace was selected unless a collision rate significantly higher than expected was discovered or roadway conditions not readily apparent to the driver were identified. Any segments with recommended speed limits 5 mph or more below the basic speed limit are fully explained later in this report.

The Legislature, in adopting Section 22358.5 of the California Vehicle Code (CVC), has made it clear that physical conditions, such as width, curvature, grade and surface conditions, or any other condition readily apparent to a driver, in the absence of other factors, would not be the basis for special downward speed zoning. In these cases, the basic speed law (CVC Section 22350) is sufficient to regulate such conditions.

The recommendations contained in this Report are intended to establish prima facie speed limits. <u>They are not intended to be absolute for all prevailing conditions.</u> All prima facie

speed violations are actually violations of the basic speed law (Section 22350 of California Vehicle Code). This statute states that a person shall not drive a vehicle at a speed greater than is safe having regard for traffic, roadway, and weather conditions. A prima facie limit is intended to establish a maximum safe speed under normal conditions.

Table 1 identifies the street segments with recommended changes in posted speed limits and Table 2 summarizes the recommendations for all surveyed segments.

TABLE 1
STREET SEGMENTS WITH RECOMMENDED SPEED CHANGES

No	STREET	FROM	TO	EXISTING	NEW
1	Ardmore Avenue	Boundary Place	Manhattan Beach Bl.	35	30
2	Ardmore Avenue	19th Street	Pacific Ave.	35	30

Table 2
Summary of Recommendations

No.	Street	From	To	Posted Speed Limit	Critical Speed	Recommended Speed Limit	Comments
1	Ardmore Ave.	Boundary Place	Manhattan Beach Bl.	35	37	30	Option 1*
2	Ardmore Ave.	19th Street	Pacific Ave.	35	35	30	Option 1*

* See "Segments with Special Conditions" Section for Comments
** = 25 mph when children are present

SEGMENTS WITH SPECIAL CONDITIONS

The following segments surveyed had recommended speed limits that were 5 miles per hour (mph) or more below the critical speed due to conditions not readily apparent to the driver. Each segment is discussed below.

Segment #1 – Ardmore Avenue – Boundary Place to Manhattan Beach Bl.

This segment currently posted at 35 mph and has two through lanes in each direction between Boundary Place and 1st Street, and two lanes in the northbound direction between 1st Street and Manhattan Beach Boulevard with an ADT of 6,678 vehicles per day. The adjacent land use is residential and open space. The critical speed is 37 mph and would normally justify a 35 mph posted speed limit. However, due to school pedestrian activity in close proximity to Robinson Elementary School, numerous crosswalks, heavy curb parking, skewed intersections and significant pedestrian volumes entering and exiting the Veterans Parkway pedestrian path that may not be apparent to unfamiliar drivers as well as to maintain uniformity among adjacent street segments, a lower speed limit is prudent. It is recommended that the speed limit be posted at 30 mph for the above reasons.

Segment #2 – Ardmore Avenue – 19th Street to Pacific Avenue

This segment currently posted at 35 mph and has one through lane in each direction with an ADT of 4,318 vehicles per day. The adjacent land use is residential and open space. The critical speed is 35 mph and would normally justify a 35 mph posted speed limit. However, due to school pedestrian activity in close proximity to two schools, numerous crosswalks, heavy parking, and designation as an enhanced bike route that may not be apparent to unfamiliar drivers as well as to maintain uniformity among adjacent street segments, a lower speed limit is prudent. It is recommended that the speed limit be posted at 30 mph for the above reasons.

LEGISLATIVE REFERENCES

APPLICABLE SECTIONS OF CALIFORNIA VEHICLE CODE

SECTION 1. Section 627 of the Vehicle Code:

Section 627.

(a) *"Engineering and traffic survey,"* as used in this code, means a survey of highway and traffic conditions in accordance with methods determined by the Department of Transportation for use by state and local authorities.

(b) An engineering and traffic survey shall include, among other requirements deemed necessary by the department, consideration of all of the following:

(1) Prevailing speeds as determined by traffic engineering measurements.
(2) Accident records.
(3) Highway, traffic, and roadside conditions not readily apparent to the driver.

(c) When conducting an engineering and traffic survey, local authorities, in addition to the factors set forth in paragraphs (1) to (3), inclusive, of subdivision (b) may consider all of the following:

(1) Residential density, if any of the following conditions exist on the particular portion of highway and the property contiguous thereto, other than a business district:
   a. Upon one side of the highway, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses of business structures.
   b. Upon both sides of the highway, collectively, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 16 or more separate dwelling houses or business structures.
   c. The portion of highway is longer than one-quarter of a mile but has the ratio of separate dwelling houses or business structures to the length of the highway described in either subparagraph (A) or (B).
(2) Pedestrian and bicyclist safety.

Uniform Standards

Section 21400.

(a) (1) The Department of Transportation shall, after consultation with local agencies and public hearings, adopt rules and regulations prescribing uniform standards and specifications for all official traffic control devices placed pursuant to this code, including, but not limited to, stop signs, yield right-of-way signs, speed restriction signs, railroad warning approach signs, street name signs, lines and markings on the roadway, and stock crossing signs placed pursuant to Section 21364.

(2) The Department of Transportation shall, after notice and public hearing, determine and publicize the specifications for uniform types of warning signs, lights, and devices to be placed highway by a person engaged in performing work that interferes with or endangers the safe movement of traffic upon that highway.

(3) Only those signs, lights, and devices as are provided for in this section shall be placed upon a highway to warn traffic of work that is being performed on the highway.

Control devices or markings installed upon traffic barriers on or after January 1, 1984, shall conform to the uniform standards and specifications required by this section.

(b) The Department of Transportation shall revise the California Manual on Uniform Traffic Control Devices, as it read on January 1, 2012, to require the Department of Transportation or a local authority to round speed limits to the nearest five miles per hour of the 85th percentile of the free-flowing traffic. However, in cases in which the speed limit needs to be rounded up to the nearest five miles per hour increment of the 85thpercentile speed, the Department of Transportation or a local authority may decide to instead round down the speed limit to the lower five miles per hour increment, but then the Department of Transportation or a local authority shall not reduce the speed limit any further for any reason.

Amended Sec. 2, Ch. 528, Stats. 2011. Effective January 1, 2012.

Basic Speed Law

22350. No person shall drive a vehicle upon a highway at a speed greater than is reasonable or prudent having due regard for weather, visibility, the traffic on, and the surface and width of, the highway, and in no event at a speed which endangers the safety of persons or property.

Speed Law Violations

Section 22351.

(a) The speed of any vehicle upon a highway not in excess of the limits specified in Section 22352 or established as authorized in this code is lawful unless clearly proved to be in violation of the basic speed law.

(b) The speed of any vehicle upon a highway in excess of the prima facie speed limits in Section 22352 or established as authorized in this code is prima facie unlawful unless the defendant establishes by competent evidence that the speed in excess of said limits did not constitute a violation of the basic speed law at the time, place and under the conditions then existing.

Prima Facie Speed Limits

Section 22352.

(a) The prima facie limits are as follows and shall be applicable unless changed as authorized in this code and, if so changed, only when signs have been erected giving notice thereof:

(1) Fifteen miles per hour:

A) When traversing a railway grade crossing, if during the last 100 feet of the approach to the crossing the driver does not have a clear and unobstructed view of the crossing and of any traffic on the railway for a distance of 400 feet in both directions along such railway. This subdivision does not apply in the case of any railway grade crossing where a human flagman is on duty or a clearly visible electrical or mechanical railway crossing signal device is installed but does not then indicate the immediate approach of a railway train or car.

B) When traversing any intersection of highways, if during the last 100 feet of the driver's approach to the intersection, the driver does not have a clear and unobstructed view of the intersection and of any traffic upon all of the highways entering the intersection for a distance of 100 feet along all those highways, except at an intersection protected by stop signs or yield right-of-way signs or controlled by official traffic control signals.

C) On any alley.

(2) Twenty-five miles per hour:

A) On any highway other than a state highway, in any business or residence district unless a different speed is determined by local authority under procedures set forth in this code.

(B) When approaching or passing a school building or the grounds thereof, contiguous to a highway and posted with a standard "SCHOOL" warning sign, while children are going to or leaving the school either during school hours or during the noon recess period. The prima facie limit shall also apply when approaching or passing any school grounds which are not separated from the highway by a fence, gate or other physical barrier while the grounds are in use by children and the highway is posted with a standard "SCHOOL" warning sign. For purposes of this subparagraph, standard "SCHOOL" warning signs may be placed at any distance up to 500 feet away from school grounds.

(C) When passing a senior center or other facility primarily used by senior citizens, contiguous to a street other than a state highway and posted with a standard "SENIOR" warning sign. A local authority is not required to erect any sign pursuant to this paragraph until donations from private sources covering those costs are received and the local agency makes a determination that the proposed signing should be implemented. A local authority may, however, utilize any other funds available to it to pay for the erection of those signs.

(b) This section shall become operative on March 1, 2001.

Increase of Local Speed Limits to 65 Miles Per Hour

Section 22357.

(a) Whenever a local authority determines upon the basis of an engineering and traffic survey that a speed greater than 25 miles per hour would facilitate the orderly movement of vehicular traffic and would be reasonable and safe upon any street other than a state highway otherwise subject to a prima facie limit of 25 miles per hour, the local authority may by ordinance determine and declare a prima facie speed limit of 30, 35, 40, 45, 50, 55 or 60 miles per hour or a maximum speed limit of 65 miles per hour, whichever is found most appropriate to facilitate the orderly movement of traffic and is reasonable and safe. The declared prima facie or maximum speed limit shall be effective when appropriate signs giving notice thereof are erected upon the street and shall not thereafter be revised except upon the basis of an engineering and traffic survey. This section does not apply to any 25 mile per hour prima facie limit, which is applicable when passing a school building or the grounds thereof or when passing a senior center or other facility primarily used by senior citizens.

(b) This section shall become operative on the date specified in subdivision (c) of Section 22366.

Downward Speed Zoning

Section 22358.5.

It is the intent of the Legislature that physical conditions such as width, curvature, grade and surface conditions, or any other condition readily apparent to a driver, in the absence of other factors, would not require special downward speed zoning, as the basic rule of Section 22350 is sufficient regulation as to such conditions.

Boundary Line Streets

Section 22359.

With respect to boundary line streets and highways where portions thereof are within different jurisdictions, no ordinance adopted under Sections 22357 and 22358 shall be effective as to any such portion until all authorities having jurisdiction of the portions of the street concerned have approved the same. This section shall not apply in the case of boundary line streets consisting of separate roadways within different jurisdictions.

Speed Trap Prohibition

Section 40801.

No peace officer or other person shall use a speedtrap in arresting, or participating or assisting in the arrest of, any person for any alleged violation of this code nor shall any speed trap be used in securing evidence as to the speed of any vehicle for the purpose of an arrest or prosecution under this code.

Speed Trap

Section 40802.

(a) A "speed trap" is either of the following:

(1) A particular section of a highway measured as to distance and with boundaries marked, designated, or otherwise determined in order that the speed of a vehicle may be calculated by securing the time it takes the vehicle to travel the known distance.

(2) A particular section of a highway with a prima facie speed limit that is provided by this code or by local ordinance under subparagraph (A) of paragraph (2) of subdivision (a) of Section 22352, or established under Section 22354, 22357, 22358, or 22358.3, if that prima facie speed limit is not justified by an engineering and traffic survey conducted within five years prior to the date of the alleged violation, and enforcement of the speed limit involves the use of radar or any other electronic device that measures the speed of moving object. This paragraph does not apply to a local street, road, or school zone.

(b)(1) For purposes of this section, a local street or road is defined by the latest functional usage and federal-aid system maps submitted to the federal Highway Administration, except that when these maps have not been submitted, or when the street or road is not shown on the maps, a “local street or road” means a street or road that primarily provides access to abutting residential property and meets the following three conditions:

(A) Roadway width of not more than 40 feet.

(B) Not more than one-half mile of a uninterrupted length. Interruptions shall include official traffic control devices as defined in Section 445.

(C) Not more than one traffic lane in each direction.

(2) For purposes of this section “school zone” means that area approaching or passing a school building or the grounds thereof that is contiguous to a highway and on which is posted a standard “SCHOOL” warning sign, while children are going to or leaving the school either during school hours or during the noon recess period. “School zone” also includes the area approaching or passing any school grounds that are not separated from the highway by a fence, gate, or other physical barrier while the grounds are in use by children if that highway is posted with a standard “SCHOOL” warning sign.

(c)(1) When all the following criteria are met, paragraph (2) of this subdivision shall be applicable and subdivision (a) shall not be applicable:

(A) When radar is used, the arresting officer has successfully completed a radar operator course of not less than 24 hours on the use of police traffic radar, and the course was approved and certified by the Commission on Peace Officer Standards and Training.

(B) When laser or any other electronic device is used to measure the speed of moving objects, the arresting officer has successfully completed the training required in subparagraph (A) and an additional training course of not less than two hours approved and certified by the Commission on Peace Officer Standards and Training.

(C)(i) The prosecution proved that the arresting officer complied with subparagraphs (A) and (B) and that an engineering and traffic survey has been conducted in accordance with subparagraph (B) of paragraph (2). The prosecution proved that, prior to the officer issuing the notice to appear, the arresting officer established that the radar, laser, or other electronic device conformed to the requirements of subparagraph (D).

(ii) The prosecution proved the speed of the accused was unsafe for the conditions present at the time of alleged violation unless the citation was for a violation of Section 22349, 22356, or 22406.

(D) The radar, laser, or other electronic device used to measure the speed of the accused meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration, and has been calibrated within the three years prior to the date of the alleged violation by an independent certified laser or radar repair and testing or calibration facility.

(2) A "speed trap" is either of the following:

(A) A particular section of a highway measured as to distance and with boundaries marked, designated, or otherwise determined in order that the speed of a vehicle may be calculated by securing the time it takes the vehicle to travel the known distance.

(B)(i) A particular section of a highway or state highway with a prima facie speed limit that is provided by this code or by local ordinance under subparagraph (A) of paragraph (2) of subdivision (a) of Section 22352, or established under Section 22354, 22357, 22358, or 22358.3, if that prima facie speed limit is not justified by an engineering and traffic survey conducted within one of the following time periods, prior to the date of the alleged violation, and enforcement of speed limit involves the use of radar or any other electronic device that measures the speed of moving objects:

(I) Except as specified in subclause (II), seven years.

(II) If an engineering and traffic survey was conducted more than seven years prior to the date of the alleged violation, and a registered engineer evaluates the section of the highway and determines that no significant changes in roadway or traffic conditions have occurred including, but not limited to, changes in adjoining property or land use, roadway width, or traffic volume, 10 years.

(ii) This subparagraph does not apply to a local street, road, or school zone.

Speed Trap Evidence

Section 40803.

(a) No evidence as to the speed of a vehicle upon a highway shall be admitted in any court upon the trial of any person in any prosecution under this code upon a charge involving the speed of a vehicle when the evidence is based upon or obtained from or by the maintenance or use of a speedtrap.

(b) In any prosecution under this code of a charge involving the speed of a vehicle, where enforcement involves the use of radar or other electronic devices which measure the speed of moving objects, the prosecution shall establish, as part of its prima facie case, that the evidence or testimony presented is not based upon a speed trap as defined in paragraph (2) of subdivision (a) of Section 40802.

(c) When a traffic and engineering survey is required pursuant to paragraph (2) of subdivision (a) of Section 40802, evidence that a traffic and engineering survey has been conducted within five years of the date of the alleged violation or evidence that the offense was committed on a local street or road as defined in paragraph (2) of subdivision (a) of Section 40802 shall constitute a prima facie case that the evidence or testimony is not based upon a speed trap as defined in paragraph (2) subdivision (a) of Section 40802.

APPENDIX A
Street Segment Data

CITY OF MANHATTAN BEACH

2013 ENGINEERING AND TRAFFIC SURVEY

STREET ARDMORE AVENUE **SEGMENT NO.** 1
FROM BOUNDARY PLACE **TO** MANHATTAN BEACH BL

1 - ROADWAY CONDITIONS

Roadway Factors		
Segment Length	**0.70**	miles
Roadway Width	**19-40**	feet
Number of Lanes	**2**	(NB/SB Boundary to 2nd; NB/NB 1st to Manhattan Beach Bl
Center Median Type	Painted Centerline; skip-type striping between 1-way lanes	
Traffic Control	Signals-Manhattan Beach Bl.; Stop Signs-Duncan Av., 2nd, 6th St	
Horizontal Alignment	Curved	
Vertical Alignment	Flat	
Visibility	Limited visibility of east side driveways and side street traffic	
Lighting	Street lights on both sides	
Crosswalks?	2nd (S); Manhattan Beach Bl (N,S)	
Shoulder/Roadside Factors		
Adjacent Land Use	OS-Greenbelt, RS(H) on East Side	
On-Street Parking	Boundary to 2nd-none; 2nd to 6th-light; 6th to Manhattan Bch-heavy	
Bike Lanes?	None	
Driveways?	Residential (East side only)	
Sidewalks?	East side; west side between 9th & Manhattan Beach Bl in Greenbelt	

2 - TRAFFIC VOLUMES

Average Daily Traffic	**6,678**	Vehicles per Day
Traffic Volume Count Date	10/23/2013	
Pedestrian Traffic	Boundary to 6th-Moderate; 6th to Manhattan Beach Bl-Heavy	
Truck Traffic	Light	

3 - COLLISION HISTORY

Number of Years Considered	**4.00**	Years
Expected Annual Collision Rate	**2.80**	Collisions per Million Vehicle Miles
Total Collisions (4-year period)	**1**	Collisions
Average Annual Collisions	**0.25**	Collisions per Year
Calculated Annual Collision Rate	**0.15**	Collisions per Million Vehicle Miles

4 - SPEED ZONING ANALYSIS

Speed Survey Day / Date / Time	Thurs	**06/28/2016**	9:30am
Number of Survey Samples	**99**	Vehicles	
50th Percentile Speed	**33**	mph	
85th Percentile Speed	**37**	mph	
10-mph Pace	**28-37**	mph	
% of Vehicles In Pace	**81%**		
% of Vehicles Over/Under Pace	**19%**		
Posted Speed Limit	**35**	mph	
Speed Limit Justification	School pedestrians, limited visibility at skewed intersections, heavy parking, blind driveways, pedestrian volumes		
Recommended Speed Limit	**30**	mph	

CERTIFICATION:

I, Erik Zandvliet, do hereby certify that this Engineering and Traffic Survey for the City of Manhattan Beach was performed under my supervision. I certify that I am both experienced in performing surveys of this type and am duly registered in the State of California as a professional engineer. The survey has been conducted in strict compliance with guidelines contained in the most current versions of the California Vehicle Code (CVC) and the California Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD). Data contained in this report represents a true and accurate description of traffic conditions existing on Manhattan Beach streets.

Erik Zandvliet	TE #1775 State Registration No.	09/20/2016 Date

CITY OF MANHATTAN BEACH

2013 ENGINEERING AND TRAFFIC SURVEY

STREET ARDMORE AVENUE **SEGMENT NO.** 2
FROM 19TH STREET **TO** PACIFIC AVENUE

1 - ROADWAY CONDITIONS

Roadway Factors		
Segment Length	**0.40**	miles
Roadway Width	**32**	feet
Number of Lanes	**2**	
Center Median Type	Centerline Stripe	
Traffic Control	Stop at Pacific Ave., 19th St.	
Horizontal Alignment	Curve between 17th St, and 19th St. straight-19th St. to Pacific Ave.	
Vertical Alignment	Vertical curve east and west of Flournoy Rd.	
Visibility	Good, Except at Intersections due to vertical and horizontal curve	
Lighting	Yes, South Side	
Crosswalks?	19th St., Pacific Ave.	
Shoulder/Roadside Factors		
Adjacent Land Use	Residential	
On-Street Parking	South Side Only	
Bike Lanes?	Bike Route, Edgeline Marking along SB Side	
Driveways?	South Side Only	
Sidewalks?	South Side Only	

2 - TRAFFIC VOLUMES

Average Daily Traffic	**4,318**	Vehicles per Day
Traffic Volume Count Date	02/12/2013	
Pedestrian Traffic	Moderate	
Truck Traffic	None	

3 - COLLISION HISTORY

Number of Years Considered	**4.00**	Years
Expected Annual Collision Rate	**2.80**	Collisions per Million Vehicle Miles
Total Collisions (4-year period)	**2**	Collisions
Average Annual Collisions	**0.50**	Collisions per Year
Calculated Annual Collision Rate	**0.79**	Collisions per Million Vehicle Miles

4 - SPEED ZONING ANALYSIS

Speed Survey Day / Date / Time	Thurs	**06/28/2016**	10:30am
Number of Survey Samples	**96**	Vehicles	
50th Percentile Speed	**32**	mph	
85th Percentile Speed	**35**	mph	
10-mph Pace	**28-37**	mph	
% of Vehicles In Pace	**93%**		
% of Vehicles Over/Under Pace	**17%**		
Posted Speed Limit	**35**	mph	
Speed Limit Justification	School pedestrians, limited visibility of skewed intersections, heavy parking, pedestrian volumes, bike route		
Recommended Speed Limit	**30**	mph	

CERTIFICATION:

I, Erik Zandvliet, do hereby certify that this Engineering and Traffic Survey for the City of Manhattan Beach was performed under my supervision. I certify that I am both experienced in performing surveys of this type and am duly registered in the State of California as a professional engineer. The survey has been conducted in strict compliance with guidelines contained in the most current versions of the California Vehicle Code (CVC) and the California Department of Transportation Manual on Uniform Traffic Control Devices (MUTCD). Data contained in this report represents a true and accurate description of traffic conditions existing on Manhattan Beach streets.

Erik Zandvliet	TE #1775 State Registration No.	09/20/2016 Date

Radar Speed Distribution Forms

CITY OF MANHATTAN BEACH

SPOT SPEED SURVEY

Street	***Ardmore Avenue***	Date	06/28/2016	50th %	33 MPH
Limits	Boundary Place-Manhattan Bch Bl	Begin	9:30 End 10:30	85th %	37 MPH
Surveyed at	5th Street	Weather	Sunny	Average	33 MPH
Direction	Northbound	Recorded by	E.Z.	10MPH	28 37
				% in Pace	81%

MPH	NUMBER OF VEHICLES (5 / 10 / 15 / 20 / 25 / 30)	Number of Vehicles	Percent of Total	Cumulative Percentage
65		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
60		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
55		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
50		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
45	X	1	1%	100.0%
	X	1	1%	99.0%
	X	1	1%	98.0%
	X	1	1%	97.0%
	X X	2	2%	96.0%
40	X	1	1%	93.9%
	X X	2	2%	92.9%
		0	0%	90.9%
	X X X X X X X	8	8%	90.9%
	X X X X X X	6	6%	82.8%
35	X X X X X X X X X X X	12	12%	76.8%
	X X X X X X X X X	9	9%	64.6%
	X X X X X X X X X X X X X X	15	15%	55.6%
	X X X X X X X X X	9	9%	40.4%
	X X X X X X X	7	7%	31.3%
30	X X X X X X	6	6%	24.2%
	X X X X X	5	5%	18.2%
	X X X	3	3%	13.1%
	X X	2	2%	10.1%
	X X X X	4	4%	8.1%
25	X	1	1%	4.0%
	X X	2	2%	3.0%
	X	1	1%	1.0%
		0	0%	0.0%
		0	0%	0.0%
20		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
15		0	0%	0.0%
	X - East/North bound 0 - West/South Bound Total Observed	99	100	

CITY OF MANHATTAN BEACH

SPOT SPEED SURVEY

Street	***Ardmore Avenue***	Date	06/28/2016	50th %	32 MPH
Limits	19th St. to Pacific Ave	Begin	10:30 End 11:30	85th %	35 MPH
Surveyed at	East of Flournoy Rd.	Weather	Sunny	Average	32 MPH
Direction	Northbound and Southbound	Recorded by	R.G.	10MPH	28 37
				% in Pace	93%

MPH	NUMBER OF VEHICLES (5 / 10 / 15 / 20 / 25 / 30)	Number of Vehicles	Percent of Total	Cumulative Percentage
65		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
60		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
55		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
50		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
45		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
		0	0%	100.0%
40		0	0%	100.0%
	O X	2	2%	100.0%
		0	0%	97.9%
	X X X	3	3%	97.9%
	X X O X X	5	5%	94.8%
35	X O O O O X X X	8	8%	89.6%
	X X X X O O X X X	9	9%	81.3%
	X X X O O O O X X X X X	12	13%	71.9%
	X X X X X X X O O O X X X X	14	15%	59.4%
	X O O X X X X	7	7%	44.8%
30	X X X X X X X X X X X	11	11%	37.5%
	X O O O O X X X X X X X	12	13%	26.0%
	O O O X X X X X	8	8%	13.5%
	O X	2	2%	5.2%
	X X	2	2%	3.1%
25		0	0%	1.0%
		0	0%	1.0%
		0	0%	1.0%
	X	1	1%	1.0%
		0	0%	0.0%
20		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
		0	0%	0.0%
15		0	0%	0.0%
	X - East/North bound 0 - West/South Bound Total Observed	96	100	

APPENDIX B
Collision Rates

Table 3
Collision Rates

No.	Street	From	To	Midblock Collisions (4 Years)	ADT*	Approx. Length of Segment (mi)	Calculated Accident Rate (Acc/MVM**)	Statewide Accident Rate*** (Acc/MVM)
1	ARDMORE AVE	BOUNDARY PL	MANHATTAN BEACH BL	0	6,678	0.70	0.15	2.80
2	ARDMORE AVE	19TH STREET	PACIFIC AVE	0	4,318	0.40	0.79	2.80

APPENDIX C
Survey Equipment

SURVEY EQUIPMENT USED

The radar equipment used to collect speed measurements for this survey was a Kustom Electronics Road Runner Model III Radar manufactured by Kustom Signals, Inc. of Chanute, Kansas. The calibration of the unit was checked before each series of measurements were taken with a tuning fork. Tests of the unit were conducted in accordance with the manufacturer's specifications. The K-15 Hand-Held Traffic Radar was last calibrated on May 27, 2016 by RHF Inc. Certification is on file with the City of Manhattan Beach.