City of Los Alamitos

Agenda Report	April 21, 2014
Consent Calendar	Item No: 8D

To: Mayor Gerri L. Graham-Mejia & Members of the City Council

Via: Bret M. Plumlee, City Manager

From: Steven A. Mendoza, Community Development/Public Works Director
David L. Hunt, City Engineer

Subject: Review of Engineering and Traffic Survey for Speed Limits

Summary: The Engineering and Traffic Survey for Speed Limits was authorized by the City and was performed by the engineering consulting firm of Hartzog & Crabill, Inc. The goal of the review was to determine whether changes in pre-existing conditions have occurred where older speed limits should be modified.

Recommendation:

1. Approve Engineering and Traffic Survey for Speed Limits as submitted in this report; and,
2. Adopt Resolution No. 2014-09, entitled, "A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOS ALAMITOS, CALIFORNIA, ADOPTING THE 2014 ENGINEERING AND TRAFFIC SURVEY FOR SPEED LIMITS."

Background

In accordance with procedures established by the State of California, this Engineering and Traffic Survey has been developed for the City of Los Alamitos as the basis for the establishment and enforcement of speed limits for selected streets within the City.

All fifty states base their speed regulations on the Basic Speed Law. In California, CVC 22350 defines the basic speed law as:

> *"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."*

This law recognizes that driving conditions vary widely from time-to-time and place-to-place and, therefore, no set of fixed driving rules will adequately serve all conditions. The motorists will constantly adjust their driving behavior to fit the conditions encountered, and must learn to do this with a minimum of assistance from the police. The Basic Speed Law is founded on the belief that a majority of motorists are able to modify their driving behavior properly, as long as they are aware of the conditions around them.

Discussion

The reason that speed limit areas and their required postings are done is to guard reasonable drivers from the unreasonable behavior of reckless, unreliable, or otherwise dangerous drivers. As with other similar laws, the limits identified are based on the consensus of the majority of those who drive the highway as to what speed is reasonable and safe. It is this type of information that is reflected in the analysis section of this report. Namely, posted speed limits are a reflection of that speed which most people deem to be safe as opposed to a minority of drivers who do not drive in a reasonable manner.

Speed zones are also established to advise drivers of road conditions or hazards that may not be readily apparent to a reasonable driver. For that reason, a field review of related road/traffic variables is conducted which considers the analytical data and accident history of a particular roadway segment to determine a safe and reasonable speed limit.

Speed evaluation data was collected at 17 different survey segments on 7 different roadways in the City of Los Alamitos. These areas and the number of segments on each are described as follows:

1. Ball Road (1)
2. Bloomfield Street (3)
3. Cerritos Avenue (3)
4. Farquhar Avenue (1)
5. Katella Avenue (5)
6. Lexington Drive (1)
7. Los Alamitos Boulevard (3)

Results

The Summary indicates that 13 of the 17 segments studied are recommended for no speed limit changes. The reason centers mostly on the fact that the newly measured values of the 85th percentile and the 10 MPH pace are still within the parameters of the existing speed limits. Additional factors such as the presence of horizontal or vertical curves reducing sight distance from the basis in some instances of our recommendations. Therefore, the current postings should remain as is.

Locations of "Speed Limit Increases":

With the combination of the speed data, field review and accident history, the following segments are recommended for a speed limit increase.

	STREET	SEGMENT	CURRENT	PROPOSED
1.	Bloomfield St.	Cerritos Ave. to Katella Ave.	35 MPH	40 MPH
2.	Katella Ave.	West City limits to Los Alamitos Bl.	35 MPH	40 MPH
3.	Katella Ave.	Los Alamitos Bl. to Bloomfield St.	35 MPH	40 MPH
4.	Katella Ave.	Bloomfield St. to Lexington Dr.	35 MPH	40 MPH

Support Explanations of "Speed Limit Increases":

1. Bloomfield Street - Cerritos Avenue to Katella Avenue
   This section of Bloomfield Street is a four lane roadway. Currently, a 35 mph speed limit is posted for this area. The adjacent land uses are business, industrial, elementary and middle schools, and a park. Field notes state that there are no shoulders throughout the majority of the segment except for approximately 1000' of cut out on-street parking south of Cerritos Avenue southbound, painted bike lanes, and heavy pedestrian traffic at school arrive and release. The speed data resulted with an 85th percentile speed of 41.0 mph and a 10 mph pace range of 33 to 42 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

2. Katella Avenue - West City Limits to Los Alamitos Boulevard
   This section of Katella Avenue is an eight lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, City Hall and the Police Station, a church and non-fronting residential. Field notes state that there are no shoulders throughout the majority of the segment, truck traffic is heavy as is conventional vehicular traffic. The speed data resulted with an 85th percentile speed of 39.9 mph and a 10 mph pace range of 32 to 41 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

3. Katella Avenue - Los Alamitos Boulevard to Bloomfield Street
   This section of Katella Avenue is a six lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, medical and a church. Field notes state that there are areas of on-street parking and areas of restricted parking, heavy truck traffic and bus stops. The speed data resulted with an 85th percentile speed of 35.7 mph and a 10 mph pace range of 27 to 36 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

4. Katella Avenue - Bloomfield Street to Lexington Drive
   This section of Katella Avenue is a six lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, medical, park, industrial and a church. Field notes state that there are areas of on-street parking and areas of restricted parking, heavy truck traffic and bus stops. The speed data resulted with

an 85th percentile speed of 39.9 mph and a 10 mph pace range of 30 to 40 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

New Signs To Be Posted:

Cerritos Avenue - Bloomfield Street to East City Limit

- The recommended 40 mph is within 4.9 mph of the 85th percentile speed and meets CVC standards. Field notes state that only one speed sign is posted (eastbound) within the segment length. Although in the City of Cypress, there is a 40 mph speed sign posted for the westbound direction west of Denni Street. Therefore, it is recommended that a 40 mph speed sign be installed westbound west of Santa Clara Street (East City Limit).

Katella Avenue - Lexington Drive to Siboney Street

- This section of Katella Avenue is a six lane roadway. The adjacent land uses are residential non-fronting to the roadway, commercial, business, medical offices, and the Los Alamitos Race Track. Field observations include a 40 mph speed sign posted only eastbound east of Lexington Drive, no shoulders westbound, bus stops and heavy truck traffic. With the speed data results showing an 85th percentile speed of 43.8 mph, it is recommended that the existing 40 mph speed limit be maintained. For enforcement, it is recommended that a 40 mph speed sign be posted for the westbound direction as well.

City of Cypress

The City of Cypress Engineering Department was given a copy of the speed survey in February 19, 2014 for their files. The City of Cypress accused Los Alamitos of changing the speed limits signs on west bound Katella Ave from Lexington to Walker from 45 mph to 40 mph. The northern most outside lane in this reach does belong to Cypress. We could not find any paperwork that we changed the speed limits sign. In Los Alamitos' 2003 and 2013 studies both shows the existing speed signs in this reach at 40 mph.

We requested a copy the City of Cypress' 2009 and 1999 studies. The City of Cypress' speed survey of May 2009 states the existing speed limit is 45 mph but we found several discrepancies in their study versus existing conditions in the field. They are summarized below.

- Katella Ave. west of Lexington the Cypress study shows the existing posted speed limit is 45 mph where it is 40 mph.
- Katella Ave. between Lexington to Winners Circle the Cypress study shows the existing speed limit is 45 mph where it is 40 mph.
- Katella Ave. between Winners Circle and Walker the Cypress study shows the existing speed limit is 45 mph where it is 40 mph.
- Cerritos Ave. west of Bloomfield the Cypress study shows the existing posted speed limit is 40 mph where it is 35 mph.

- Cerritos Ave. between Bloomfield and Denni the Cypress study shows the existing posted speed limit is 45 mph where it is 40 mph.

Cypress stated the reach on Katella Avenue from Lexington Drive to Walker Street was not covered in their 1999 study. With all of the above discrepancies in Cypress' report we believe the Los Alamitos report is correct.

Traffic Commission

The Traffic Commission reviewed the draft report on February 12, 2014, and approved the report with some modifications that have been incorporated into this final report (see attached minutes). Therefore, City staff and the Traffic Commission recommend approval of the report, and adopt Resolution No. 2014-09 accepting the Engineering and Traffic Survey for 2014.

Fiscal Impact

The construction estimate for adding new speed limit signs and painting speed limits on the street is $3,000, and will come out of the 2013/2014 Street Marking and Striping budget and the Traffic Impact Fund.

Prepared By:

David L. Hunt, PE
City Engineer

Reviewed By:

Steven Mendoza
Community Development/Public Works Director

Fiscal Impact Reviewed By:

Glenn Steinbrink
Interim Administrative Services Director

Approved By:

Bret M. Plumlee
City Manager

Attachments: 1. Resolution No. 2014-09, Exhibit A, Engineering and Traffic Survey for Speed Limits
2. Excerpt Minutes from February 12, 2014 Traffic Commission Meeting

RESOLUTION NO. 2014-09

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LOS ALAMITOS, CALIFORNIA, ADOPTING THE 2014 ENGINEERING AND TRAFFIC SURVEY FOR SPEED LIMITS

WHEREAS, an Engineering and Traffic survey as defined by the California Vehicle Code (CVC) section 627 is a survey of highway and traffic conditions in accordance with methods determined by the Department of Transportation for use by state and local authorities, and;

WHEREAS, an Engineering and Traffic survey shall include a minimum of the following considerations; 1) Prevailing speeds as determined by traffic engineering measurements; and, 2) Accident records; and 3) Highway, traffic and roadside conditions not readily apparent to the driver, and;

WHEREAS, the requirement to perform Engineering and Traffic surveys for the support of prima facie speed limits and the use of radar or other approved electronic devices to enforce speed limits is based on CVC 40802a, and;

WHEREAS, CVC also outlines the requirement to update the Engineering and Traffic survey every 5 to 10 years depending on changes in the road conditions, and;

WHEREAS, the Los Alamitos Municipal Code 10.08.100 establishes that the City Council may, by Resolution, designate prima facie speed limits upon streets in the City based upon engineering and traffic surveys as authorized by State Vehicle Code, and;

WHEREAS, the City traffic engineer has completed the Engineering and Traffic Survey for Speed Limits dated January, 2014.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF LOS ALAMITOS DOES RESOLVE AS FOLLOWS:

SECTION 1. The City Council of the City of Los Alamitos, California, finds that the above recitals are true and correct.

SECTION 2. To accept the recommendations as outlined in the Engineering and Traffic Survey for Speed Limits completed January, 2014, attached hereto as Exhibit A.

SECTION 3. The City Clerk shall certify as to the adoption of this Resolution.

PASSED, APPROVED, AND ADOPTED this 21st day of April, 2014.

_____

Gerri L. Graham-Mejia, Mayor

ATTEST:

_____
Windmera Quintanar, City Clerk

APPROVED AS TO FORM:

_____
Cary Reisman, City Attorney

STATE OF CALIFORNIA)
COUNTY OF ORANGE) ss
CITY OF LOS ALAMITOS)

I, Windmera Quintanar, City Clerk of the City of Los Alamitos, do hereby certify that the foregoing Resolution was adopted at a regular meeting of the City Council held on the 21st day of April, by the following vote, to wit:

AYES: COUNCILMEMBERS:

NOES: COUNCILMEMBERS:
ABSENT: COUNCILMEMBERS:
ABSTAIN: COUNCILMEMBERS:

_____
Windmera Quintanar, City Clerk

EXHIBIT A

ENGINEERING AND TRAFFIC SURVEY FOR SPEED LIMITS

CITY OF LOS ALAMITOS

JANUARY 2014

PREPARED FOR:

CITY OF LOS ALAMITOS
3191 KATELLA AVENUE
LOS ALAMITOS, CALIFORNIA 90720
(562) 431-3538

PREPARED BY:

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TRAFFIC ENGINEERS
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Appendix A - For Each Street Segment in the Survey
- Data Summary Sheet .....
- Radar Speed Distribution Sheet .....
- Survey Field Sheet .....

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- Radar Gun Certification .....
- Technician Certification .....

CERTIFICATION

I, Gerald Stock, do hereby certify that this Engineering and Traffic Survey for the City of Los Alamitos was performed under my supervision and is accurate and complete. I certify that I am both experienced in performing surveys of this type and duly registered in the State of California as a professional Traffic Engineer.

_____
Gerald Stock
RTE # 2049

File: Los Alamitos Radar Rpt 2013.doc

CITY OF LOS ALAMITOS
ENGINEERING AND TRAFFIC SURVEY FOR SPEED LIMITS

In accordance with procedures established by the State of California, this Engineering and Traffic Survey has been developed for the City of Los Alamitos as the basis for the establishment and enforcement of speed limits for selected streets within the City. The work provided herein was authorized by the City and was performed by the engineering consulting firm of Hartzog & Crabill, Inc. The goal of the review was to determine whether changes in pre-existing conditions have occurred where older speed limits should be modified.

The requirement to perform Engineering and Traffic surveys for speed limits is based on the California Vehicle Code (CVC). CVC Section 40802 states that at least once every five (5), seven (7) or ten (10) years, States and local agencies should re-evaluate non-statuary speed limits on segments of their roadways. Recent changes to the CA. MUCTD changed the policy and procedure for setting speed limits in California. Engineering and Traffic Surveys must be performed with the use of radar or other approved electronic devices if the use of radar is to be employed to enforce speed limits. If such a survey is not performed within five years (or seven years, or ten years as stated previously) of the date of the preceding survey, then the new data and its use will constitute a speed trap. Hence, evidence using such would not be admissible in court. From the Vehicle Code, 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) A particular section of a highway with a prima facie speed limit provided by this code or by local ordinance under sub-paragraph (A) of paragraph (2) of subdivision (a) of Section 22352, or established pursuant to 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 where enforcement involves the use of radar or other electronic devices that measures the speed of moving objects. This paragraph does not apply to a local street, road, or school zone.

The definition of a Traffic and Engineering Survey is contained in Section 627 of the Vehicle Code and is as follows:

Engineering and Traffic survey, as used in this code, means a survey of highway and traffic conditions in accordance with methods determined by the California Department of Transportation (Caltrans) for use by State and local authorities. An engineering and traffic survey shall include, among other requirements deemed necessary by the department, consideration of the following:

(a) Prevailing speeds as determined by traffic engineering measurements.

(b) Accident records.

(c) Highway, traffic and roadside conditions not readily apparent to the driver.

The California Vehicle code has set certain regulations regarding the posting and enforcement of speed zones. These regulations generally reflect the viewpoint that speed zoning should be based on traffic conditions and natural driver behavior and not because of an arbitrary response to a traffic event or occurrence. Therefore, it is important to have a general understanding of the "Basic Speed Law", "Prima Facie Speed Limits" and "Intermediate Speed Zones".

Basic Speed Law (CVC 22350)

All fifty states base their speed regulations on the Basic Speed Law. In California, CVC 22350 defines the basic speed law as:

"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."

This law recognizes that driving conditions vary widely from time-to-time and place-to-place and, therefore, no set of fixed driving rules will adequately serve all conditions. The motorist will constantly adjust their driving behavior to fit the conditions encountered, and must learn to do this with a minimum of assistance from the police. The Basic Speed Law is founded on the belief that a majority of motorists are able to modify their driving behavior properly, as long as they are aware of the conditions around them.

Prima Facie Speed Limits (CVC 22352)

All other speed limits are prima facie limits which, "on the face of it", are reasonable and prudent under normal conditions. The opportunity given to the driver to exceed a prima facie speed limit when it is safe to do so recognizes the fact that any posted speed limit cannot adequately reflect the many different conditions of traffic, weather, visibility, etc., that may be found on the same highway at different times.

Certain prima facie limits are automatically established by law (CVC 22352), including a 15 mph limit in alleys, blind intersections, blind railroad crossing, and the 25 mph limit in business and residence districts. There is also a part time 25 mph limit in school zones when children are present in route to or from school.

Business and residence districts are defined in the Vehicle Code as specific areas meeting a specified minimum density of roadside development. CVC Sections 235 and 515 define these regulations. A count of houses or active businesses facing on a highway must be made to determine whether or not a valid business or residence district exists. The law does not require posting these prima facie limits that are readily apparent.

Residence District (CVC 515)

A "residence district" is that portion of a highway and the property contiguous thereto, other than a business district, (a) upon one side of which highway, within a distance of a quarter of a mile, the contiguous property fronting thereon is occupied by 13 or more separate dwelling houses or business structures, or (b) upon both sides of which 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. A residence district may be longer than one-quarter of a mile if the above ratio of separate dwelling houses or business structures to the length of the highway exists.

Establishment of Speed Zones

The reason that speed limit areas and their required postings are done is to guard reasonable drivers from the unreasonable behavior of reckless, unreliable, or otherwise dangerous drivers. As with other similar laws, the limits identified are based on the consensus of the majority of those who drive the highway as to what speed is reasonable and safe. It is this type of information that is reflected in the analysis section of this report. Namely, posted speed limits are a reflection of that speed which most people deem to be safe as opposed to a minority of drivers who do not drive in a reasonable manner.

Speed zones are also established to advise drivers of road conditions or hazards that may not be readily apparent to a reasonable driver. For that reason, a field review of related road/traffic variables is conducted which considers the analytical data and accident history of a particular roadway segment to determine a safe and reasonable speed limit.

Data Collection Procedures

Speed evaluation data was collected at 17 different survey segments on 7 different roadways in the City of Los Alamitos. These areas and the number of segments on each are described as follows:

1. Ball Road (1)
2. Bloomfield Street (3)
3. Cerritos Avenue (3)
4. Farquhar Avenue (1)
5. Katella Avenue (5)
6. Lexington Drive (1)
7. Los Alamitos Boulevard (3)

As described in various traffic engineering documents - including information provided by the State of California, the individual locations on which radar data collection procedures were used involved considerations for the following:

a. Stop sign or traffic signal locations;
b. Visibility issues;
c. Traffic flow at intersections, cross-traffic, major driveways, crosswalks, railroad crossings and unusual turning movements;
d. The influence of other traffic factors on the speed of cars: such as on street parking, roadway features, adjacent land uses, and lighting.

Speed Zoning Methodology

The California Manual on Uniform Traffic Control Devices (CA. MUTCD) specifies a "short method of determining speed limits on City and County through Highways, Arterial and Collector Roads Procedures.

Introduction - This short method of speed zoning is based on the premise that the reasonable speed limit is one that conforms to the actual behavior of the majority of motorists, and that by

measuring motorist's speeds, one will be able to select a speed limit that is both reasonable and effective. Other factors that need to be considered include, but are not limited to: the most recent three-year collision record, roadway design speed, safe stopping sight distance, superelevation, shoulder conditions, profile conditions, intersection spacing and offsets, commercial driveway characteristics, pedestrian traffic in the roadway without sidewalks.

Speed Zone Survey

- Only one person is required for the fieldwork. Speeds can be read directly from a radar speed meter.

- A section of road should be selected with representative operating speeds. If speeds vary on a given road, additional surveys should be conducted. In this case, it may be necessary to establish additional speed zones with different speed limits. The section selected should be straight and should have no traffic signal, stop sign or intersection with a major cross street.

- Speed measurements should be taken during off-peak hours on weekdays. The weather should be fair with no unusual conditions prevailing. It is important that the surveyor and his equipment be so inconspicuous as not to affect traffic speeds. For this reason, an unmarked car is recommended, with the radar speed meter located as inconspicuously as possible. It should be placed so as to be able to survey traffic in both directions, and should not make an angle greater than 15 degrees with the roadway centerline.

- It is desirable to have a minimum sample of 100 automobiles in each survey. This may result in excessive survey periods for low-volume roads. Under these conditions, the survey should be conducted for a minimum of two hours, but in no case should the sample for any survey contain less than 50 automobiles.

- The California MUTCD states that speed limits are established at or near the 85th percentile speed, which is defined as that speed at or below which 85 percent of the traffic is moving. This speed can be selected directly from the data sheet. However, roadway conditions not readily apparent to the motorist such as vertical or horizontal curves or other roadway conditions that may impact sight distance may result in a further reduction of 5 mph in the recommended speed limit.

- As a check on the validity of the proposed speed limit, an analysis should be made of the two-year accident record for the section of roadway under consideration. If this record shows an abnormally high percentage of accidents normally associated with excessive speeds, the proposed speed limit should be further reduced. This is a judgment situation, and will not usually be a factor,

- Short speed zones of less than half a mile should be avoided, except in transition areas.

- Speed zone changes should be coordinated with changes in roadway conditions or roadway development.

- Speed zoning in 5 mile per hour increments should be avoided if possible. A 10-mile per hour increment is preferable.

- Speed zoning should be coordinated between adjacent jurisdictions.

Local Street Exemptions (CVC 40802)

Many streets are designated as "Local" streets per CVC 40802. These streets are exempt from the radar study. Therefore, the speed limit for these streets does not require an Engineering and Traffic Survey. The code is as follows:

"For the purpose of this section, local streets and roads shall be defined by the latest functional usage and federal aid system maps as submitted to the Federal Highway Administration. When these maps have not been submitted, the following definition shall be used: A local street or road primarily provides access to abutting residential property and shall meet the following three conditions:

1. Roadway width of not more than 40 feet.
2. Not more than one half mile of uninterrupted length.
3. Not more than one traffic lane in each direction.

Other Considerations

Every street should be inspected for unusual traffic, roadway and roadside conditions not readily apparent to a motorist. A check should be made of the adequacy of traffic control devices, roadway alignment, width surface conditions, accident history and any unique traffic hazards that may exist. Any of these conditions may warrant the selection of a speed lower than the 85th percentile speed for speed zoning.

Radar Collection Time Frames

The hours of radar operation were restricted to off-peak periods for heavily traveled streets and to uncongested peak periods on lightly traveled streets. All surveys were conducted in fair weather.

The radar unit was mounted at the top of the front dash of an unmarked vehicle with the meter-reading unit sustained inside the vehicle. The radar unit's calibration was checked periodically using a tuning fork.

The radar operator and assistant recorded the speed meter readings for each location on Radar Speed Survey Field Sheets included in the appendix of this report. A representative sampling of at least 100 vehicles were surveyed in each direction or a cumulative sample of 200 vehicles for both directions where possible. On low volume roads, where a total sample of 200 vehicles would result in an excessive time period, sampling was continued until a representative bell-shaped frequency distribution was attained.

Analysis Factors

Several factors were used as input to our recommendations for speed limits. These include the 85th Percentile, the 10 MPH Pace and others. These are described in detail below.

1. The **CRITICAL SPEED**, or the 85th percentile is defined as that speed at or below which 85 percent of the traffic is moving. From experience, traffic engineers have found that this is one of the most reliable factors in determining appropriate speed limits.

Hence, the accepted practice, and one that has been used in this case is to set the speed limit at or near the critical speed. This recognizes that other factors could be present where the above may not be appropriate. When this procedure is used, it not only conforms to that required by the State but it also provides a strong base for law enforcement personnel to properly enforce speed limits.

2. The **10 MPH PACE** is that continuous 10 mph incremental range of speeds in which the largest number of recorded vehicles is contained. It is a measure of the dispersion of speeds within the sample surveyed. For this element, the accepted practice to the greatest extent possible is to try and keep the recommended speed limit within the 10 mph pace after considering the critical speed and any factors requiring a speed lower than the critical speed.

3. The **MEDIAN (MIDDLE) SPEED**, or 50th percentile speed, represents the mid-point value within the range of recorded speeds for a particular roadway location. In other words, 50% of the vehicles travel faster, and 50% travel slower than the median speeds. This value is another measure of the central tendency of the vehicle speed distribution.

4. The **15th PERCENTILE SPEED** is that speed at or below which 15% of the vehicles are traveling. This value is important in determining the minimum allowable speed limit, given that the vehicles traveling below this speed tend to obstruct the flow of traffic, thereby increasing the accident potential.

5. **MODAL SPEED**: The modal speed is the speed, which occurs most frequently in the distribution (the most). It serves as another useful measure in verifying the correct recommendation for speed limits.

6. **STANDARD DEVIATION**: This is a mathematical element, which relates to measures of dispersion of data. It is used to assist in describing the center of speed distribution information around the arithmetic mean or the time mean speed. It also is used in the overall review of recommended speed limits and serves to verify the level of confidence of data used in making recommendations.

7. The **MEAN (AVERAGE)** is the sum of the speeds of the samples divided by the number of samples.

The numerical values of the above factors are derived from the speed distribution curves calculated for each survey location. These distribution curves represent a method of graphic analysis that compares the cumulative percentage of vehicles to the speed at which the vehicles are traveling.

Field Review

In addition to the availability of the above statistical data, a significant aspect of speed limit recommendations is based on the field review. Its importance is that existing conditions may warrant a lower speed than is actually indicated by the application of survey data. Examples of the field data collected for the purposes of analyzing related roadway characteristics as they pertain to the determination of appropriate speed limits are listed below:

1. Segment length, width and alignment
2. Level of pedestrian activity
3. Traffic flow characteristics
4. Vertical and/or horizontal curves.
5. Driver sight distance constraints.
6. Adjacent residential/commercial/industrial etc. zoning.
7. Number of lanes and other channelization/striping factors
8. Frequency of intersections, driveways and on street parking;
9. Location of stop signs, traffic signals, and other regulatory traffic control devices;
10. Roadway conditions, bumps and dips;
11. Obstructions to pedestrian visibility;
12. Land use and proximity of schools;
13. Uniformity with existing speed zones to/with adjacent jurisdictions;
14. Any other unusual conditions not readily apparent to the driver.

The results of the field review of related road/traffic variables are summarized on the Engineering and Traffic Survey forms found in the Appendix of this report.

Accident History

The Engineering and Traffic Survey forms summarize the available two-year accident information for the subject streets. The accident information includes the total number of accidents within each street segment and of those accidents, the number that are speed-related. This information was obtained from the California Statewide Integrated Traffic Records System (SWITRS) for the City of Los Alamitos.

The annual accident rate figures represent the number of speed-related accidents divided by years of accident records. The evaluation of accidents is useful as a check on the accuracy of recommended or existing speed limits. Should this review show a high percentage of accidents associated with excessive speeds, consideration based on professional traffic engineering judgment should be directed toward reducing the posted or recommended speed limit.

Results and Recommendations

The following Summaries: No Speed Limit Changes, New Speed Limit Postings, Speed Limit Increases, Speed Limit Reductions and Summary of Recommendations presents the results of the radar survey for the selected 17 locations. As shown, the Summary of Recommendations chart presents the necessary analysis elements that in addition to the field review of a registered traffic engineer led to the recommendations indicated.

Locations of "No Speed Limit Changes"

The Summary indicates that 13 of the 17 segments studied are recommended for no speed limit changes. The reason centers mostly on the fact that the newly measured values of the 85th percentile and the 10 MPH pace are still within the parameters of the existing speed limits. Additional factors such as the presence of horizontal or vertical curves reducing sight distance form the basis in some instances of our recommendations. Therefore, the current postings should remain as is. One segment has a speed sign posted in one direction only and is listed for no change. Hence, the other direction should be posted. These segments noted as "install", as well as the segments recommended for "No Change" are listed below:

Ball Road	
West City Limits to Bloomfield St	Remain posted at 40 mph
Bloomfield Street	
North City Limits to Cerritos Ave	Remain posted at 40 mph
Katella Ave to Farquhar Ave	Remain posted at 25 mph
Cerritos Avenue	
North City Limits to Los Alamitos Bl	Remain posted at 40 mph
Los Alamitos Bl to Bloomfield St	Remain posted at 35 mph
Bloomfield St to East City Limits	Remain posted at 40 mph
Farquhar Avenue	
Los Alamitos Bl to Lexington Dr	Remain posted at 25 mph
Katella Avenue	
Lexington Dr to Siboney St	Remain posted at 40 mph
Siboney St to Walker St	Remain posted at 40 mph
Lexington Drive	
Katella Ave to Farquhar Ave	Remain posted at 30 mph
Los Alamitos Boulevard	
North City Limits to Katella Ave	Remain posted at 35 mph
Katella Ave to Farquhar Ave	Remain posted at 35 mph
Farquhar Ave to Bradbury Rd	Remain posted at 40 mph

Support Explanations for "No Speed Limit Changes"

The following are support explanations for the roadway segments that the recommended speed limit is 5 mph lower or more than the newly measured 85th percentile speed or has a speed sign posted in one direction only. The various reasons for the recommendations are provided below.

Katella Avenue

Lexington Drive to Siboney Street

This section of Katella Avenue is a six lane roadway. The adjacent land uses are residential non-fronting to the roadway, commercial, business, medical offices, golf course, and the Los Alamitos Race Track. Field observations include a 40 mph speed sign posted only eastbound east of Lexington Drive, no shoulders westbound, bus stops and heavy truck traffic. With the speed data results showing an 85th percentile speed of 43.8 mph, it is recommended that the existing 40 mph speed limit be maintained. For enforcement, it is recommended that a 40 mph speed sign be posted for the westbound direction as well.

Locations of "Speed Limit Increases"

With the combination of the speed data, our field review and accident history, the following (4) segments are recommended for a speed limit increase.

Bloomfield Street

Cerritos Ave to Katella Ave	Increase speed from 35 mph to 40 mph

Katella Avenue

West City Limits to Los Alamitos Bl	Increase speed from 35 mph to 40 mph
Los Alamitos Bl to Bloomfield St	Increase speed from 35 mph to 40 mph
Bloomfield St to Lexington Dr	Increase speed from 35 mph to 40 mph

Support Explanations of "Speed Limit Increases"

Bloomfield Street

Cerritos Avenue to Katella Avenue

This section of Bloomfield Street is a four lane roadway. Currently, a 35 mph speed limit is posted for this area. The adjacent land uses are business, industrial, elementary and middle schools, and a park. Field notes state that there are no shoulders throughout the majority of the segment except for approximately 1000' of cut out on-street parking south of Cerritos Avenue southbound, painted bikes lanes, and heavy pedestrian traffic at school arrive and release. The speed data resulted with an 85th percentile speed of 41.0 mph and a 10 mph pace range of 33 to 42 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

Katella Avenue

West City Limits to Los Alamitos Boulevard

This section of Katella Avenue is an eight lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, City Hall and the Police Station, a church and non-fronting residential. Field notes state that there are no shoulders throughout the majority of the segment, truck traffic is heavy as is conventional vehicular traffic The speed data resulted with an 85th percentile speed of 39.9 mph and a 10 mph pace range of 32 to 41 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

Los Alamitos Boulevard to Bloomfield Street

This section of Katella Avenue is a six lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, medical and a church. Field notes state that there are areas of on-street parking and areas of restricted parking, heavy truck traffic and bus stops. The speed data resulted with an 85th percentile speed of 35.7 mph and a 10 mph pace range of 27 to 36 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

Bloomfield Street to Lexington Drive

This section of Katella Avenue is a six lane roadway. Currently a 35 mph speed limit is posted for this area. The adjacent land uses are business, medical, park, industrial and a church. Field notes state that there are areas of on-street parking and areas of restricted parking, heavy truck traffic and bus stops. The speed data resulted with an 85th percentile speed of 39.9 mph and a 10 mph pace range of 30 to 39 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

SUMMARY

OF

RECOMMENDATIONS

CITY OF LOS ALAMITOS
SUMMARY OF RECOMMENDATIONS

STREET LOCATION	EXISTING SPEED LIMIT	RECOMMENDED SPEED LIMIT	85TH PERCENTILE SPEED	AVERAGE SPEED	10 MPH PACE RANGE	PERCENT OF VEHICLES IN PACE	JUSTIFICATION / COMMENTS
BALL ROAD							
WEST CITY LIMITS TO BLOOMFIELD ST	40	**40**	44.9	41.2	37-46	83.3	NO CHANGE – 85TH PERCENTILE
BLOOMFIELD STREET							
NORTH CITY LIMITS TO CERRITOS AVE	40 / 25*	**40**	44.8	41.3	38-47	83.9	NO CHANGE – 85TH PERCENTILE
CERRITOS AVE TO KATELLA AVE	35 / 25*	**40**	41.0	36.2	33-42	79.5	INCREASE – 85TH PERCENTILE
KATELLA AVE TO FARQUHAR AVE	25	**25**	25.2	22.5	19-28	96.9	NO CHANGE – 85TH PERCENTILE
CERRITOS AVENUE							
WEST CITY LIMITS TO LOS ALAMITOS BL	40 / 25*	**40**	43.4	39.0	35-44	74.9	NO CHANGE – 85TH PERCENTILE
LOS ALAMITOS BL TO BLOOMFIELD ST	35 / 25*	**35**	39.3	35.1	31-40	80.1	NO CHANGE – 85TH PERCENTILE
BLOOMFIELD ST TO EAST CITY LIMITS	40 / 25*	**40**	44.9	41.1	37-46	85.2	NO CHANGE – 85TH PERCENTILE
FARQUHAR AVENUE							
LOS ALAMITOS BL TO LEXINGTON DR	25	**25**	29.9	25.9	22-31	87.2	NO CHANGE – 85TH PERCENTILE
KATELLA AVENUE							
WEST CITY LIMITS TO LOS ALAMITOS BL	35	**40**	39.9	35.4	32-41	70.9	INCREASE – 85TH PERCENTILE
LOS ALAMITOS BL TO BLOOMFIELD ST	35	**40**	35.7	32.0	27-36	76.0	INCREASE – 85TH PERCENTILE
BLOOMFIELD ST TO LEXINGTON DR	35	**40**	39.9	34.7	30-39	67.3	INCREASE – 85TH PERCENTILE

*25 mph When Children Present

STREET LOCATION	EXISTING SPEED LIMIT	RECOMMENDED SPEED LIMIT	85TH PERCENTILE SPEED	AVERAGE SPEED	10 MPH PACE RANGE	PERCENT OF VEHICLES IN PACE	JUSTIFICATION / COMMENTS
KATELLA AVENUE (Continued)							
LEXINGTON DR TO SIBONEY ST	40	**40**	43.6	39.4	36-45	74.5	NO CHANGE – 85TH PERCENTILE
SIBONEY ST TO WALKER ST	40	**40**	44.1	38.2	34-43	73.5	NO CHANGE – 85TH PERCENTILE
LEXINGTON DRIVE							
KATELLA AVE TO FARQUHAR AVE	30	**30**	33.4	29.6	26-35	86.1	NO CHANGE – 85TH PERCENTILE
LOS ALAMITOS BOULEVARD							
NORTH CITY LIMITS TO KATELLA AVE	35	**35**	38.5	34.5	30-39	83.0	NO CHANGE – 85TH PERCENTILE
KATELLA AVE TO FARQUHAR AVE	35	**35**	36.8	32.3	28-37	84.5	NO CHANGE – 85TH PERCENTILE
FARQUHAR AVE TO BRADBURY RD	40 / 25*	**40**	42.2	38.4	34-43	84.4	NO CHANGE – 85TH PERCENTILE

*25 mph When Children Present NP = Not Posted

APPENDIX A

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

BALL ROAD — **WEST CITY LIMITS TO BLOOMFIELD ST**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 11:30 PM - 12:00 PM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	WEST OF KAYLOR
DATE OF SURVEY	11/14/2013
85th PERCENTILE	44.9 MPH
10 MPH PACE	37 - 46 MPH
PERCENT IN PACE	83.3 %
POSTED SPEED LIMIT	40 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	1
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	20,000
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - BLOOMFIELD / KAYLOR
CROSSWALKS	AT BLOOMFIELD (sch) / KAYLOR
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	NO PARKING ANYTIME
OTHER	BIKE ROUTE

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.25
VERTICAL CURVE	SLIGHT-GRADUAL UP/DOWNHILL GRADES (OVER CREEK)
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / NO
STREET LIGHTING	YES
OTHER	PAINTED ISLAND

ADJACENT LAND USE	RESIDENTIAL (NF) / COMMERCIAL / CREEK
RECOMMENDED SPEED LIMIT	40 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 40 mph speed limit is within 4.9 mph of the 85th percentile speed and meets CVC standards. Note, a 40 mph speed limit is posted in the adjacent City of Long Beach.

*25 MPH When Children Present, School Zone

File: Ball 2013-01

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

BALL ROAD — WEST CITY LIMITS TO BLOOMFIELD ST

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 11:30 PM - 12:00 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		99.3%	
48		98.6%	
47		95.1%	
46		91.0%	}PACE
45		85.4%	}PACE
44		78.5%	}PACE - - -85PCT
43		70.1%	}PACE
42		59.7%	}PACE
41		47.9%	}PACE - - -MEAN
40		36.8%	}PACE
39		26.4%	}PACE
38		19.4%	}PACE
37		12.5%	}PACE - - -15PCT
36		7.6%	
35		4.2%	
34		2.8%	
33		1.4%	
32		0.7%	
31		0.0%	
30		0.0%	
29		0.0%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	46	MPH
LOWER LIMIT 10 MPH PACE:	37	MPH
PERCENT OVER PACE:	9.0	%
PERCENT IN PACE:	83.3	%
PERCENT UNDER PACE:	7.6	%

85th PERCENTILE SPEED:	44.9	MPH
MEDIAN SPEED:	41.2	MPH
15th PERCENTILE SPEED:	37.4	MPH

Ball 2013-01

$SPD--HCI.dwg

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
Consulting Traffic Engineers
17842 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9411 fax: 714.731.9414
www.hartzog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: BALL ROAD
LOCATION: WEST CITY LIMITS TO BLOOMFIELD ST.

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 11:30 AM
END TIME: 12:00 PM VAL

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50	/	1
49		0
48	///	3
47	///	3
46	////	5
45	////	5
44	/////	6
43	////	7
42	////	8
41	////	9
40	////	7
39	////	5
38	////	6
37	///	2
36	//	2
35	/	1
34	/	1
33		
32		
31		
30		
29		
28		
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50			1	50
49	/	1	1	49
48	//	2	5	48
47	///	3	8	47
46	///	3	8	46
45	////	5	10	45
44	////	6	12	44
43	////	8	15	43
42	////	9	17	42
41	////	7	16	41
40	////	8	15	40
39	////	5	10	39
38	////	5	10	38
37	////	5	7	37
36	///	3	5	36
35	/	1	2	35
34	/	1	2	34
33	/	1	1	33
32	/	1	1	32
31				31
30				30
29				29
28				28
27				27
26				26
25				25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

BLOOMFIELD STREET — **NORTH CITY LIMITS TO CERRITOS AVE**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 12:30 PM - 1:00 PM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	SOUTH OF BARCLAY
DATE OF SURVEY	11/14/2013
85th PERCENTILE	44.8 MPH
10 MPH PACE	38 - 47 MPH
PERCENT IN PACE	83.9 %
POSTED SPEED LIMIT	40 MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	1
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	13,700
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - CERRITOS / BALL
CROSSWALKS	AT CERRITOS (sch) / PED XING (at creek) / BALL
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	PARTIAL (NB) / NO STOPPING ANYTIME (SB)
OTHER	BIKE ROUTE MANY AREAS OF RED CURB

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.53
VERTICAL CURVE	SLIGHT-GRADUAL UP/DOWNHILL GRADES (OVER CREEK)
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / NO
STREET LIGHTING	YES
OTHER	PAINTED ISLAND

ADJACENT LAND USE	RESIDENTIAL (NF) / LAUREL HIGH SCHOOL / SCHOOL DISTRICT
RECOMMENDED SPEED LIMIT	40 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 40 mph speed limit is within 4.8 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

NF = Non-Fronting

File: Bloomfield 2013-02

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

BLOOMFIELD STREET — NORTH CITY LIMITS TO CERRITOS AVE

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 12:30 PM - 1:00 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		99.4%	
49		99.4%	
48		98.1%	
47		96.9%	}PACE
46		91.9%	}PACE
45		86.3%	}PACE
44		77.6%	}PACE - - -85PCT
43		68.3%	}PACE
42		58.4%	}PACE
41		46.0%	}PACE - - -MEAN
40		36.0%	}PACE
39		25.5%	}PACE
38		19.3%	}PACE
37		13.0%	- - -15PCT
36		8.1%	
35		3.7%	
34		2.5%	
33		0.6%	
32		0.6%	
31		0.0%	
30		0.0%	
29		0.0%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	47	MPH
LOWER LIMIT 10 MPH PACE:	38	MPH
PERCENT OVER PACE:	8.1	%
PERCENT IN PACE:	83.9	%
PERCENT UNDER PACE:	13.0	%

85th PERCENTILE SPEED:	44.8	MPH
MEDIAN SPEED:	41.3	MPH
15th PERCENTILE SPEED:	37.3	MPH

Bloomfield 2013-02

Radar Speed Survey Field Sheet

HAITZOG & CHASTEL, INC.
Consulting Traffic Engineers
175916 17th Street, Suite 101
Tustin, California 92780
714.731.9401 Fax:714.731.9408
www.haitzog-chastel.com

AGENCY: CITY OF LOS ALAMITOS
STREET: BLOOMFIELD STREET
LOCATION: NORTH CITY LIMITS TO CERRITOS AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 12:30 PM
END TIME: 1:00 PM VAL

DIRECTION: NORTHBOUND

MPH	5	10	15	20	25	30	TOTAL
60							
59							
58							
57							
56							
55							
54							
53							
52							
51							1
50							0
49							1
48							1
47							5
46							4
45							6
44							8
43							7
42							10
41							8
40							8
39							5
38							4
37							5
36							2
35							1
34							1
33							
32							
31							
30							
29							
28							
27							
26							
25							
24							
23							
22							
21							
20							
19							
18							
17							
16							
15							

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: SOUTHBOUND

MPH	5	10	15	20	25	30	TOTAL	CUMULATIVE TOTAL	MPH
60									60
59									59
58									58
57									57
56									56
55									55
54									54
53									53
52									52
51								1	51
50								0	50
49							1	2	49
48								2	48
47							3	5	47
46							5	8	46
45							8	9	45
44							7	14	44
43							9	15	43
42							10	16	42
41							8	20	41
40							9	16	40
39							5	17	39
38							6	10	38
37							3	10	37
36							5	8	36
35							1	7	35
34							2	2	34
33							0	3	33
32							1	0	32
31								1	31
30									30
29									29
28									28
27									27
26									26
25									25
24									24
23									23
22									22
21									21
20									20
19									19
18									18
17									17
16									16
15									15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

BLOOMFIELD STREET **CERRITOS AVE TO KATELLA AVE**

DATE: 11/14/2013 SURVEY BY: C. BUENDIA

TIME: 1:00 PM - 1:30 PM CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	SOUTH OF CERRITOS
DATE OF SURVEY	11/14/2013
85th PERCENTILE	41.0 MPH
10 MPH PACE	33 - 42 MPH
PERCENT IN PACE	79.5 %
POSTED SPEED LIMIT	35 MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	1
TOTAL ACCIDENTS	1
ANNUAL ACCIDENT RATE	0.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.16 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	16,900
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - CERRITOS / KATELLA
CROSSWALKS	AT CERRITOS (sch) / KATELLA (sch)
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	PARTIAL w/RESTRICTIONS (SB) / NO STOPPING ANYTIME (NB)
OTHER	BIKE ROUTE
	HEAVY PEDS AT SCHOOL ARRIVAL-DEPARTURE

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.50
VERTICAL CURVE	NONE (Except over former RxR tracks)
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	2 WAY LEFT TURN CENTERLANE
	AREAS OF RED CURB

ADJACENT LAND USE	BUSINESS / INDUSTRIAL / SCHOOLS / PARK

RECOMMENDED SPEED LIMIT	40 MPH

SPEED LIMIT CHANGE	INCREASE

JUSTIFICATION:

This section of Bloomfield Street is a four lane roadway. Currently, a 35 mph speed limit is posted for this area. The adjacent land uses are business, industrial, elementary and middle schools, and a park. Field notes state that there are no shoulders throughout the majority of the segment except for approximately 1000' of cut out on-street parking south of Cerritos Avenue southbound, painted bikes lanes, and heavy pedestrian traffic at school arrive and release. The speed data resulted with an 85th percentile speed of 41.0 mph and a 10 mph pace range of 33 to 42 mph. Therefore, it is recommended that the existing 35 mph be increased to 40 mph.

* 25 MPH When Children Present, School Zone

File: Bloomfield 2013-03

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

BLOOMFIELD STREET — CERRITOS AVE TO KATELLA AVE

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 1:00 PM - 1:30 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		100.0%	
48		100.0%	
47		100.0%	
46		100.0%	
45		98.2%	
44		96.4%	
43		94.0%	
42		90.4%	}PACE
41		84.9%	}PACE - - -85PCT
40		81.3%	}PACE
39		74.7%	}PACE
38		67.5%	}PACE
37		57.8%	}PACE
36		48.2%	}PACE - - - -MEAN
35		36.7%	}PACE
34		28.3%	}PACE
33		19.3%	}PACE
32		10.8%	- - -15PCT
31		7.2%	
30		3.6%	
29		1.2%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	42	MPH
LOWER LIMIT 10 MPH PACE:	33	MPH
PERCENT OVER PACE:	9.6	%
PERCENT IN PACE:	79.5	%
PERCENT UNDER PACE:	10.8	%

85th PERCENTILE SPEED:	41.0	MPH
MEDIAN SPEED:	36.2	MPH
15th PERCENTILE SPEED:	32.5	MPH

Bloomfield 2013-03

Radar Speed Survey Field Sheet

HARTROG & CRABILL, Inc.
Consulting Traffic Engineers
17852 E. 17th Street, Suite 300
Tustin, California 92780
714.731.9455 fax 714.731.9496
www.hartrogcrabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: BLOOMFIELD STREET
LOCATION: CERRITOS AVE TO KATELLA AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 1:00 PM
END TIME: 1:30 PM

DIRECTION: NORTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		2
45		1
44		2
43		2
42		3
41		3
40		6
39		6
38		9
37		7
36		10
35		7
34		9
33		7
32		3
31		2
30		3
29		1
28		
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: SOUTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46		1	3	46
45		2	3	45
44		2	4	44
43		4	8	43
42		6	9	42
41		3	10	41
40		5	11	40
39		6	12	39
38		7	16	38
37		9	16	37
36		9	19	36
35		7	14	35
34		6	15	34
33		7	14	33
32		3	6	32
31		4	6	31
30		1	4	30
29		1	2	29
28				28
27				27
26				26
25				25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

BLOOMFIELD STREET — **KATELLA AVE TO FARQUHAR AVE**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 1:30 PM - 2:15 PM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	SOUTH OF GREEN
DATE OF SURVEY	11/14/2013
85th PERCENTILE	25.2 MPH
10 MPH PACE	19 - 28 MPH
PERCENT IN PACE	96.9 %
POSTED SPEED LIMIT	25 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	0
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	4,200
LANE CONFIGURATION	1 LANE PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - KATELLA. STOP - FARQUHAR / GREEN / HOWARD
CROSSWALKS	AT KATELLA (sch)
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	NO (except delivery truck)
ON-STREET PARKING	YES
OTHER	NO PARKING 9am-12pm, 2nd-4th THURS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.25
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	

ADJACENT LAND USE	RESIDENTIAL (Multi-Family) / CHURCH / BUSINESS AND COMMERCIAL (at Katella)

RECOMMENDED SPEED LIMIT	25 MPH

SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 25 mph is within 0.2 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Bloomfield 2013-04

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

BLOOMFIELD STREET — KATELLA AVE TO FARQUHAR AVE

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 1:30 PM - 2:15 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)						
60						x	100.0%
59						x	100.0%
58						x	100.0%
57						x	100.0%
56						x	100.0%
55						x	100.0%
54						x	100.0%
53						x	100.0%
52						x	100.0%
51						x	100.0%
50						x	100.0%
49						x	100.0%
48						x	100.0%
47						x	100.0%
46						x	100.0%
45						x	100.0%
44						x	100.0%
43						x	100.0%
42						x	100.0%
41						x	100.0%
40						x	100.0%
39						x	100.0%
38						x	100.0%
37						x	100.0%
36						x	100.0%
35						x	100.0%
34						x	100.0%
33						x	100.0%
32						x	100.0%
31							100.0%
30						x	100.0%
29						x	99.4%
28						x	98.7% }PACE
27						x	96.2% }PACE
26						x	92.5% }PACE
25					x		83.6% }PACE - - -85PCT
24				x			72.3% }PACE
23			x				58.5% }PACE
22			x				42.1% }PACE - - -MEAN
21		x					29.6% }PACE
20	x						17.6% }PACE
19	x						8.2% }PACE - - -15PCT
18	x						1.9%
17	x						0.6%
16	x						0.0%
15	x						0.0%

UPPER LIMIT 10 MPH PACE:	28	MPH
LOWER LIMIT 10 MPH PACE:	19	MPH
PERCENT OVER PACE:	1.3	%
PERCENT IN PACE:	96.9	%
PERCENT UNDER PACE:	1.9	%

85th PERCENTILE SPEED:	25.2	MPH
MEDIAN SPEED:	22.5	MPH
15th PERCENTILE SPEED:	19.7	MPH

Bloomfield 2013-04

Radar Speed Survey Field Sheet

HARTOG & CRASILL, Inc.
Consulting Traffic Engineers
17150 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9455 fax 714.731.9458
www.hartogcrasill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: BLOOMFIELD STREET
LOCATION: KATELLA AVE TO FARQUAR AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 1:30 PM
END TIME: 2:15 PM VAL

DIRECTION:

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41		
40		
39		
38		
37		
36		
35		
34		
33		
32		
31		
30		
29		1
28		3
27		4
26		7
25		9
24		12
23		14
22		10
21		8
20		9
19		6
18		1
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION:

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46				46
45				45
44				44
43				43
42				42
41				41
40				40
39				39
38				38
37				37
36				36
35				35
34				34
33				33
32				32
31				31
30		1	1	30
29		0	1	29
28		1	4	28
27		2	6	27
26		7	14	26
25		9	18	25
24		10	22	24
23		12	28	23
22		10	28	22
21		11	19	21
20		6	15	20
19		4	10	19
18		1	2	18
17		1	1	17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

CERRITOS AVENUE — **WEST CITY LIMITS TO LOS ALAMITOS BL**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 10:45 AM - 11:15 AM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF RIVERBED
DATE OF SURVEY	11/14/2013
85th PERCENTILE	43.4 MPH
10 MPH PACE	35 - 44 MPH
PERCENT IN PACE	74.9 %
POSTED SPEED LIMIT	40 MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	1
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	28,500
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - LOS ALAMITOS
CROSSWALKS	AT LOS ALAMITOS (sch)
PEDESTRIAN/BICYCLES	FEW / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	NO PARKING ANYTIME (EB) / FEW AT LOS ALAMITOS BL (WB)
OTHER	NO SHOULDERS (EB)
	BIKE ROUTE

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.29
VERTICAL CURVE	SLIGHT UP-DOWNHILL GRADE (over creek/riverbed)
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	

ADJACENT LAND USE	BUSINESS / COMMERCIAL
RECOMMENDED SPEED LIMIT	40 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 40 mph is within 3.4 mph of the 85th percentile speed and meets CVC standards.

*25 MPH When Children Present, School Zone

File: Cerritos 2013-05

RADAR SPEED DISTRIBUTION SHEET

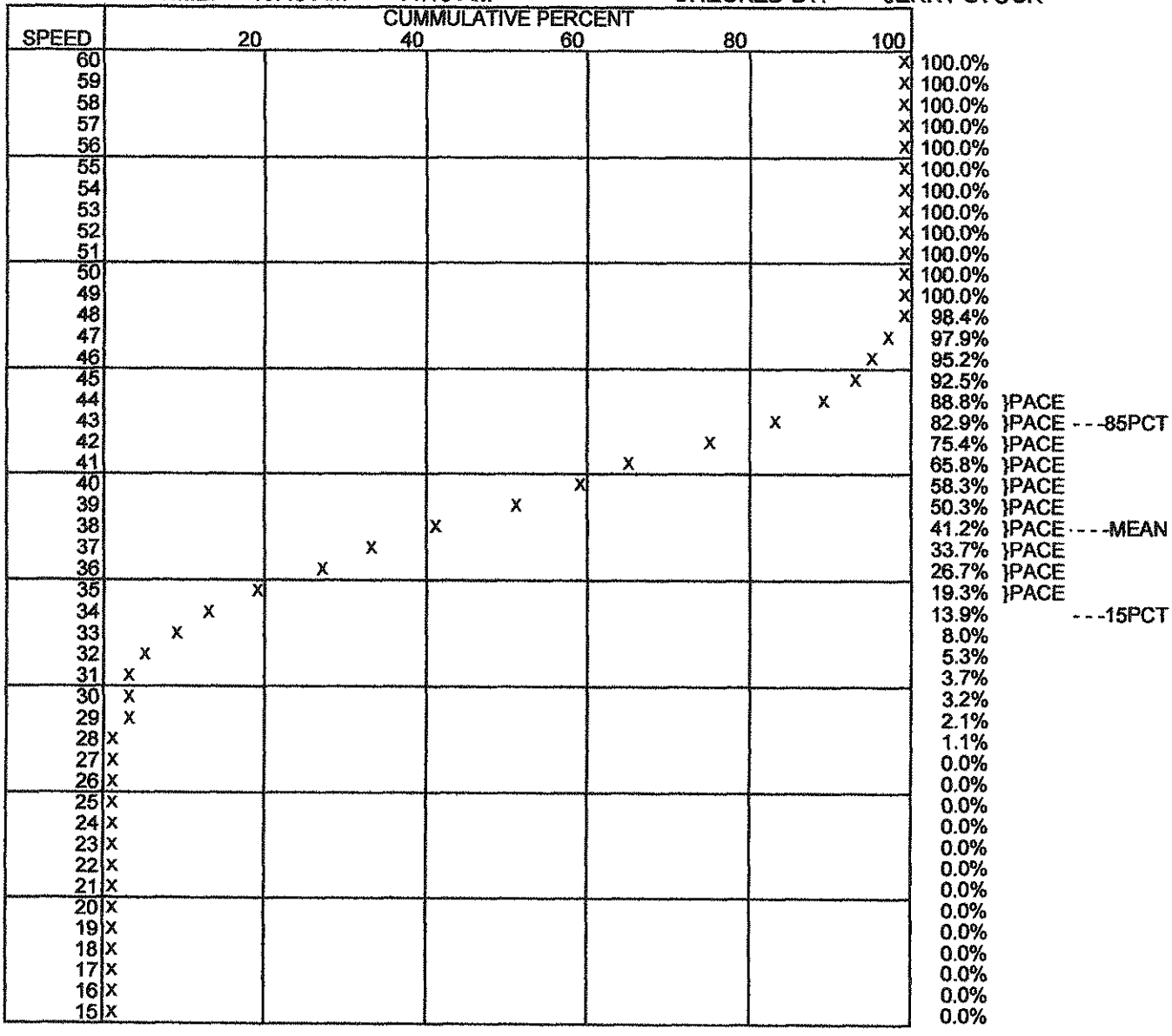
HCI

CITY OF LOS ALAMITOS

CERRITOS AVENUE — WEST CITY LIMITS TO LOS ALAMITOS BL

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 10:45 AM - 11:15 AM — CHECKED BY: JERRY STOCK



UPPER LIMIT 10 MPH PACE:	44	MPH
LOWER LIMIT 10 MPH PACE:	35	MPH
PERCENT OVER PACE:	17.1	%
PERCENT IN PACE:	74.9	%
PERCENT UNDER PACE:	13.9	%

85th PERCENTILE SPEED:	43.4	MPH
MEDIAN SPEED:	39.0	MPH
15th PERCENTILE SPEED:	34.2	MPH

Cerritos 2013-05

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
Consulting Traffic Engineers
17592 E. 17th Street, Suite 101
Tustin, California 92780
714.731.8453 fax 714.731.8459
www.hartzogcrabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: CERRITOS AVENUE
LOCATION: WEST CITY LIMITS TO LOS ALAMITOS BL

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 10:45 AM
END TIME: 11:15 AM VAL

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51	/	1
50		
49	//	2
48	//	
47	////	4
46	////	3
45	////	4
44	////////	6
43	////////	7
42	//////////	9
41	////////	7
40	////////	8
39	////////	8
38	////////	6
37	////////	7
36	////////	7
35	////////	6
34	////////	6
33	////	3
32	///	3
31		0
30	//	2
29	//	1
28	/	1
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49	/	1	3	49
48		0	1	48
47	/	1	5	47
46	//	2	5	46
45	///	3	7	45
44	////	5	11	44
43	///////	7	14	43
42	//////////	9	18	42
41	///////	7	14	41
40	///////	7	15	40
39	//////////	9	17	39
38	//////////	8	14	38
37	///////	6	13	37
36	///////	7	14	36
35	////	4	10	35
34	////	5	11	34
33	//	2	5	33
32		0	3	32
31	/	1	1	31
30		0	2	30
29	/	1	2	29
28	/	1	2	28
27				27
26				26
25				25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

CERRITOS AVENUE	**LOS ALAMITOS BL TO BLOOMFIELD ST**
DATE: 11/14/2013	SURVEY BY: C. BUENDIA
TIME: 10:15 AM - 10:45 AM	CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF HIGH SCH ENT
DATE OF SURVEY	11/14/2013
85th PERCENTILE	39.3 MPH
10 MPH PACE	31 - 40 MPH
PERCENT IN PACE	80.1 %
POSTED SPEED LIMIT	35MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	3
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	28,500
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - LOS ALAMITOS / H.S. ENTRANCE /HUMBOLT / BLOOMFIELD
CROSSWALKS	AT LOS ALAMITOS (sch) / H.S. ENTRANCE (sch) /HUMBOLT / BLOOMFIELD
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	YES
OTHER	SHORT DISTANCE BTWN SIGNALS BIKE ROUTE

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.47
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	BUS STOPS

ADJACENT LAND USE	BUSINESS / COMMERCIAL / RESIDENTIAL (NF) / HIGH SCH
RECOMMENDED SPEED LIMIT	35 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 4.3 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Cerritos 2013-06

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

CERRITOS AVENUE — LOS ALAMITOS BL TO BLOOMFIELD ST

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 10:15 AM - 10:45 AM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60	x	100.0%	
59	x	100.0%	
58	x	100.0%	
57	x	100.0%	
56	x	100.0%	
55	x	100.0%	
54	x	100.0%	
53	x	100.0%	
52	x	100.0%	
51	x	100.0%	
50	x	100.0%	
49	x	100.0%	
48	x	100.0%	
47	x	100.0%	
46	x	100.0%	
45	x	99.3%	
44	x	97.9%	
43	x	96.6%	
42	x	95.2%	
41	x	91.8%	
40	x	89.0%	}PACE
39	x	83.6%	}PACE - - -85PCT
38	x	78.1%	}PACE
37	x	69.2%	}PACE
36	x	58.9%	}PACE
35	x	48.6%	}PACE - - - -MEAN
34	x	39.0%	}PACE
33	x	28.1%	}PACE
32	x	21.2%	}PACE
31	x	13.7%	}PACE - - -15PCT
30	x	8.9%	
29	x	3.4%	
28	x	1.4%	
27	x	0.7%	
26	x	0.0%	
25	x	0.0%	
24	x	0.0%	
23	x	0.0%	
22	x	0.0%	
21	x	0.0%	
20	x	0.0%	
19	x	0.0%	
18	x	0.0%	
17	x	0.0%	
16	x	0.0%	
15	x	0.0%	

UPPER LIMIT 10 MPH PACE:	40	MPH
LOWER LIMIT 10 MPH PACE:	31	MPH
PERCENT OVER PACE:	16.4	%
PERCENT IN PACE:	80.1	%
PERCENT UNDER PACE:	8.9	%

85th PERCENTILE SPEED:	39.3	MPH
MEDIAN SPEED:	35.1	MPH
15th PERCENTILE SPEED:	31.2	MPH

Cerritos 2013-06

Radar Speed Survey Field Sheet

HARTOG & CRABILL, Inc.
Consulting Traffic Engineers
13553 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9411 fax 714.731.9416
www.hartogcrabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: CERRITOS AVENUE
LOCATION: LOS ALAMITOS BL TO BLOOMFIELD ST.

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 10:15 AM
END TIME: 10:45 AM

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44	/	1
43	/	1
42	//	2
41	//	2
40	//	2
39	////	4
38	////////	6
37	////////	8
36	////////	6
35	////////	7
34	////////	8
33	////////	5
32	////////	6
31	////////	4
30	////////	6
29	//	2
28	/	1
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46	/	1	1	46
45	//	2	2	45
44	/	1	2	44
43	/	1	2	43
42	///	3	5	42
41	//	2	4	41
40	////////	8	8	40
39	////////	8	8	39
38	////////	7	13	38
37	////////	7	15	37
36	////////	9	15	36
35	////////	7	14	35
34	////////	8	16	34
33	////////	5	10	33
32	////////	5	11	32
31	////////	3	7	31
30	////////	2	8	30
29	/	0	3	29
28		0	1	28
27	/	1	1	27
26				26
25				25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

CERRITOS AVENUE — **BLOOMFIELD ST TO EAST CITY LIMITS (Santa Clara St)**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 9:45 AM - 10:15 AM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF LOS VAQUEROS
DATE OF SURVEY	11/14/2013
85th PERCENTILE	44.9 MPH
10 MPH PACE	37 - 46 MPH
PERCENT IN PACE	85.2 %
POSTED SPEED LIMIT	40 MPH (EB) / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	2
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	25,500
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - BLOOMFIELD
CROSSWALKS	AT BLOOMFIELD
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	PARTIAL
OTHER	AREAS OF NO PARKING AND NO STOPPING BIKE ROUTE

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.50
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	BUS STOPS

ADJACENT LAND USE	RESIDENTIAL / BUSINESS / CHURCH / MIDDLE SCH

RECOMMENDED SPEED LIMIT	40 MPH

SPEED LIMIT CHANGE	NO CHANGE - POST WESTBOUND

JUSTIFICATION:

The recommended 40 mph is within 4.9 mph of the 85th percentile speed and meets CVC standards. Field notes state that only one speed sign is posted (eastbound) within the segment length. Although in the City of Cypress, there is a 40 mph speed sign posted for the westbound direction west of Denni Street. Therefore, it is recommended that a 40 mph speed sign be installed westbound west of Santa Clara Street (west of East City Limit).

* 25 MPH When Children Present, School Zone

EB = Eastbound, WB = Westbound

File: Cerritos 2013-07

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

CERRITOS AVENUE — BLOOMFIELD ST TO EAST CITY LIMITS

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 9:45 AM - 10:15 AM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		99.4%	
50		99.4%	
49		98.2%	
48		97.6%	
47		95.9%	
46		91.7%	}PACE
45		85.8%	}PACE
44		78.7%	}PACE - - -85PCT
43		70.4%	}PACE
42		61.5%	}PACE
41		48.5%	}PACE - - -MEAN
40		36.7%	}PACE
39		26.6%	}PACE
38		18.9%	}PACE
37		11.2%	}PACE - - -15PCT
36		6.5%	
35		4.1%	
34		2.4%	
33		1.8%	
32		0.6%	
31		0.0%	
30		0.0%	
29		0.0%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	46	MPH
LOWER LIMIT 10 MPH PACE:	37	MPH
PERCENT OVER PACE:	8.3	%
PERCENT IN PACE:	85.2	%
PERCENT UNDER PACE:	6.5	%

85th PERCENTILE SPEED:	44.9	MPH
MEDIAN SPEED:	41.1	MPH
15th PERCENTILE SPEED:	37.5	MPH

Cerritos 2013-07

Radar Speed Survey Field Sheet

HARTOOG & CUMMILL, Inc.
Consulting Traffic Engineers
17651 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9431 fax 714.731.9495
www.hartoog-cummill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: CERRITOS AVENUE
LOCATION: BLOOMFIELD ST TO EAST CITY LIMITS

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 9:45 AM
END TIME: 10:15 AM VCM

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50	/	1
49	/	1
48	/	1
47	///	3
46	////	5
45	////	6
44	////	8
43	////	8
42	////////	11
41	////////	12
40	////////	9
39	////	7
38	////	7
37	///	4
36	//	2
35	/	1
34		0
33	/	1
32	/	1
31		
30		
29		
28		
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: WB

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL
60			
59			
58			
57			
56			
55			
54			
53			
52	/		1
51		0	0
50	/	1	2
49		0	1
48	//	2	3
47	////	4	7
46	////	5	10
45	////	6	12
44	////	6	14
43	////////	8	16
42	////////////	11	22
41	////////	8	20
40	////////	8	17
39	////////	6	13
38	////////	6	13
37	////	4	8
36	//	2	4
35	//	2	3
34	/		1
33	/	1	2
32			1
31			
30			
29			
28			
27			
26			
25			
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

FARQUHAR AVENUE — **LOS ALAMITOS BL TO LEXINGTON DR**

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 3:15 PM - 3:45 PM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	WEST OF NOEL
DATE OF SURVEY	11/14/2013
85th PERCENTILE	29.9 MPH
10 MPH PACE	22 - 31 MPH
PERCENT IN PACE	87.2 %
POSTED SPEED LIMIT	25 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	3
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	18,900
LANE CONFIGURATION	1 LANE PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - LOS ALAMITOS, AND
" "	STOP- REAGAN / MAPLE / ROCHELLE / NOEL / BLOOMFIELD / LEXINGTON
CROSSWALKS	AT LOS ALAMITOS / REAGAN / MAPLE/ BLOOMFIELD / AMERICA / LEXINGTON
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	NO
ON-STREET PARKING	YES (WB) / NO PARKING ANYTIME (EB)
OTHER	NO SHOULDERS (EB)

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.97
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	FAIR
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	

ADJACENT LAND USE	RESIDENTIAL / COMMERCIAL (at Los Alamitos) / PARK / MILITARY BASE
RECOMMENDED SPEED LIMIT	25 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 25 mph is within 4.9 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Farquhar 2013-08

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

FARQUHAR AVENUE — LOS ALAMITOS BL TO LEXINGTON DR

DATE: 11/14/2013 — SURVEY BY: C. BUENDIA

TIME: 3:15 PM - 3:45 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		100.0%	
48		100.0%	
47		100.0%	
46		100.0%	
45		100.0%	
44		100.0%	
43		100.0%	
42		100.0%	
41		100.0%	
40		100.0%	
39		99.3%	
38		99.3%	
37		99.3%	
36		98.0%	
35		96.6%	
34		96.0%	
33		95.3%	
32		94.6%	
31		91.9%	}PACE
30		85.9%	}PACE
29		79.9%	}PACE - - -85PCT
28		71.1%	}PACE
27		62.4%	}PACE
26		51.0%	}PACE
25		42.3%	}PACE - - - -MEAN
24		31.5%	}PACE
23		20.1%	}PACE
22		12.1%	}PACE - - -15PCT
21		4.7%	
20		1.3%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	31	MPH
LOWER LIMIT 10 MPH PACE:	22	MPH
PERCENT OVER PACE:	8.1	%
PERCENT IN PACE:	87.2	%
PERCENT UNDER PACE:	4.7	%

85th PERCENTILE SPEED:	29.9	MPH
MEDIAN SPEED:	25.9	MPH
15th PERCENTILE SPEED:	22.4	MPH

Farquhar 2013-08

Radar Speed Survey Field Sheet

HARTOOG & CRABILL, Inc.
Consulting Traffic Engineers
17851 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9455 fax: 714.731.9595
www.hartoog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: FARQUHAR AVENUE
LOCATION: LOS ALAMITOS BL TO LEXINGTON DR

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/14/13
START TIME: 3:15 PM
END TIME: 3:45 PM VGR

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41		
40		
39		
38		
37		1
36		1
35		1
34		1
33		0
32		2
31		6
30		5
29		6
28		8
27		9
26		7
25		9
24		8
23		7
22		5
21		2
20		1
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46				46
45				45
44				44
43				43
42				42
41				41
40		1	1	40
39			0	39
38			0	38
37		1	2	37
36		1	2	36
35			1	35
34			1	34
33			1	33
32		2	4	32
31		3	9	31
30		4	9	30
29		7	13	29
28		5	13	28
27		8	17	27
26		6	13	26
25		7	16	25
24		9	17	24
23		5	12	23
22		6	11	22
21		3	5	21
20		1	2	20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

KATELLA AVENUE — **WEST CITY LIMITS TO LOS ALAMITOS BL**

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 12:30 PM - 1:00 PM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	WEST OF OAK
DATE OF SURVEY	11/15/2013
85th PERCENTILE	39.9 MPH
10 MPH PACE	32 - 41 MPH
PERCENT IN PACE	70.9 %
POSTED SPEED LIMIT	35 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	3
TOTAL ACCIDENTS	8
ANNUAL ACCIDENT RATE	1.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.10 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	59,800
LANE CONFIGURATION	4 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - CIVIC CENTER / WELLINGSFORD-WALNUT / LOS ALAMITOS
CROSSWALKS	AT CIVIC CENTER / WELLINGSFORD-WALNUT / LOS ALAMITOS
PEDESTRIAN/BICYCLES	FEW / FEW
TRUCK TRAFFIC	YES (Heavy)
ON-STREET PARKING	NO PARKING ANYTIME
OTHER	NO SHOULDERS
	DENSE TRAFFIC

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.68
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / FEW
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND

ADJACENT LAND USE	RESIDENTIAL (NF) / BUSINESS / COMMERCIAL / CITY HALL
RECOMMENDED SPEED LIMIT	35 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 4.9 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Katella 2013-09

RADAR SPEED DISTRIBUTION SHEET

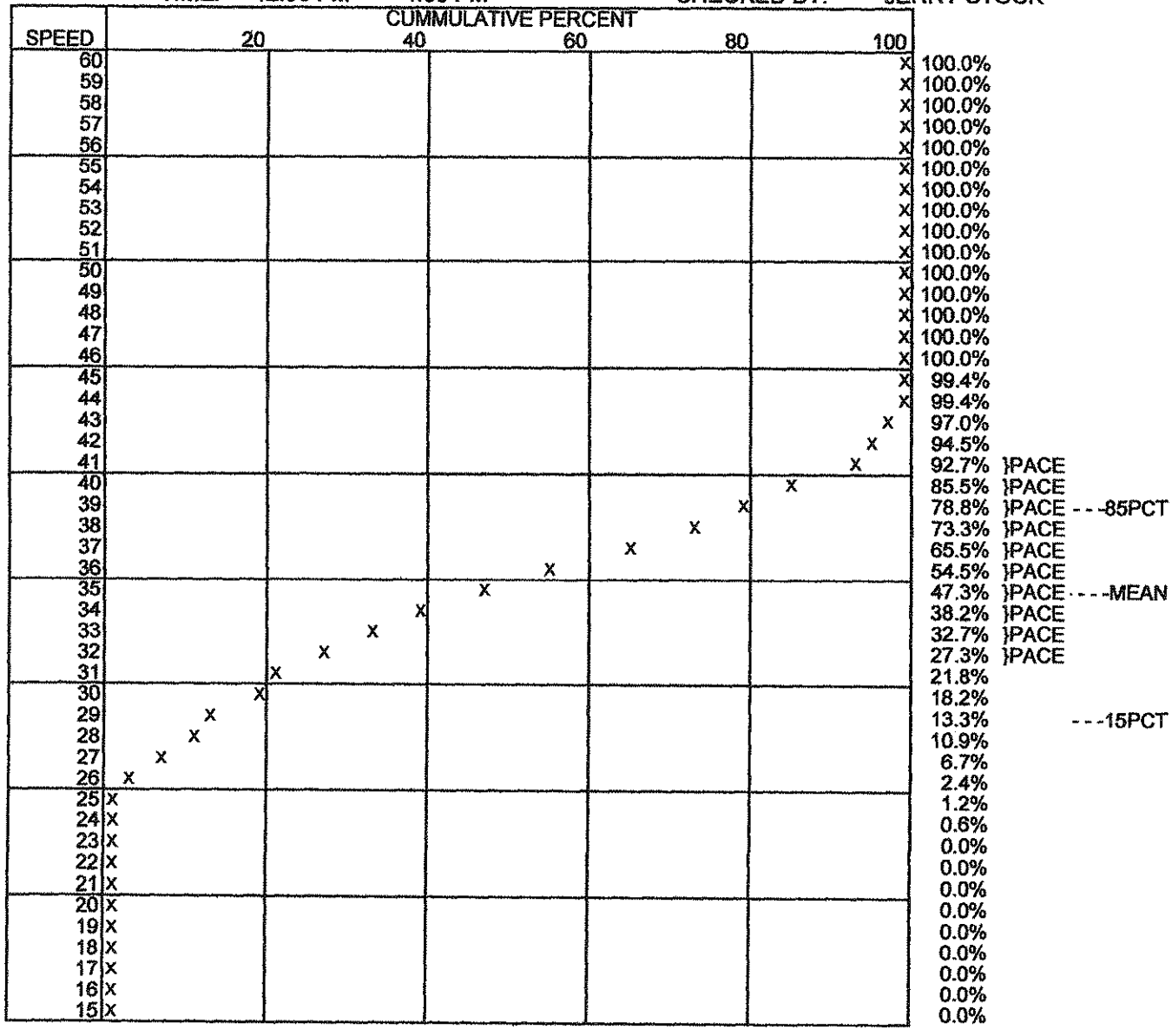
HCI

CITY OF LOS ALAMITOS

KATELLA AVENUE — WEST CITY LIMITS TO LOS ALAMITOS BL

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 12:30 PM - 1:00 PM — CHECKED BY: JERRY STOCK



UPPER LIMIT 10 MPH PACE:	41	MPH		
LOWER LIMIT 10 MPH PACE:	32	MPH	85th PERCENTILE SPEED:	39.9 MPH
PERCENT OVER PACE:	7.3	%	MEDIAN SPEED:	35.4 MPH
PERCENT IN PACE:	70.9	%	15th PERCENTILE SPEED:	29.3 MPH
PERCENT UNDER PACE:	21.8	%		

Katella 2013-09

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Radar Speed Survey Field Sheet

HARTOOG & CUSHILL, Inc. Consulting Traffic Engineers

AGENCY: CITY OF LOS ALAMITOS
STREET: KATELLA AVENUE
LOCATION: WEST CITY LIMIT TO LOS ALAMITOS

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 12:30 PM
END TIME: 1:00 PM VAL

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44	/	1
43	/	1
42	//	2
41	/////	5
40	//////	6
39	//////	6
38	//////////	10
37	//////////	9
36	//////////	9
35	//////////	9
34	////	5
33	/	2
32	////	4
31	/	1
30	///	4
29	///	3
28	///	3
27	////	4
26	//	2
25	/	1
24	/	1
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL
60			
59			
58			
57			
56			
55			
54			
53			
52			
51			
50			
49			
48			
47			
46	/	1	1
45		0	0
44	///	3	4
43	///	3	4
42	/	1	3
41	//////	7	12
40	////	5	17
39	///	3	9
38	///	3	13
37	//////////	9	18
36	////////	6	12
35	////////	6	15
34	////	4	9
33	//////	7	9
32	////	5	9
31	////	5	6
30	////	4	8
29	/	1	4
28	///	4	7
27	///	3	7
26			2
25			1
24			1
23			
22			
21			
20			
19			
18			
17			
16			
15			

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

KATELLA AVENUE — **LOS ALAMITOS BL TO BLOOMFIELD ST**

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 11:15 AM - 11:45 AM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF CHERRY
DATE OF SURVEY	11/15/2013
85th PERCENTILE	35.7 MPH
10 MPH PACE	27 - 36 MPH
PERCENT IN PACE	76.0 %
POSTED SPEED LIMIT	35 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	1
TOTAL ACCIDENTS	3
ANNUAL ACCIDENT RATE	0.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.04 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	57,700
LANE CONFIGURATION	3 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - LOS ALAMITOS / CHERRY / BLOOMFIELD
CROSSWALKS	AT LOS ALAMITOS / CHERRY / BLOOMFIELD
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES (Heavy)
ON-STREET PARKING	YES (Heavy)
OTHER	MANY AREAS OF RED CURB / 2 HR PKNG (EB) 7am-6pm BUS STOPS / SOME AREAS OF NO PARKING ANYTIME

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.60
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND NO BLOCKING AT INTERSECTIONS OF KAYLOR AND REAGAN

ADJACENT LAND USE	DENSE BUSINESS / DENSE MEDICAL / COMMERCIAL / SMALL CHURCH
RECOMMENDED SPEED LIMIT	35 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 0.7 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Katella 2013-10

RADAR SPEED DISTRIBUTION SHEET

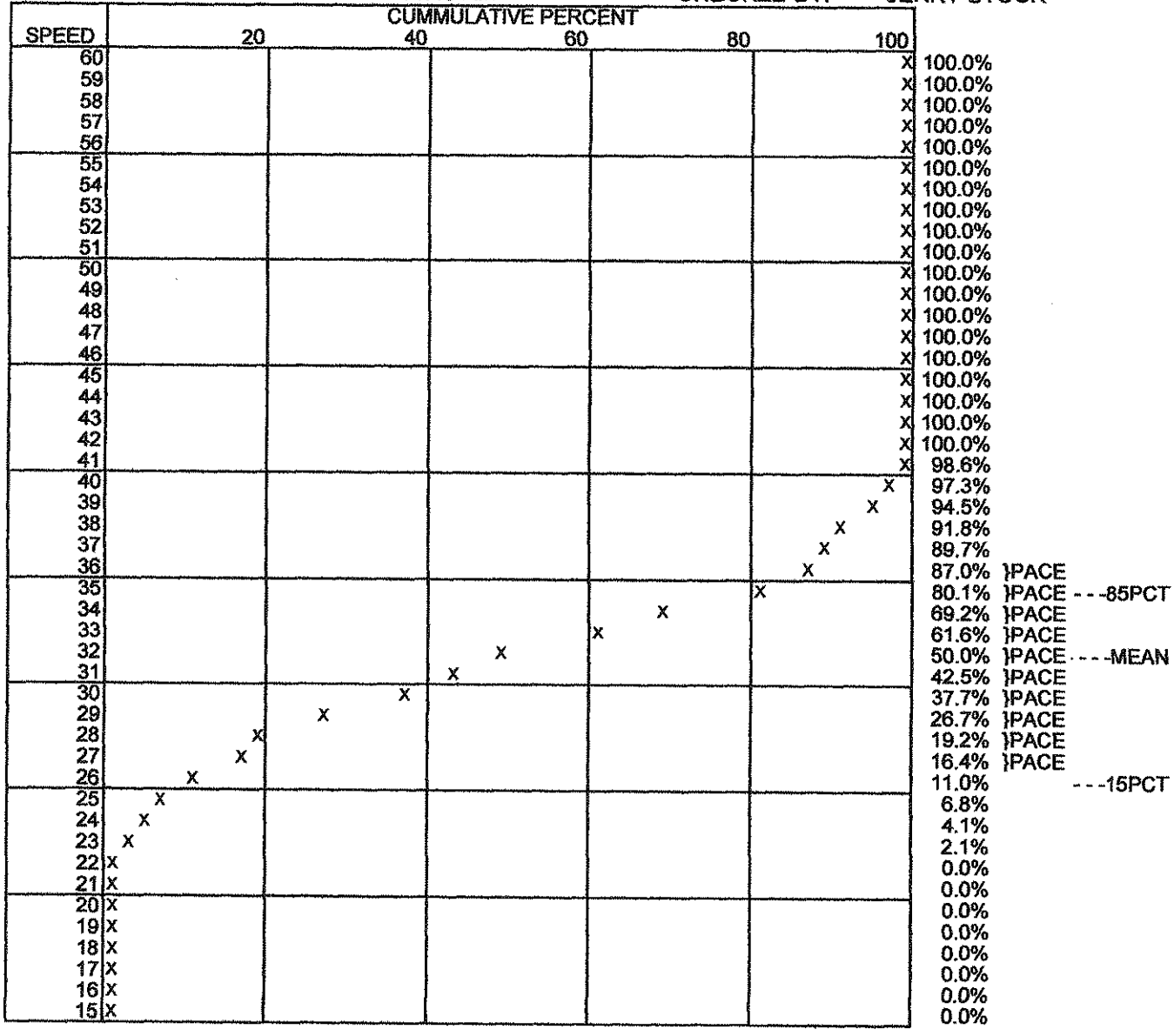
HCI

CITY OF LOS ALAMITOS

KATELLA AVENUE — LOS ALAMITOS BL TO BLOOMFIELD ST

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 11:15 AM - 11:45 AM — CHECKED BY: JERRY STOCK



UPPER LIMIT 10 MPH PACE:	36	MPH
LOWER LIMIT 10 MPH PACE:	27	MPH
PERCENT OVER PACE:	13.0	%
PERCENT IN PACE:	76.0	%
PERCENT UNDER PACE:	11.0	%

85th PERCENTILE SPEED:	35.7	MPH
MEDIAN SPEED:	32.0	MPH
15th PERCENTILE SPEED:	26.7	MPH

Katella 2013-10

$SPD--HCI.dwg

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
Consulting Traffic Engineers
17412 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9454 fax: 714.731.9455
www.hartzog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: KATELLA AVENUE
LOCATION: LOS ALAMITOS BI TO BLOOMFIELD ST

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 11:15 AM
END TIME: 11:45 AM

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41		
40		
39		
38	/	1
37	/	1
36	//	2
35	/////	5
34	///	3
33	//////////	10
32	//	2
31	////	4
30	////////	9
29	////////	8
28	//	2
27	/////	5
26	/////	5
25	////	4
24	//	2
23	///	3
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46				46
45				45
44				44
43				43
42	//	2	2	42
41	//	2	2	41
40	////	4	4	40
39	////	4	4	39
38	//	2	3	38
37	//	2	4	37
36	////////	8	10	36
35	//////////	10	10	35
34	////////	8	11	34
33	////////	7	17	33
32	////////	7	11	32
31	///	3	7	31
30	///////	7	16	30
29	///	3	11	29
28	//	2	4	28
27	///	3	8	27
26	/	1	6	26
25		0	4	25
24	/	1	3	24
23			3	23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

KATELLA AVENUE — **BLOOMFIELD ST TO LEXINGTON DR**

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 10:45 AM - 11:15 AM — CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	WEST OF NOEL
DATE OF SURVEY	11/15/2013
85th PERCENTILE	39.9 MPH
10 MPH PACE	30 - 39 MPH
PERCENT IN PACE	67.3 %
POSTED SPEED LIMIT	35 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	3
TOTAL ACCIDENTS	4
ANNUAL ACCIDENT RATE	1.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.15 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	53,200
LANE CONFIGURATION	3 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - BLOOMFIELD / NOEL / LEXINGTON
CROSSWALKS	AT BLOOMFIELD (sch) / NOEL / LEXINGTON
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES (Heavy)
ON-STREET PARKING	YES
OTHER	MANY AREAS OF RED CURB / 2 HR PKNG (EB) 7am-6pm NO BLOCKING INTERSECTION AT PORTAL

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.50
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND BUS STOPS

ADJACENT LAND USE	BUSINESS / MEDICAL / COMMERCIAL / PARK / CHURCH / INDUSTRIAL (at Lexington)
RECOMMENDED SPEED LIMIT	35 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 4.9 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Katella 2013-11

RADAR SPEED DISTRIBUTION SHEET

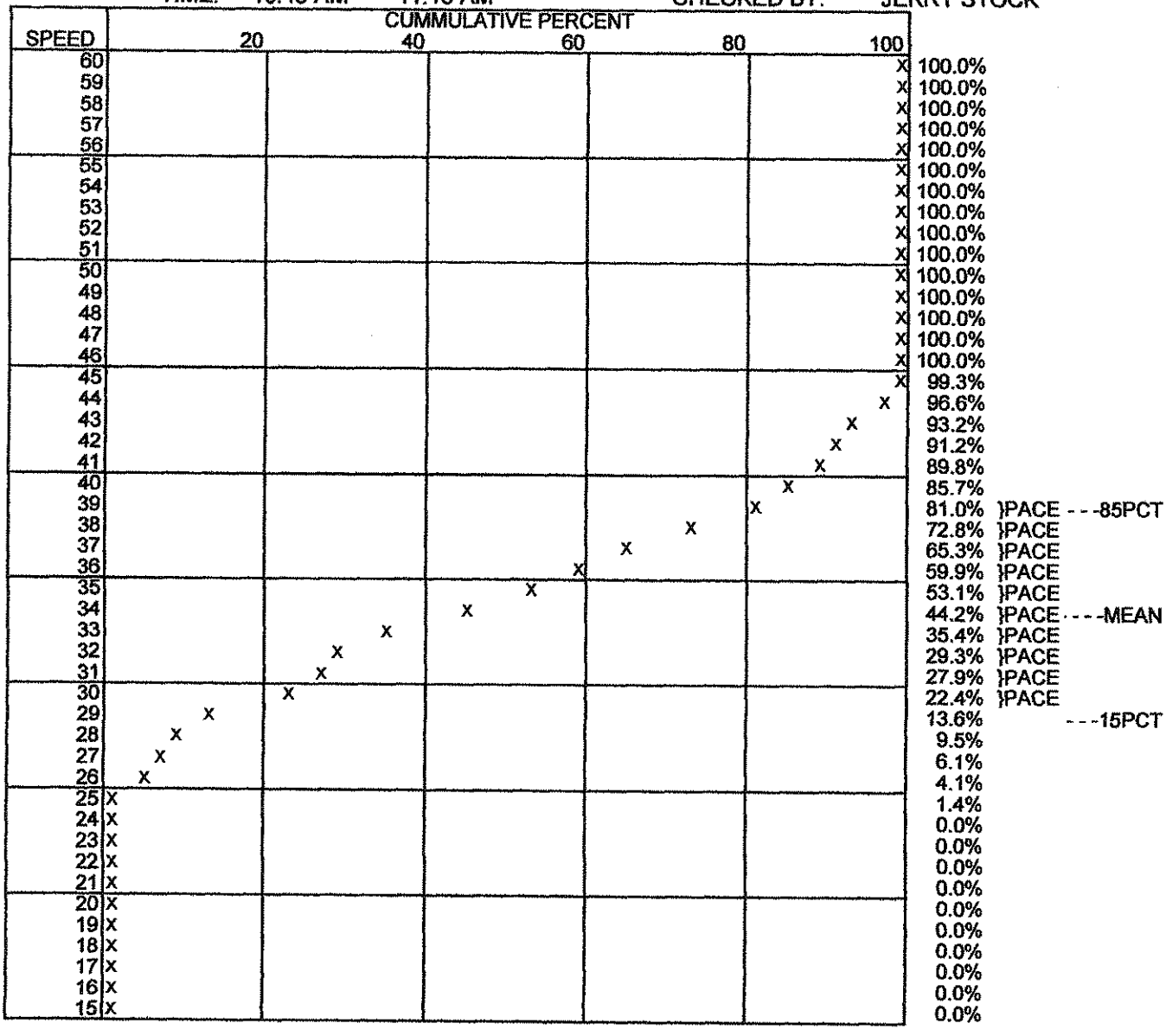
HCI

CITY OF LOS ALAMITOS

KATELLA AVENUE — BLOOMFIELD ST TO LEXINGTON DR

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 10:45 AM - 11:15 AM — CHECKED BY: JERRY STOCK



UPPER LIMIT 10 MPH PACE:	39	MPH
LOWER LIMIT 10 MPH PACE:	30	MPH
PERCENT OVER PACE:	19.0	%
PERCENT IN PACE:	67.3	%
PERCENT UNDER PACE:	13.6	%

85th PERCENTILE SPEED:	39.9	MPH
MEDIAN SPEED:	34.7	MPH
15th PERCENTILE SPEED:	29.2	MPH

Katella 2013-11

Radar Speed Survey Field Sheet

HARTOOG & CRABILL, Inc.
Consulting Traffic Engineers
17511 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9411 fax 714.731.9436
www.hartoog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: KATELLA AVENUE
LOCATION: BLOOMFIELD ST. TO LEXINGTON DR

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 10:45 AM
END TIME: 11:15 AM

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45	/	1
44	/	1
43		0
42	//	2
41	//	2
40	/	1
39	////	4
38	/////	5
37	///	3
36	//////	6
35	////	4
34	//////////	9
33	/////	5
32		0
31	///	4
30	//////	7
29	////	4
28	//	2
27	/	1
26	///	3
25	/	1
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL
60			
59			
58			
57			
56			
55			
54			
53			
52			
51			
50			
49			
48			
47			
46	/	1	1
45	///	3	4
44	////	4	5
43	///	3	3
42		0	2
41	///	4	6
40	//////	6	7
39	////////	8	12
38	//////	6	11
37	////	5	8
36	////	4	10
35	////////	9	13
34	////	4	13
33	////	4	9
32	///	3	2
31	////	4	8
30	//////	6	13
29	///	3	16
28	///	3	5
27	//	2	3
26	/	1	4
25	/	1	2
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

KATELLA AVENUE	**LEXINGTON DR TO SIBONEY ST**
DATE: 11/15/2013	SURVEY BY: C. BUENDIA
TIME: 10:15 AM - 10:45 AM	CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF LEXINGTON
DATE OF SURVEY	11/15/2013
85th PERCENTILE	43.6 MPH
10 MPH PACE	36 - 45 MPH
PERCENT IN PACE	74.5 %
POSTED SPEED LIMIT	40 MPH (EB)

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	1
TOTAL ACCIDENTS	3
ANNUAL ACCIDENT RATE	0.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.05 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	47,000
LANE CONFIGURATION	3 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - LEXINGTON / SIBONEY / COTTONWOOD
CROSSWALKS	AT LEXINGTON / SIBONEY / COTTONWOOD
PEDESTRIAN/BICYCLES	YES / FEW
TRUCK TRAFFIC	YES (Heavy)
ON-STREET PARKING	PARTIAL (EB) / NO PARKING ANYTIME (WB)
OTHER	NO SHOULDERS (WB) BUS STOPS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.63
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND

ADJACENT LAND USE	COMMERCIAL / BUSINESS / RACE TRACK / MOTEL / CHURCH

RECOMMENDED SPEED LIMIT	40 MPH

SPEED LIMIT CHANGE	NO CHANGE - POST WESTBOUND

JUSTIFICATION:

This section of Katella Avenue is a six lane roadway. The adjacent land uses are residential non-fronting to the roadway, commercial, business, medical offices, and the Los Alamitos Race Track. Field observations include a 40 mph speed sign posted only eastbound east of Lexington Drive, no shoulders westbound, bus stops and heavy truck traffic. With the speed data results showing an 85th percentile speed of 43.8 mph, it is recommended that the existing 40 mph speed limit be maintained. For enforcement, it is recommended that a 40 mph speed sign be posted for the westbound direction as well.

*25 MPH When Children Present, School Zone

File: Katella 2013-12

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

KATELLA AVENUE — LEXINGTON DR TO SIBONEY ST

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 10:15 AM - 10:45 AM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		100.0%	
48		100.0%	
47		99.3%	
46		96.6%	
45		93.8%	}PACE
44		87.6%	}PACE
43		81.4%	}PACE - - -85PCT
42		75.2%	}PACE
41		67.6%	}PACE
40		56.6%	}PACE
39		45.5%	}PACE - - - -MEAN
38		36.6%	}PACE
37		29.7%	}PACE
36		24.1%	}PACE
35		19.3%	
34		14.5%	- - -15PCT
33		8.3%	
32		4.8%	
31		0.7%	
30		0.0%	
29		0.0%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	45	MPH
LOWER LIMIT 10 MPH PACE:	36	MPH
PERCENT OVER PACE:	6.2	%
PERCENT IN PACE:	74.5	%
PERCENT UNDER PACE:	19.3	%

85th PERCENTILE SPEED:	43.6	MPH
MEDIAN SPEED:	39.4	MPH
15th PERCENTILE SPEED:	34.1	MPH

Radar Speed Survey Field Sheet

HAITTOG & CIABILL, Inc.
Consulting Traffic Engineers
17631 E. 17th Street, Suite 301
Tustin, California 92780
714.731.9451 fax 714.731.9456
www.haittogciabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: KATELLA AVENUE
LOCATION: LEXINGTON DR. TO SIBONEY ST

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 10:15 AM
END TIME: 10:45 AM VAL

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48	/	1
47	///	3
46	////	4
45	/////	6
44	////	4
43	///	3
42	/////	6
41	//////////	10
40	//////////	10
39	//////	6
38	///	3
37	/////	5
36	//	2
35		
34		
33		
32		
31		
30		
29		
28		
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL
60			
59			
58			
57			
56			
55			
54			
53			
52			
51			
50			
49			
48			1
47	/	1	4
46		0	4
45	////	3	9
44	/////	5	9
43	//////	6	9
42	/////	5	11
41	//////	6	16
40	//////	6	16
39	//////	7	13
38	//////	7	10
37	////	2	8
36	/////	5	7
35	//////	7	7
34	//////////	9	9
33	/////	5	5
32	//////	6	6
31	/	1	1
30			
29			
28			
27			
26			
25			
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

KATELLA AVENUE		**SIBONEY ST TO WALKER ST**	
DATE:	11/15/2013	SURVEY BY:	C. BUENDIA
TIME:	9:45 AM - 10:15 AM	CHECKED BY:	JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	EAST OF SIBONEY
DATE OF SURVEY	11/15/2013
85th PERCENTILE	44.1 MPH
10 MPH PACE	34 - 43 MPH
PERCENT IN PACE	73.5 %
POSTED SPEED LIMIT	40 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	3
TOTAL ACCIDENTS	6
ANNUAL ACCIDENT RATE	1.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.22 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	48,900
LANE CONFIGURATION	3 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - SIBONEY / WINNERS CIRCLE / WALKER
CROSSWALKS	AT SIBONEY / WINNERS CIRCLE / WALKER
PEDESTRIAN/BICYCLES	YES / FEW
TRUCK TRAFFIC	YES (Heavy)
ON-STREET PARKING	NO PARKING ANYTIME
OTHER	BUS STOPS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.38
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES (EB) / YES / NO (WB)
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND

ADJACENT LAND USE	BUSINESS / COMMERCIAL / RACE TRACK
RECOMMENDED SPEED LIMIT	40 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 40 mph is within 4.1 mph of the 85th percentile speed and meets CVC standards.

File: Katella 2013-13

RADAR SPEED DISTRIBUTION SHEET

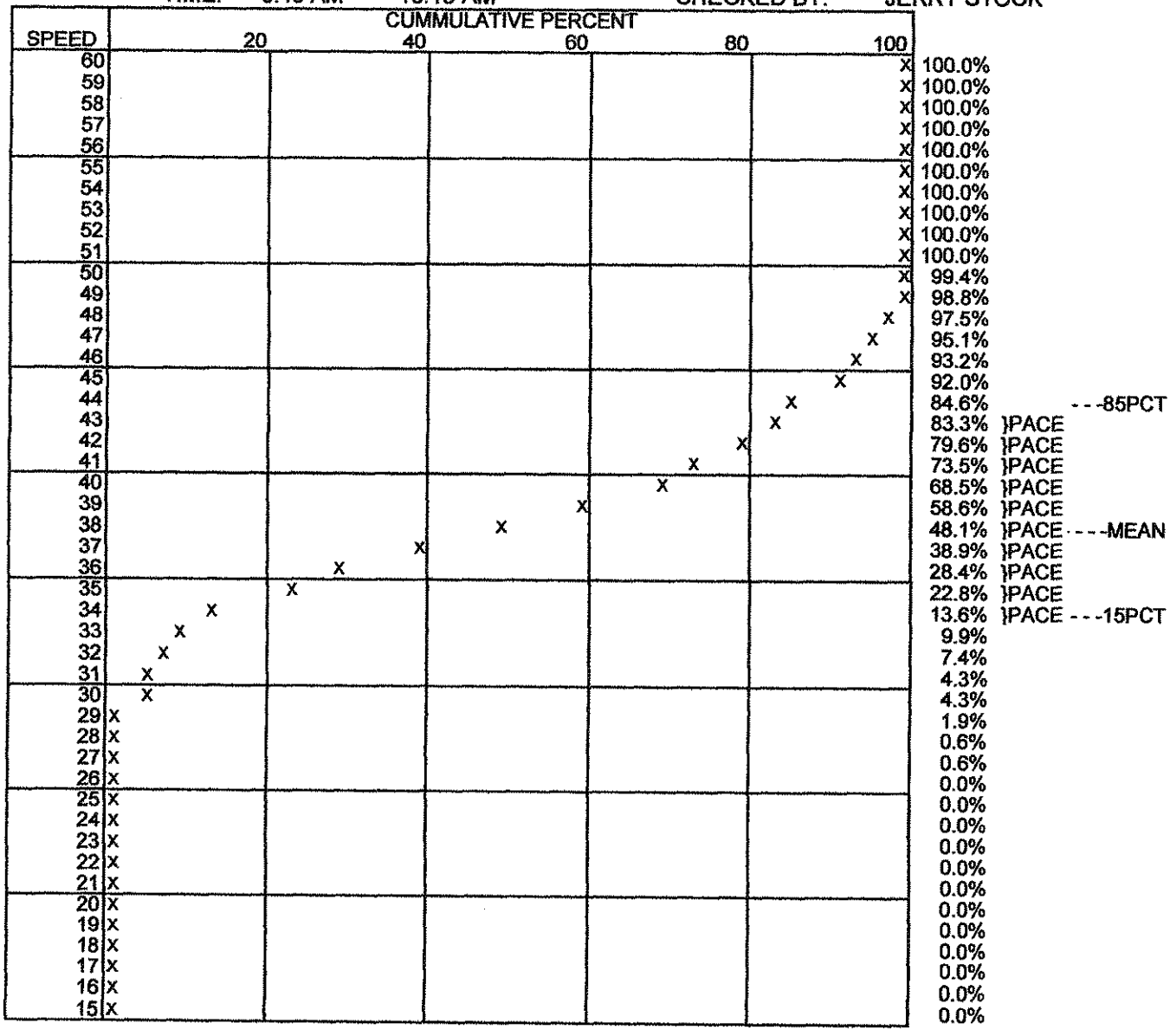
HCI

CITY OF LOS ALAMITOS

KATELLA AVENUE — SIBONEY ST TO WALKER ST

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 9:45 AM - 10:15 AM — CHECKED BY: JERRY STOCK



UPPER LIMIT 10 MPH PACE:	43	MPH
LOWER LIMIT 10 MPH PACE:	34	MPH
PERCENT OVER PACE:	16.7	%
PERCENT IN PACE:	73.5	%
PERCENT UNDER PACE:	9.9	%

85th PERCENTILE SPEED:	44.1	MPH
MEDIAN SPEED:	38.2	MPH
15th PERCENTILE SPEED:	34.2	MPH

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
Consulting Traffic Engineers
17631 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9455 fax: 714.731.3495
www.hartzogcrabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: KATELLA AVENUE
LOCATION: SIBONEY ST. TO WALKER ST

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 9:45 AM
END TIME: 10:15 AM

DIRECTION: WESTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49	/	1
48	//	2
47	//	2
46	/	1
45	///////	7
44	/	1
43	/	1
42	/////	5
41	/////	5
40	//////////	9
39	//////////	8
38	//////////	10
37	//////////	10
36	//////////	6
35	//////////	9
34	///	3
33	///	2
32	///	3
31		0
30	///	3
29	//	2
28		0
27	/	1
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: EASTBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51	/	1	1	51
50	/	1	1	50
49	/	1	2	49
48	//	2	4	48
47	/	1	3	47
46	/	1	2	46
45	////////	5	12	45
44	/	1	2	44
43	////////	5	6	43
42	////////	5	10	42
41	///////	3	8	41
40	//////////	7	16	40
39	//////////	9	17	39
38	////////	5	15	38
37	//////////	7	17	37
36	///////	3	9	36
35	//////////	6	15	35
34	///	3	6	34
33	//	2	4	33
32	//	2	5	32
31		0	0	31
30	/	1	4	30
29			2	29
28			0	28
27			1	27
26				26
25				25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

LEXINGTON DRIVE		**KATELLA AVE TO FARQUHAR AVE**	
DATE:	11/15/2013	SURVEY BY:	C. BUENDIA
TIME:	1:15 PM - 1:45 PM	CHECKED BY:	JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	SOUTH OF KATELLA
DATE OF SURVEY	11/15/2013
85th PERCENTILE	33.4 MPH
10 MPH PACE	26 - 35 MPH
PERCENT IN PACE	86.1 %
POSTED SPEED LIMIT	30 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	1
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	5,400
LANE CONFIGURATION	1 LANE PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - KATELLA, STOP - FARQUHAR
CROSSWALKS	AT KATELLA / FARQUHAR
PEDESTRIAN/BICYCLES	YES / NO
TRUCK TRAFFIC	YES
ON-STREET PARKING	YES
OTHER	NO PARKING 9am-NOON (2nd-4th TUES)

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.77
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	DBL YELLOW CENTERLINE WIDE ROADWAY

ADJACENT LAND USE	NATIONAL GUARD BASE / RESIDENTIAL / COMMERCIAL (at Katella)
RECOMMENDED SPEED LIMIT	30 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 30 mph is within 3.4 mph of the 85th percentile speed and meets CVC standards.

*25 MPH When Children Present, School Zone

File: Lexington 2013-14

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

LEXINGTON DRIVE — KATELLA AVE TO FARQUHAR AVE

DATE: 11/15/2013 — SURVEY BY: C. BUENDÍA

TIME: 1:15 PM - 1:45 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60	X	100.0%	
59	X	100.0%	
58	X	100.0%	
57	X	100.0%	
56	X	100.0%	
55	X	100.0%	
54	X	100.0%	
53	X	100.0%	
52	X	100.0%	
51	X	100.0%	
50	X	100.0%	
49	X	100.0%	
48	X	100.0%	
47	X	100.0%	
46	X	100.0%	
45	X	100.0%	
44	X	100.0%	
43	X	100.0%	
42	X	100.0%	
41	X	100.0%	
40	X	100.0%	
39	X	99.4%	
38	X	98.7%	
37	X	97.5%	
36	X	96.2%	
35	X	94.3%	}PACE
34	X	88.0%	}PACE
33	X	82.9%	}PACE - - -85PCT
32	X	74.1%	}PACE
31	X	65.8%	}PACE
30	X	55.1%	}PACE
29	X	43.0%	}PACE - - - -MEAN
28	X	34.2%	}PACE
27	X	24.1%	}PACE
26	X	14.6%	}PACE - - -15PCT
25	X	8.2%	
24	X	2.5%	
23	X	1.3%	
22	X	0.0%	
21	X	0.0%	
20	X	0.0%	
19	X	0.0%	
18	X	0.0%	
17	X	0.0%	
16	X	0.0%	
15	X	0.0%	

UPPER LIMIT 10 MPH PACE:	35	MPH
LOWER LIMIT 10 MPH PACE:	26	MPH
PERCENT OVER PACE:	5.7	%
PERCENT IN PACE:	86.1	%
PERCENT UNDER PACE:	8.2	%

85th PERCENTILE SPEED:	33.4	MPH
MEDIAN SPEED:	29.6	MPH
15th PERCENTILE SPEED:	26.0	MPH

$SPD-HCI.dwg

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
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17551 E. 17th Street, Suite 101
Tustin, California 92780
+1.714.731.9455 fax: +1.714.731.9056
www.hartzog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: LEXINGTON DRIVE
LOCATION: KATELLA AVE TO FARQUHAR AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 1:15 PM
END TIME: 1:45 PM VGL

DIRECTION: NORTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41		
40		1
39		
38		2
37		2
36		2
35		5
34		4
33		7
32		6
31		8
30		9
29		7
28		9
27		7
26		5
25		4
24		1
23		1
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

DIRECTION: SOUTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47				47
46				46
45				45
44				44
43				43
42				42
41				41
40			1	40
39			1	39
38			2	38
37			2	37
36		1	3	36
35		5	10	35
34		4	8	34
33		7	14	33
32		7	13	32
31		9	17	31
30		10	19	30
29		7	14	29
28		7	16	28
27		8	15	27
26		5	10	26
25		5	9	25
24		1	2	24
23		1	2	23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

LOS ALAMITOS BOULEVARD **NORTH CITY LIMITS TO KATELLA AVE**

DATE: 11/15/2013 SURVEY BY: C. BUENDIA

TIME: 2:00 PM - 2:30 PM CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	SOUTH OF SAUSALITO
DATE OF SURVEY	11/15/2013
85th PERCENTILE	38.5 MPH
10 MPH PACE	30 - 39 MPH
PERCENT IN PACE	83.0 %
POSTED SPEED LIMIT	35 MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	1
TOTAL ACCIDENTS	15
ANNUAL ACCIDENT RATE	0.50 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.07 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	23,400
LANE CONFIGURATION	2 LANES PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - KATELLA / CERRITOS / SAUSALITO / FLORISTA
CROSSWALKS	AT KATELLA / CERRITOS (sch) / SAUSALITO / FLORISTA
PEDESTRIAN/BICYCLES	YES / FEW
TRUCK TRAFFIC	YES
ON-STREET PARKING	YES
OTHER	AREAS OF RED CURB BUS STOPS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.84
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	2 WAY LEFT TURN CENTERLANE NO U-TURNS (NB) BY HIGH SCHOOL

ADJACENT LAND USE	DENSE COMMERCIAL / LOS ALAMITOS HIGH SCH
RECOMMENDED SPEED LIMIT	35 MPH
SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 3.5 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

File: Los Alamitos 2013-15

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

LOS ALAMITOS BOULEVARD — NORTH CITY LIMITS TO KATELLA AVE

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 2:00 PM - 2:30 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		100.0%	
48		100.0%	
47		100.0%	
46		99.3%	
45		99.3%	
44		98.6%	
43		97.3%	
42		95.9%	
41		95.2%	
40		92.5%	
39		89.8%	}PACE
38		81.0%	}PACE - - -85PCT
37		77.6%	}PACE
36		66.7%	}PACE
35		56.5%	}PACE
34		43.5%	}PACE - - - -MEAN
33		36.1%	}PACE
32		27.2%	}PACE
31		15.6%	}PACE
30		11.6%	}PACE - - -15PCT
29		6.8%	
28		4.8%	
27		2.0%	
26		1.4%	
25		0.7%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	39	MPH
LOWER LIMIT 10 MPH PACE:	30	MPH
PERCENT OVER PACE:	10.2	%
PERCENT IN PACE:	83.0	%
PERCENT UNDER PACE:	6.8	%

85th PERCENTILE SPEED:	38.5	MPH
MEDIAN SPEED:	34.5	MPH
15th PERCENTILE SPEED:	30.8	MPH

Radar Speed Survey Field Sheet

Hastings & Crabill, Inc.
Consulting Traffic Engineers
17511 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9455 fax 714.731.9486
www.hastings-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: LOS ALAMITOS BOULEVARD
LOCATION: NORTH CITY LINIT TO KATELLA AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 2:00 PM
END TIME: 2:30 PM VAL

DIRECTION: NORTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41		
40		2
39		6
38		2
37		9
36		10
35		12
34		6
33		5
32		8
31		3
30		4
29		2
28		1
27		
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: SOUTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL	MPH
60				60
59				59
58				58
57				57
56				56
55				55
54				54
53				53
52				52
51				51
50				50
49				49
48				48
47		1	1	47
46		0	0	46
45		1	1	45
44		2	2	44
43		2	2	43
42		1	1	42
41		4	4	41
40		2	4	40
39		7	13	39
38		3	5	38
37		7	16	37
36		5	15	36
35		7	19	35
34		5	11	34
33		8	13	33
32		9	17	32
31		3	6	31
30		3	7	30
29		1	3	29
28		3	4	28
27		1	1	27
26		1	1	26
25		1	1	25
24				24
23				23
22				22
21				21
20				20
19				19
18				18
17				17
16				16
15				15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

LOS ALAMITOS BOULEVARD **KATELLA AVE TO FARQUHAR AVE**

DATE: 11/15/2013 SURVEY BY: C. BUENDIA

TIME: 2:30 PM - 3:00 PM CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	NORTH OF HEDWIG
DATE OF SURVEY	11/15/2013
85th PERCENTILE	36.8 MPH
10 MPH PACE	28 - 37 MPH
PERCENT IN PACE	84.5 %
POSTED SPEED LIMIT	35 MPH

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	0
TOTAL ACCIDENTS	4
ANNUAL ACCIDENT RATE	0.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.00 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	60,000
LANE CONFIGURATION	3 LANE PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - KATELLA / FARQUHAR
CROSSWALKS	AT KATELLA / FARQUHAR
PEDESTRIAN/BICYCLES	YES / FEW
TRUCK TRAFFIC	YES
ON-STREET PARKING	YES (Heavy)
OTHER	AREAS OF RED CURB BUS STOPS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.84
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	PARTIAL 2 WAY LEFT TURN / PARTIAL RAISED MEDIAN ISLAND

ADJACENT LAND USE	DENSE BUSINESS / DENSE COMMERCIAL

RECOMMENDED SPEED LIMIT	35 MPH

SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 35 mph is within 1.8 mph of the 85th percentile speed and meets CVC standards.

File: Los Alamitos 2013-16

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

LOS ALAMITOS BOULEVARD — KATELLA AVE TO FARQUHAR AVE

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 2:30 PM - 3:00 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		100.0%	
48		100.0%	
47		100.0%	
46		100.0%	
45		100.0%	
44		100.0%	
43		98.6%	
42		98.0%	
41		95.3%	
40		93.9%	
39		91.9%	
38		89.9%	
37		85.8%	}PACE
36		82.4%	}PACE - - -85PCT
35		75.7%	}PACE
34		64.9%	}PACE
33		57.4%	}PACE
32		47.3%	}PACE - - - -MEAN
31		37.8%	}PACE
30		27.0%	}PACE
29		15.5%	}PACE
28		8.8%	}PACE - - -15PCT
27		1.4%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	37	MPH
LOWER LIMIT 10 MPH PACE:	28	MPH
PERCENT OVER PACE:	14.2	%
PERCENT IN PACE:	84.5	%
PERCENT UNDER PACE:	1.4	%

85th PERCENTILE SPEED:	36.8	MPH
MEDIAN SPEED:	32.3	MPH
15th PERCENTILE SPEED:	28.9	MPH

Los Alamitos 2013-16

Radar Speed Survey Field Sheet

HARTZOG & CRABILL, Inc.
Consulting Traffic Engineers
17619 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9451 fax 714.731.9496
www.hartzog-crabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: LOS ALAMITOS BOULEVARD
LOCATION: KATELLA AVE TO FARQUHAR AVE

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 11/15/13
START TIME: 2:30 PM
END TIME: 3:00 PM

DIRECTION: SOUTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL
60		
59		
58		
57		
56		
55		
54		
53		
52		
51		
50		
49		
48		
47		
46		
45		
44		
43		
42		
41	/	1
40	///	3
39	/	1
38	//	2
37	///	3
36	//////	6
35	//////////	11
34	////////	8
33	////////	8
32	//////////	10
31	////////	8
30	//////	7
29	///	3
28	//////	6
27	/	1
26		
25		
24		
23		
22		
21		
20		
19		
18		
17		
16		
15		

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

DIRECTION: NORTHBOUND

MPH	NUMBER OF VEHICLES (5, 10, 15, 20, 25, 30)	TOTAL	CUMULATIVE TOTAL
60			
59			
58			
57			
56			
55			
54			
53			
52			
51			
50			
49			
48			
47			
46			
45			
44	//	2	2
43	/	1	1
42	///	4	4
41	/	1	2
40		0	3
39	//	2	3
38	///	4	6
37	///	2	5
36	////	4	10
35	/////	5	16
34	///	3	11
33	////////	9	15
32	////	4	14
31	//////////	10	16
30	//////////	10	17
29	//////	7	10
28	/////	5	11
27	/	1	2
26			
25			
24			
23			
22			
21			
20			
19			
18			
17			
16			
15			

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

ENGINEERING AND TRAFFIC SURVEY

CITY OF LOS ALAMITOS

HCI

LOS ALAMITOS BOULEVARD **FARQUHAR AVE TO BRADBURY RD**

DATE: 11/15/2013 SURVEY BY: C. BUENDIA

TIME: 3:00 PM - 3:30 PM CHECKED BY: JERRY STOCK

PREVAILING SPEED DATA	
LOCATION OF SURVEY	NORTH OF BRADBURY
DATE OF SURVEY	11/15/2013
85th PERCENTILE	42.2 MPH
10 MPH PACE	34 - 43 MPH
PERCENT IN PACE	84.4 %
POSTED SPEED LIMIT	40 MPH / 25 MPH*

ACCIDENT HISTORY	
NO. OF MONTHS OBSERVED	24
SPEED-RELATED ACCIDENTS	2
TOTAL ACCIDENTS	8
ANNUAL ACCIDENT RATE	1.00 ACCIDENTS PER YEAR (SPEED RELATED ONLY)
ACC./MILLION VEH. MILES	0.07 ACCIDENTS PER MVM (SPEED RELATED ONLY)

TRAFFIC FACTORS	
AVERAGE DAILY TRAFFIC	47,200
LANE CONFIGURATION	3 LANE PER DIRECTION
TRAFFIC CONTROLS	SIGNAL - FARQUHAR / ORANGEWOOD ROSSMOOR / BRADBURY
CROSSWALKS	AT FARQUHAR / ORANGEWOOD (sch) / ROSSMOOR / BRADBURY
PEDESTRIAN/BICYCLES	YES / YES
TRUCK TRAFFIC	YES
ON-STREET PARKING	NO PARKING ANYTIME
OTHER	MANY AREAS OF RED CURB
	MANY AREAS OF NO SHOULDERS

ROADWAY FACTORS	
LENGTH OF SEGMENT (MILES)	0.81
VERTICAL CURVE	NONE
HORIZONTAL CURVE	NONE
LATERAL VISIBILITY	GOOD
ROAD CONDITIONS	GOOD
SIDEWALKS/DRIVEWAYS	YES / YES
STREET LIGHTING	YES
OTHER	RAISED MEDIAN ISLAND
	BUS STOPS

ADJACENT LAND USE	COMMERCIAL / BUSINESS / CHURCH / RESIDENTIAL (NF)

RECOMMENDED SPEED LIMIT	40 MPH

SPEED LIMIT CHANGE	NO CHANGE

JUSTIFICATION:

The recommended 40 mph is within 2.2 mph of the 85th percentile speed and meets CVC standards.

* 25 MPH When Children Present, School Zone

NF = Non-Fronting

File: Los Alamitos 2013-17

RADAR SPEED DISTRIBUTION SHEET

HCI

CITY OF LOS ALAMITOS

LOS ALAMITOS BOULEVARD — FARQUHAR AVE TO BRADBURY RD

DATE: 11/15/2013 — SURVEY BY: C. BUENDIA

TIME: 3:00 PM - 3:30 PM — CHECKED BY: JERRY STOCK

SPEED	CUMMULATIVE PERCENT (20 / 40 / 60 / 80 / 100)		
60		100.0%	
59		100.0%	
58		100.0%	
57		100.0%	
56		100.0%	
55		100.0%	
54		100.0%	
53		100.0%	
52		100.0%	
51		100.0%	
50		100.0%	
49		99.3%	
48		99.3%	
47		97.9%	
46		97.9%	
45		95.7%	
44		92.9%	
43		91.5%	}PACE
42		83.0%	}PACE - - -85PCT
41		80.1%	}PACE
40		69.5%	}PACE
39		56.0%	}PACE
38		45.4%	}PACE - - - -MEAN
37		36.2%	}PACE
36		24.1%	}PACE
35		15.6%	}PACE
34		10.6%	}PACE - - -15PCT
33		7.1%	
32		2.1%	
31		1.4%	
30		0.0%	
29		0.0%	
28		0.0%	
27		0.0%	
26		0.0%	
25		0.0%	
24		0.0%	
23		0.0%	
22		0.0%	
21		0.0%	
20		0.0%	
19		0.0%	
18		0.0%	
17		0.0%	
16		0.0%	
15		0.0%	

UPPER LIMIT 10 MPH PACE:	43	MPH
LOWER LIMIT 10 MPH PACE:	34	MPH
PERCENT OVER PACE:	8.5	%
PERCENT IN PACE:	84.4	%
PERCENT UNDER PACE:	7.1	%

85th PERCENTILE SPEED:	42.2	MPH
MEDIAN SPEED:	38.4	MPH
15th PERCENTILE SPEED:	34.9	MPH

Radar Speed Survey Field Sheet

HARTOOG & CRABILL, Inc.
Consulting Traffic Engineers
17855 E. 17th Street, Suite 101
Tustin, California 92780
714.731.9455 fax: 714.731.9456
www.hartogcrabill.com

AGENCY: CITY OF LOS ALAMITOS
STREET: LOS ALAMITOS BOULEVARD
LOCATION: FARQUHAR AVE TO BRADBURY

WEATHER: SUNNY
ROAD CONDITION: DRY
OBSERVER: Cathy Buendia

DATE: 1/15/13
START TIME: 3:00 PM
END TIME: 3:30 PM JAL

DIRECTION: SOUTH

MPH	5	10	15	20	25	30	TOTAL
60							
59							
58							
57							
56							
55							
54							
53							
52							
51							
50							
49							
48	/						1
47							0
46	/						1
45	/ / / /						4
44	/						1
43	/ / / / / /						6
42	/ /						2
41	/ / / / / / / / / /						10
40	/ / / / / / / / / /						10
39	/ / / / / / / / / /						10
38	/ / / / / /						5
37	/ / / / / / / / /						9
36	/ / / / / /						6
35	/						1
34	/ / /						3
33	/ / /						3
32	/						1
31							
30							
29							
28							
27							
26							
25							
24							
23							
22							
21							
20							
19							
18							
17							
16							
15							

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

DIRECTION: NORTH

MPH	5	10	15	20	25	30	TOTAL	CUMULATIVE TOTAL	MPH
60									60
59									59
58									58
57									57
56									56
55									55
54									54
53									53
52									52
51									51
50	/							1	50
49							0	0	49
48	/						1	2	48
47							0	0	47
46	/ /						2	3	46
45							0	4	45
44	/						1	2	44
43	/ / / / / /						6	12	43
42	/ /						2	4	42
41	/ / / / /						5	15	41
40	/ / / / / / / / /						9	19	40
39	/ / / / /						5	15	39
38	/ / / / / / / /						8	13	38
37	/ / / / / / / /						8	17	37
36	/ / / / / /						6	12	36
35	/ / / / / /						6	7	35
34	/ / /						2	5	34
33	/ / / /						4	7	33
32							0	1	32
31	/ /						2	2	31
30									30
29									29
28									28
27									27
26									26
25									25
24									24
23									23
22									22
21									21
20									20
19									19
18									18
17									17
16									16
15									15

AVERAGE SPEED: _____ CRITICAL SPEED: _____ PACE SPEED: _____

CUMULATIVE (BOTH DIRECTIONS) _____

APPENDIX B

Radar Certification

Certificate of Completion and Competency
DOPPLER RADAR OPERATION

Name & Title Cathy Buendia
Technician

Department Transportation

has successfully completed a course of instruction in the operation of Moving Car and Stationary Doppler Radar and is deemed competent to utilize the same Doppler Radar to determine the velocity of motor vehicles.

7/23/91
Date

Instructor

Subsidiaries of MPD, Inc.

316 East Ninth Street
Owensboro, KY 42301
(502) 685-6200

RHF Inc.
Radar Repair

TRAFFIC RADAR CERTIFICATION

TESTED TO NHTSA SPECIFICATIONS / IACP CRITICAL PERFORMANCE STANDARDS
(NHTSA) National Highway and Traffic Safety Administration.
(IACP) International Association of Chiefs of Police.

16202 Keats Circle
Westminster, Calif. 92683

R.H.F. is a certified independent testing and repair facility.

1	TEST ID	Date Received 6-3-13	Certification Number 64903				
2	DEVICE ID	Manufacturer MPH	Model: K-15	Type (1-IV) III	Directional radar ☐ Yes ☑ No	Same direction ☐ Yes ☑ No	
		Counting unit S/N 12145	Antenna-1 S/N N/A		Antenna-2 S/N N/A		
3	§ 2.4 / § 5.4 TUNING FORK CALIBRATION	Low speed fork S/N 276979	Last date calib.	Freq. (Hz)	Speed (mph) 35	Measured (Hz) 2520	PASS / FAIL
		High speed fork S/N	Last date calib.	Freq. (Hz)	Speed (mph)	Measured (Hz)	
4	§ 2.5 / § 5.5 RADAR DEVICE TUNING FORK TESTS			Lo fork	High fork		PASS / FAIL
		Stationary mode	Fork speed (mph)	35	65		
			Disp. Speed (mph)	35	65		
		Moving mode Opposite Direction	TARGET SPEED (Hi fork – Lo fork)	Expected. (mph) N/A	Displayed. (mph) N/A		
		Moving mode Same Direction	TARGET SPEED Hi fork + Lo fork Ho fork - Lo fork	Expected. (mph) N/A	Displayed. (mph) N/A		
5	§ 2.6.1. / § 5.6.1 TRANSMISSION FREQUENCY STABILITY	Standard supply Voltage (V) 13.6 V	Antenna 1 Freq. GHz 24.155	Antenna 2 Freq. GHz N/A		PASS / FAIL	
		Standard supply Voltage – 20% (V) 10.8 V	Antenna 1 Freq. GHz 24.155	Antenna 2 Freq. GHz N/A			
		Standard supply voltage + 20% (V) 16.3 V	Antenna 1 Freq. GHz 24.155	Antenna 2 Freq. GHz N/A			
6	§ 2.6.5 / § 5.6.5 POWER DENSITY	Mfg. Spec. (max mW/cm) ≤ 5	Antenna 1 Power (mW/cm) .3	Antenna 2 Power (mW/cm) N/A		PASS / FAIL	
7	§ 2.8 / § 5.8 LOW VOLTAGE	Mfg. spec. (V) ≤ 10.8V	LVA activates (V) N/A	LVA deactivates (V) N/A		PASS / FAIL	
8	§ 2.9.1 / § 5.9.1 DOPPLER AUDIO	A. Audio tone correlates with received Doppler signal ☑ Yes ☐ No B. Functioning audio volume-adjustment control ☑ Yes ☐ No				PASS / FAIL	
9	§ 2.12.4 / § 5.12.4 INTERNAL CIRCUIT	Mfg. Spec. 32	Test results 32			PASS / FAIL	
10	§ 2.12.6.5 / § 5.12.6.5 DIRECTIONAL	A. Selects only targets moving towards radar ☐ Yes ☐ No ☑ N.A. B. Selects only targets moving away from radar ☐ Yes ☐ No ☑ N.A.				PASS	FAIL
11	§ 2.12.7 / § 2.12.8 / 5.12.7 / 5.12.8 LOW AND HIGH SPEED DISPLAY TEST	Stationary mode: target channel (mph)	Low speed spec. 20	Lo speed disp. 20		PASS / FAIL	
			Hi speed spec. 199	Hi speed disp. 199			
		Moving Mode target channel (mph)	Low speed spec. N/A	Lo speed disp. N/A			
			Hi speed spec. N/A	Hi speed disp. N/A			
		Moving Mode: patrol channel (mph)	Low speed spec. N/A	Lo speed disp. N/A			
			Hi speed spec. N/A	Hi speed disp. N/A			
12	§ 2.13 / § 5.13 RFI TEST	[illegible]				PASS	FAIL
13	LABORATORY COMMENTS						
14	NHTSA/IACP CERTIFICATION	***This radar device meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration. California Vehicle Code Section 40802*** ☑ PASS ☐ FAIL **Certified by:** Ford Bauman **Date:** 6-3-13					
15	INVENTORY	☐ Fork Cert ☐ Manual ☐ 2nd Ant. ☐ Remote ☐ Bat. ☐ Carrying Case Other: (please list)					

RHF Inc.
Radar Repair

TRAFFIC RADAR CERTIFICATION

TESTED TO NHTSA SPECIFICATIONS / IACP CRITICAL PERFORMANCE STANDARDS
(NHTSA) National Highway and Traffic Safety Administration.
(IACP) International Association of Chiefs of Police.

16202 Keats Circle
Westminster, Calif. 92683

R.H.F. is a certified independent testing and repair facility.

1	TEST ID	Date Received 6-3-13	Certification Number 64904				
2	DEVICE ID	Make: **Kustom Electronics**	Model: **KR-10SP**	Type (I-IV) **IV**	Directional radar ☐ Yes ☑ No	Same direction ☐ Yes ☑ No	
		Counting unit S/N EE 8364	Antenna-1 S/N CC 9108		Antenna-2 S/N		
3	§ 2.4 / § 5.4 TUNING FORK CALIBRATION	Low speed fork S/N 6359	Last date calib.	Freq. (Hz)	Speed (mph) 35	Measured (Hz) 2542	PASS / FAIL
		High speed fork S/N 15751	Last date calib.	Freq. (Hz)	Speed (mph) 65	Measured (Hz) 4732	
4	§ 2.5 / § 5.5 RADAR DEVICE TUNING FORK TESTS			Lo fork	High fork		PASS / FAIL
		Stationary mode	Fork speed (mph)	35	65		
			Disp. Speed (mph)	35	65		
		Moving mode Opposite Direction	TARGET SPEED (Hi fork – Lo fork)	Expected. (mph) 30	Displayed. (mph)		
		Moving mode Same Direction	TARGET SPEED Hi fork + Lo fork Ho fork - Lo fork	Expected. (mph) N/A	Displayed. (mph) N/A		
5	§ 2.6.1. / § 5.6.1 TRANSMISSION FREQUENCY STABILITY	Standard supply Voltage (V) 13.6 V	Antenna 1 Freq. GHz 24.162	Antenna 2 Freq. GHz			PASS / FAIL
		Standard supply Voltage – 20% (V) 10.8 V	Antenna 1 Freq. GHz 24.162	Antenna 2 Freq. GHz			
		Standard supply voltage + 20% (V) 16.3 V	Antenna 1 Freq. GHz 24.162	Antenna 2 Freq. GHz			
6	§ 2.6.5 / § 5.6.5 POWER DENSITY	Mfg. Spec. (max mW/cm) ≤ 5	Antenna 1 Power (mW/cm) .4	Antenna 2 Power (mW/cm)			PASS / FAIL
7	§ 2.8 / § 5.8 LOW VOLTAGE	Mfg. spec. (V) ≤10.8 V	LVA activates (V) 9.9	LVA deactivates (V) 10.4			PASS / FAIL
8	§ 2.9.1 / § 5.9.1 DOPPLER AUDIO	A. Audio tone correlates with received Doppler signal			☑ Yes ☐ No		PASS / FAIL
		B. Functioning audio volume-adjustment control			☑ Yes ☐ No		
9	§ 2.12.4 / § 5.12.4 INTERNAL CIRCUIT	Mfg. Spec. 32		Test results 32			PASS / FAIL
10	§ 2.12.6.5 / § 5.12.6.5 DIRECTIONAL	A. Selects only targets moving towards radar			☐ Yes ☐ No ☑ N.A.		PASS / FAIL
		B. Selects only targets moving away from radar			☐ Yes ☐ No ☑ N.A.		
11	§ 2.12.7 / § 2.12.8 / 5.12.7 / 5.12.8 LOW AND HIGH SPEED DISPLAY TEST	Stationary mode: target channel (mph)	Low speed spec. 15	Lo speed disp. 15			PASS / FAIL
			Hi speed spec. 175	Hi speed disp. 175			
		Moving Mode target channel (mph)	Low speed spec. 20	Lo speed disp. 20			
			Hi speed spec. 155	Hi speed disp. 155			
		Moving Mode: patrol channel (mph)	Low speed spec. 20	Lo speed disp. 20			
			Hi speed spec. 80	Hi speed disp. 80			
12	§ 2.13 / § 5.13 RFI TEST						PASS / FAIL
13	LABORATORY COMMENTS						
14	NHTSA/IACP CERTIFICATION	***This radar device meets or exceeds the minimal operational standards of the National Traffic Highway Safety Administration. California Vehicle Code Section 40802*** ☑ **PASS** ☐ **FAIL**					
		Certified by: Ford Bauman			**Date:** 6-3-13		
15	INVENTORY	☐ Fork Cert ☐ Manual ☐ 2nd Ant. ☐ Remote ☐ Bat. ☐ Carrying Case Other: (please list)					

EXCERPT

MINUTES OF REGULAR TRAFFIC COMMISSION MEETING

February 12, 2014

6. STAFF REPORTS

A. Review of Draft Engineering and Traffic Survey for Speed Limits

Dave Hunt introduced Jerry Stock, of Hartzog & Crabill. Hartzog & Crabill performed the speed limit survey to determine whether any modifications to the survey were needed. Mr. Hunt gave a summary of the staff report and the information contained therein. In summary, changes were recommended for the following segments:

- Bloomfield Street – Cerritos Avenue to Katella Avenue – increase speed limit from 35 mph to 40 mph
- Cerritos Avenue – Bloomfield Street to East City limits – install 40 mph speed limit sign westbound west Santa Clara Street (east City limit)
- Katella Avenue – Lexington Drive to Siboney Street – install 40 mph speed limit sign for westbound direction

The Traffic Commission is being asked to review and approve the Draft Engineering and Traffic Survey for Speed Limits, which will then be forwarded to City Council for their approval. Mr. Hunt then turned the meeting over to Chair Emerson for questions and comments from the Traffic Commission.

Commission asked for clarification of the Radar Speed Survey Field Sheet and the Radar Speed Distribution Sheet. Mr. Stock explained the information contained on the sheets. He stated that the criteria contained in the Vehicle Code and MUTCD (Manual of Uniform Traffic Control Devices) states that the speed limit should be posted within 5 mph of the 85th percentile speed. A compelling reason (reasons not readily apparent to the motorist) would be needed to post outside of the 5 mph threshold.

Mr. Stock explained that he tries not to change speed limits as long as they are able to stay in compliance the Vehicle Code & MUTCD. Motorists are dictating the speed limit, based on the premise that the average motorist is safety conscious and drives at a safe speed. Speed limits are consistent with driver behavior.

The first item discussed was the recommendation to increase speed from 35 mph to 40 mph on Bloomfield Street from Cerritos Avenue to Katella Avenue.

Commission is concerned with recommending a 40 MPH speed limit on Bloomfield Street between Cerritos Avenue and Katella Avenue. With McAuliffe and Los Alamitos Elementary school located there, kids are present on and around campus more than just during the day. What consideration was given for the fact that there are two schools on that street? Mr. Stock explained that there are signs posted alerting motorists that there are schools in the area. The definition of "not readily apparent" to motorists is not met and there is no justification for deviating from 40 mph; therefore, we are compelled to stay within 5 mph of the 85th percentile.

Commission inquired about time and conditions for the data collection for Bloomfield Street. Mr. Stock stated that the data was collected for the segment recommended for change, on November 14, between 1:00 p.m. and 1:30 p.m. He stated that the data collector sits in an inconspicuous position on each side of the roadway for a duration of time needed to collect data on a statistically representative number of vehicles. Mr. Stock stated the 25 mph speed limit applies to areas contiguous to schools within a specific time period and a specific geographic location. He also explained that the data collection was conducted outside of the sphere of influence of schools, which is why the greatest number of vehicles was traveling 33-42 mph.

Commission noted that the accident history showed one accident in a 24 month period; and felt that was fairly low.

Commission was concerned that once you cross Katella Avenue the speed limit changes to 25 mph for the residential area and felt that is the one place where the base speed should be raised. Feel that it seems more prudent to err on the side of caution because of the two schools and a park. Mr. Stock stated that there were "no compelling reasons" to justify maintaining the speed at 35 mph, which is below the 85th percentile. He stated that there are no factors "not readily apparent" to the motorist; i.e., high rate of collisions, areas of limited site distance, vertical curve. He believes that if a citation was challenged in court it would not hold up. Based on the statistical data, motorists are slowing down traveling southbound on Bloomfield Street; north city limits to Cerritos Avenue speed data shows the 85th percentile speed as 44.8 mph, Cerritos Avenue to Katella Avenue is 41.0 mph, Katella Avenue to Farquhar Avenue drops to 25.2 mph. He stated that, as reflected in the statistical data, the characteristics of the roadway and adjacent land uses are compelling the motorists to alter their driving.

Commission asked Mr. Stock if, in his view, and in studying other cities, how often the decision is made not to go with the 85th percentile and stay with the current speed limit. Mr. Stock stated if that was the case City Council would have to adopt an ordinance. However, if it is contested he does not believe it would hold up in court as there is no compelling reason to maintain the 35 mph speed limit and it is inconsistent with the Vehicle Code and MUTCD guidelines.

Mr. Stock likened the Vehicle Code and MUTCD guidelines to a recipe. The traffic engineers are required to follow that recipe, which means staying within a 5 mph window of the 85th percentile unless there is a compelling reason. He prefers personally to be consistent with what the existing posting is, and not to change postings unless his hand is forced.

Commission questioned why this did not apply to maintaining the 35 mph on Bloomfield Street between Cerritos Avenue and Katella Avenue. Both Mr. Hunt and Mr. Stock explained that the survey data shows a 6 mph higher speed, which is outside the 5 mph cutoff. Mr. Stock stated that guidelines of the Vehicle Code and MUTCD must be followed. To keep the speed limit at 35 mph there must be a reason or justification that meets the definition of 'not readily apparent' to the motorist. Bloomfield Street is straight, flat, has good lateral visibility, a low accident rate, and the adjacent land use is clearly visible. In doing due diligence, data did not show a compelling reason that would meet the test of 'not readily apparent' to a motorist. That is the basis of the recommendation to raise the speed limit to 40 mph.

Commission questioned whether using radar is the most effective method to obtain vehicle speed data. Mr. Stock answered that the data reflects the percentage of vehicles in pace is 75% – 90%, which is a tight spread resulting in good statistical data.

Commission inquired about the location of the tester gathering speed data; are they positioned midblock? Mr. Stock stated that is what is required by the MUTCD; the tester is in an unmarked vehicle, in an inconspicuous location, using a calibrated device.

Commission questioned whether tubes across the pavement are more accurate for measuring speed than radar. Mr. Stock stated tubes are used to obtain speed profiles but are not accurate enough for this application. He

stated that tubes are also more conspicuous, which could alter driver behavior.

The Commission then discussed raising the 35 mph speed limit on segments of Katella Avenue currently 35 mph to 40 mph. The following points were raised:

- 40 mph would be consistent with other segments on Katella Avenue.
- Does measuring speed at off-peak traffic periods introduce a bias? Mr. Stock stated that the guidelines require 'off-peak' optimal flow.
- Citizens have complained that most vehicles do not drive at the posted 35 mph speed limit on Katella Avenue.
- Would be interesting to see how many vehicles have been cited for excessive speed on Katella Avenue. Mr. Stock stated that it is not a factor of consideration for this analysis.
- Katella Avenue can be perceived as a speed trap, as the speed drops from to 35 mph from 40 mph coming from Cypress and 45 mph from Long Beach.
- Question was raised as to whether or not on-street parking is a factor in determining speed. Mr. Stock stated that the presence or absence of on-street parking is not a factor.
- If the speed limit is raised to 40 mph, perhaps the speed indicator placed going westbound on Katella Avenue can be moved to another location.

Commission consensus was to increase the speed limit on the three segments on Katella Avenue from 35 mph to 40 mph. Mr. Stock stated that this change was within guidelines and could be made by the Traffic Commission and taken to City Council for approval; or the Traffic Commission could approve the survey as presented and let City Council recommend the increase. The Commission was in favor of making the changes and forwarding it to City Council.

MOTION: FIRST/SECOND: Emerson/Biri
Accept the Draft Engineering and Traffic Survey for Speed Limits as presented, with the recommendation to revise the speed limit survey to increase the speed limit from 35 mph to 40 mph on the three segments on Katella Avenue prior to City Council review. Motion passed unanimously.