6. Bicycle Boulevards

Bicycle boulevards are generally defined as low-volume, low-speed streets that have been optimized for bicycle travel using treatments such as traffic calming and traffic reduction, signage and pavement markings, and intersection crossing treatments. Bicycle boulevards are an integral part of the City's bicycle network.

This chapter supports Policy 3.3 of this Plan, which states, "the City will construct the network of bicycle boulevards and monitor them for performance goals, as indicated in **Chapters 4, 5,** and **6** of this Plan."

This chapter provides specific guidelines for application of treatments on Emeryville's bicycle boulevards. The material is drawn from the *Bicycle Boulevard Treatments Memorandum*, written during the development of this Plan and presented as **Appendix C**.

6.1. Bicycle Boulevard Standards and Best Practices

Bicycle boulevards have been implemented in several cities throughout the country, and while no federal guidelines exist, several best practices have emerged for their development. This section summarizes standards and best practices for the development of bicycle boulevards, drawn from published materials and interviews with agency staff working to implement bicycle boulevards in eight communities throughout North America.

As demonstrated through the range of experiences and techniques used to develop bicycle boulevards in different jurisdictions, there are no strict standards or warrants for use of bicycle boulevard treatments. Commonalities that emerge among the jurisdictions include:

- Bicycle boulevards are low-speed, low-volume streets that encourage use by bicyclists.
- Distinctive signs and pavement markings are essential components of designating a bicycle boulevard.
- Most municipalities are looking into improving crossings of arterial streets and applying traffic calming and diversion techniques to improve the bicycling environment.
- Public input is a key component of identifying streets and treatments for bicycle boulevards.

However, the jurisdictions differed in terms of street selection, intersection treatments, speed control measures, and volume control measures, as described following.

6.1.1 Street Selection

Most municipalities identified bicycle boulevards through the bicycle master plan process. All municipalities considered local streets with existing traffic calming, closures, or signalized crossings of major streets for bicycle boulevard designation. Streets that improve connectivity to key destinations, provide a direct route for bicyclists, or where residents have expressed a desire for traffic calming are also good candidates.

Most bicycle boulevards are located on residential streets, although Austin, Berkeley, and Portland all have boulevards along commercial streets.

Figure 6-1. Emeryville's existing and proposed bicycle boulevards

6.1.2 Intersection Treatments

Major Street Crossings

The quality of treatments at major street crossings can significantly affect a bicyclist's choice to use a bicycle boulevard or not. If the delay for a bicyclist to cross a major street on a bicycle boulevard is considerably longer than the delay for crossing at an adjacent street, some bicyclists are less likely to use the bicycle boulevard.

Some jurisdictions have prioritized improving bicycle boulevard crossings of arterial streets when establishing a bicycle boulevard, while others began with signs and pavement markings, and are more recently focusing on improving major street intersections. Common treatments include curb extensions, crosswalks, median islands, and signals. Treatment selection is based on engineering judgment as well as manuals, primarily the Manual on Uniform Traffic Control Devices (MUTCD) and National Cooperative Highway Research Program (NCHRP) Report #562, *Improving Pedestrian Safety at Unsignalized Crossings* (2006). Several jurisdictions use pedestrian half-signals, while others use or are considering implementing Pedestrian Hybrid Beacons, also known as High-Intensity Activated Crosswalk or HAWK signals.

Minor Street Crossings

Municipalities differ significantly on use of stop control on bicycle boulevard intersections with other local streets. CAMUTCD Section 2B.05 *Stop Application* specifies when a stop sign can be used at the intersection of two streets with relatively equal traffic volumes and/or characteristics. Some municipalities, including Portland and Vancouver, stop control one direction of every intersection with a minor street.

Many municipalities turn stop signs or remove four-way stop-controlled intersections to give right-of-way to the bicycle boulevard, reducing the delay for bicyclists on the bicycle boulevard.

6.1.3 Speed Control Measures

Motor vehicle speeds are critical to the bicycling environment because of the likelihood of injury resulting from a high-speed crash, as well as turning, passing, and other potential conflicts between motor vehicles and bicyclists.

Automobile speed has a significant impact on the likelihood a fatality will result from a crash (see **Figure 6-2**).

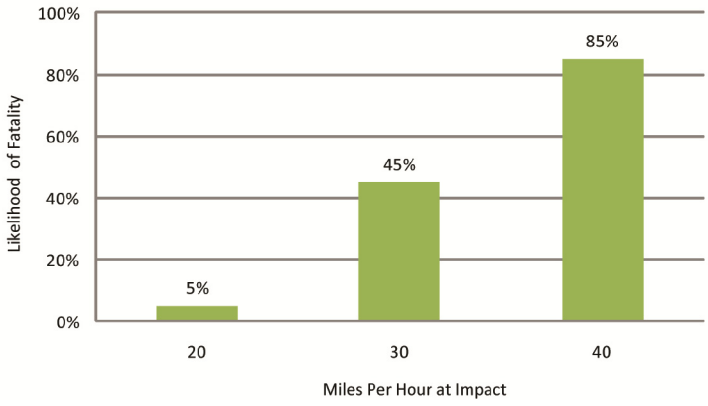

Figure 6-2. Likelihood of pedestrian fatality resulting from crash based on automobile impact speed.
Source: U.K. Department of Transport

Roads selected for bicycle boulevards tend to have maximum motor vehicle speeds of 25 mph, although some communities such as Albuquerque are reducing speeds through traffic calming or posting reduced speed limits. **Table 6-1** summarizes guidance for speeds on bicycle boulevards from the communities interviewed and key resources.

In general, a speed differential between motor vehicles and bicyclists of 15 mph or less is desirable to reduce turning conflicts and the number of passing events; the San Francisco Bicycle Plan recommends re-designing a street for maximum speed of 15 mph unless volumes are low.

Table 6-1. Posted Speeds and Speed Thresholds

Source	Posted Speed	Speed Threshold/Goal
Albuquerque, New Mexico	18	None specified
Austin, Texas	25	85th percentile 25 mph or less
Berkeley, California	25	None specified
Palo Alto, California	25	85th percentile 32 mph or less
Portland, Oregon	25	85th percentile25 mph or less; 15-20 mph preferred
Seattle, Washington	25	85th % speeds <5mph over posted
Vancouver, British Columbia	25	None specified
AASHTO *Guide for the Development of Bicycle Facilities*	25	None specified

6.1.4 Volume Control Measures

Motor vehicle traffic volumes affect the comfort of a bicyclist, particularly for roadways with shared travel lanes, such as bicycle boulevards. Higher vehicle volumes are less comfortable and mean more potential conflicts. To illustrate, on a 25 mph street with 1,000 vehicles per day (vpd), during peak hour a bicyclist traveling at 12 mph would be passed by a car traveling in the same direction about every two minutes.[27] By comparison, at 3,000 vpd, a bicyclist would be passed by a car every 46 seconds, and at 5,000 vpd, a bicyclist would be passed by a car every 28 seconds.

Table 6-2. Traffic Volume Guidelines

Source	Volume Threshold
Albuquerque, New Mexico	500+ vpd threshold for speed humps; 1,500 for diversion
Austin, Texas	None
Berkeley, California	None
Palo Alto, California	None
Portland, Oregon	1,000 vpd goal, depends on street
Seattle, Washington	None
Vancouver, British Columbia	< 3,000 vpd
AASHTO *Guide for the Development of Bicycle Facilities*	generally < 3,000 vpd

There is a wide variation in vehicle volume goals for bicycle boulevards considered by different jurisdictions, shown in Table 6-2. Goals range from 1,000 to 3,000 vpd, with the majority of jurisdictions lacking a volume goal. No jurisdiction has a specific set threshold that triggers implementation of volume control treatments. Instead, the decision to implement volume control treatments is based on the context of the bicycle boulevard, and engineering judgment plays heavily in the decision.

The majority of cities interviewed have a traffic calming program that is separate from bicycle boulevard implementation programs. Portland has modified its traffic calming program to permit traffic calming to be installed on a bicycle boulevard at the City's discretion, rather than just as a response to community request.

[27] *At peak hour, assuming peak hour is 10 percent of vpd, the street is two-way with traffic volumes split evenly between each direction, and cars are evenly spaced along the street.*

6.1.5 Impacts to Neighboring Streets

Some cities consider how traffic calming and/or diversion can affect traffic on adjacent streets; in Palo Alto, an increase of up to 25 percent of existing volume (under 2,500 vpd) is generally considered acceptable.[28] The Traffic Calming Program manual estimates that traffic calming treatments such as a series of speed humps can be expected to divert 10 to 20 percent of traffic onto other routes, while full and partial street closures result in a 50 to 90 percent diversion.

Portland's Neighborhood Traffic Management Program has defined an 'impact threshold curve' to evaluate what impacts are acceptable to neighboring streets. The City's standard impact curve is expressed in terms of total traffic volume. The parameters allow for an increase of up to 150 vpd on any street, while an increase of over 400 vpd on a local street is unacceptable, and the resulting traffic volume on any local street should not exceed 3,000 vpd.[29]

6.1.6 Impacts to Emergency Response Vehicles

Jurisdictions consider traffic calming impacts to emergency vehicle routes in one or more of the following ways:

- Treatments on emergency response routes must be approved by emergency response officials
- A limited set of emergency-vehicle-friendly traffic calming techniques are allowed

Examples of emergency-vehicle-friendly traffic calming techniques include 22-foot speed tables in lieu of speed humps, laterally offset speed tables (also called split humps), speed lumps (which have a gap that emergency vehicles' wheels can fit through), and other treatments.

The Palo Alto Traffic Calming Program Manual notes that emergency "vehicles are particularly susceptible to the vertical displacement of speed humps because of the weight and length of fire trucks, and the delicate instruments and patients in paramedic vans and ambulances." Emergency vehicles must reduce speeds more than a passenger car would to travel over a speed hump. The manual also states that intersection treatments have less of an impact on emergency vehicles than corridor treatments, as the vehicles already slow for intersections. Emeryville's emergency vehicle response time goals are an average of five minutes or less.[30]

It is estimated that a ladder truck may be delayed up to ten seconds at a speed hump and an ambulance may be delayed up to five seconds.[31]

6.1.7 Other Lessons Learned

Experience in several communities indicates that it is important to record where automobile speed measurements are taken in relation to the traffic calming or diversion treatment and replicate for before and after trials. In addition, traffic calming and diversion measures can be implemented on a trial basis to gauge residents' support prior to finalizing the design. Temporary speed humps, tables, and lumps are available, and temporary closures can be created with construction barrels or planters. However, if not aesthetically appealing, the temporary measures can diminish residents' opinions.

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[28] *Based on the Traffic Infusion on Residential Environments (TIRE) index, which shows that most residents do not notice an increase of 25 percent.*
[29] *http://www.portlandonline.com/transportation/index.cfm?&a=85375&c=35934*
[30] *City of Emeryville Website. Accessed March 15, 2011. http://www.ci.emeryville.ca.us/index.aspx?NID=359*
[31] *Ewing, Reid. (1999). p.142 Traffic Calming: State of the Practice. http://www.ite.org/traffic/tcsop/Chapter7.pdf*

6.2. Recommended Bicycle Boulevard Policies and Treatments for Emeryville

This section recommends policies for bicycle boulevard development in Emeryville. None of the case study cities have strict policies that require specific action if bicycle boulevard goals are not met. Similarly, because of the variety of conditions and importance of context-sensitive design, Emeryville's policies are meant to serve as guidelines, rather than standards. If a bicycle boulevard goal is not met, the City should consider treatments that will allow the bicycle boulevard to meet goals. If goals cannot be met, the City should consider a different type of bicycle facility.

This section first identifies Emeryville's existing and proposed bicycle boulevards. It then presents three goals for bicycle boulevards that address speeds, volumes, and intersection delay.

6.2.1 Street Selection

Emeryville's General Plan and the 1998 *Bicycle and Pedestrian Plan* identify bicycle boulevards based on traffic conditions and proximity to key destinations, including schools and parks. **Table 6-3** lists the bicycle boulevards. Note that bicycle boulevards on 66th Street and 55th Street are not included in this Plan and the extents of others have been modified.

Table 6-3. Emeryville's Bicycle Boulevards

Street	Extents	Notes
45th Street	Horton Street to San Pablo Avenue	Modified from General Plan. Changed Eastern extent to San Pablo Avenue.
45th Street	San Pablo Avenue to Adeline Street	
53rd Street	Horton Street to San Pablo Avenue	Included in General Plan.
Doyle Street	Ocean Avenue to 55th Street	Included in General Plan.
Horton Street/Overland Avenue	40th Street to 65th Street	Included in General Plan.
Stanford Avenue	Horton Street to Doyle Street	Included in General Plan.
59th Street	Horton Street to City Limits	Modified from General Plan. Changed eastern extent from City Limits to Doyle Street.

The General Plan includes bicycle boulevards on 55th Street from Doyle Street to the City Limits and on 66th Street from Shellmound Street to the City Limits. These facilities are not supported by this Pedestrian and Bicycle Plan. The General Plan will be amended to reconcile the inconsistencies.

6.2.2 Bicycle Boulevard Goals and Metrics

This section outlines recommended bicycle boulevard goals and metrics for Emeryville based on the best practices resources surveyed. The bicycle boulevard goals address metrics for motor vehicle speeds, motor vehicle volumes, and major intersection delay, described below.

Speed Goals

Streets developed as bicycle boulevards should have posted speeds of 20 mph or less, with 85th percentile speeds at 22 mph or less. If the street has relatively high volumes (over 3,000 vehicles per day) 85th percentile speeds should be further reduced below 22 mph where feasible.

- **Rationale**: Higher vehicular speeds increase the frequency of automobiles passing bicyclists and increase the severity of crashes that occur. Bicyclists generally travel at approximately 12 mph, and maintaining vehicular speeds at a speed closer to bicyclists' speeds greatly improves bicyclists' comfort on a street. Slower vehicular speeds also improve drivers' ability to see and react to bicyclists and minimize conflicts at driveways and other turning locations.

Motor Vehicle Volume Goals

Traffic volumes on bicycle boulevards east of Hollis Street should be below 1,500 vehicles per day. West of Hollis Street, traffic volumes should be below 3,000 vehicles per day. Higher volumes can be permitted for short segments with additional treatments.

- **Rationale**: Volumes of motor vehicles determine the frequency of passing events; at 1,000 vehicles per day, cars pass a bicyclist approximately every two minutes, while at 3,000 vehicles per day, cars pass a bicyclist every 46 seconds. The rate of automobiles passing a bicyclist indicates the number of potential conflicts and affects the comfort of the bicycling environment.

  Bicycle boulevards with volumes higher than 3,000 vehicles per day are not recommended, although a segment of a bicycle boulevard may accommodate more traffic for a short distance if necessary to complete the corridor. Providing additional separation with a bike lane, raised bike lane, cycle track, or other treatment is recommended where traffic calming or diversion cannot reduce volumes below this threshold.

Monitoring

As noted in Chapter 4, Section 4.4.3, the City should regularly monitor traffic volumes, and speeds on its bicycle boulevards to determine if they are meeting the goals listed above or not. Counts should be conducted every two years. If a bicycle boulevard goal is not met, the City should consider treatments that will allow the bicycle boulevard to meet goals. If additional treatments are not possible, or if treatments are unlikely to result in conditions that meet the above goals, the City should consider a different type of bicycle facility.

Emeryville should collect this data and evaluate each bicycle boulevard in the case of any of the following:

- Development occurs that is projected to increase motor vehicle volumes on the bicycle boulevard
- The *Pedestrian and Bicycle Plan* is updated
- Substantial community concern is brought to the City

6.2.3 Bicycle Boulevard Treatment Selection

This section identifies five levels of treatment for bicycle boulevards. The appropriate treatment level is dependent on how well the bicycle boulevard meets the above speed, volume and delay goals. If one treatment does not address out-of-compliance bicycle boulevards, the next treatment level should be used. This phased approach promotes implementation of the least intensive treatment to achieve the desired outcome. **Table 6-4**

shows the hierarchy of application levels. Appendix B includes descriptions and illustrations of the individual treatments. If increased levels of treatment fail to achieve the goals, re-designation should be considered.

The minimum standard to designate a street as a bicycle boulevard, Level 1 treatments consist of "Bicycle Boulevard" or other identification signs and pavement markings. The second level includes these items, plus wayfinding signage and treatments to major street crossings. All bicycle boulevards in Emeryville should meet Level 2 treatments at a minimum.

Traffic calming and diversion treatments (Levels 3, 4, and 5) should be implemented on bicycle boulevards as necessary when the street exceeds the target vehicular speed and volume thresholds. If an analysis shows that the bicycle boulevard does not meet the thresholds, the City should consider applications for the next treatment level.

Note that while traffic calming treatments primarily affect motor vehicle speeds, they also reduce volumes, as drivers avoid slower streets. Speed humps can lead to a 20 percent reduction in vehicular speeds, while chicanes, traffic circles, and other narrowing can reduce vehicle volumes by 10 percent.[32]

Level 1. Basic Bicycle Boulevard

Signs and pavement markings represent the least physically intensive treatments and should be included in all bicycle boulevard treatments. Emeryville's pavement stencils and purple bicycle boulevard signs provide a strong visual identity for the street and designate the corridor as a bicycle route. This is the minimum treatment for a street to be considered a bicycle boulevard.

Level 2. Enhanced Bicycle Boulevards

Wayfinding signs and directional pavement markings improve the experience of a bicycle boulevard and passively market the facility. Intersection treatments that reduce delay can be a major determinant of whether a bicyclist uses the bicycle boulevard rather than a parallel street. Emeryville should build all bicycle boulevards to a Level 2 minimum standard.

Level 3. Limited Traffic Calming

If speeds and volumes on a bicycle boulevard rise above the City's goals, Level 3 treatments should be implemented. Traffic calming should be considered on bicycle boulevards that have 85th percentile speeds greater than 22 mph. Limited traffic calming can also reduce volumes 10 to 20 percent.

Specific treatments depend on public input, whether the street is a transit street, vehicular speeds, and lane widths. Where on-street parking is important, minimize loss of parking by using vertical speed control where appropriate, minimizing impacts to bicycle travel where possible.

[32] *Berkeley Bicycle Boulevard Design Tools and Guidelines.*

Table 6-4. Application of bicycle boulevard treatment levels

Level	Signs	Pavement Markings	Intersection Treatments	Traffic Calming	Traffic Diversion
Level 1 Basic Bicycle Boulevard	• identification	• shared lane markings			
Level 2 Enhanced Bicycle Boulevard	• identification • wayfinding	• shared lane markings • directional markings for bicyclists	• crossing improvements at major streets (high-visibility crosswalks, median islands, HAWK and standard signals)		
All bicycle boulevards in Emeryville should meet level 2 treatments at a minimum					
Level 3 Limited Traffic Calming	• identification • wayfinding	• shared lane markings • directional markings for bicyclists	• crossing improvements at major streets (high-visibility crosswalks, median islands, HAWK and standard signals) • improve visibility of bicyclists (forward stop bars, bicycle crosswalks)	• vertical speed control (speed humps/ cushions/ tables) • horizontal speed control (chicanes, traffic circles, curb extensions)	
Level 4 Significant Traffic Calming	• identification • wayfinding	• shared lane markings • directional markings for bicyclists	• crossing improvements at major streets (high-visibility crosswalks, median islands, HAWK and standard signals) • improve visibility of bicyclists (forward stop bars, bicycle crosswalks)	• vertical speed control (speed humps/ cushions/ tables) • horizontal speed control (chicanes, traffic circles, curb extensions) • narrowings (chokers, neckdowns, pinchpoints, center island narrowing)	
Level 5 Traffic Diversion	• identification • wayfinding	• shared lane markings • directional markings for bicyclists	• crossing improvements at major streets (high-visibility crosswalks, median islands, HAWK and standard signals) • improve visibility of bicyclists (forward stop bars, bicycle crosswalks)	• vertical speed control (speed humps/ cushions/ tables) • horizontal speed control (chicanes, traffic circles, curb extensions) • narrowings (chokers, neckdowns, pinchpoints, center island narrowing)	• full and partial closures, diagonal diverters

Level 4. Significant Traffic Calming

If treatments indicated in Level 3 do not reduce speeds and volumes below the City's goals, Level 4 treatments should be implemented. On bicycle boulevards west of Hollis Street where automobile speeds and volumes are identified issues, neck-downs can reduce speeds significantly, as drivers must slow and wait for one car to pass the treatment at a time. This treatment is not recommended on bicycle boulevards east of Hollis due to limited effectiveness because of low traffic volumes.

Treatments shall not significantly hinder emergency vehicle access or bus routes and the Emeryville Fire Department, AC Transit, and Emery Go-Round should be consulted in the design, as appropriate. Neck-downs shall be designed to permit a 20 foot clear access for emergency vehicles.

Level 5. Traffic Diversion

If treatments indicated in Level 4 do not reduce speeds and volumes below the City's goals, Level 5 treatments should be implemented. Where a bicycle boulevard has high traffic volumes, particularly cut-through traffic, diversion should be considered to substantially reduce volumes on the road. Diversion should only be implemented after a thorough traffic analysis and public outreach process, and traffic conditions should be evaluated after six months to determine whether neighboring streets were negatively impacted.

Alternatively, a treatment can be implemented based on engineering judgment and monitored to determine impacts to neighboring streets. Based on the *Traffic Infusion on Residential Environments* (TIRE) index, an increase of up to 25 percent of existing volume on an adjacent local street is generally acceptable.

6.3. Recommended Design Treatments for Emeryville's Bicycle Boulevards

This section provides existing conditions and general recommendations for Emeryville's existing and proposed bicycle boulevards, based on automobile speeds and volumes, number and location of crashes, and other factors. **Table 6-5** summarizes proposed treatments for all bicycle boulevards. Proposed treatments are also included in **Chapter** 7.

All bicycle boulevards in the City need some level of treatment to be brought up to Level 2: Enhanced Bicycle Boulevard Design treatments. Sections of several bicycle boulevards are also designated as transit streets in the City's General Plan. Treatments on these streets should allow for wider travel lanes, limit horizontal traffic calming treatments, and depending on bus volumes, should consider separation of bicyclists and motor vehicles. Angled parking shall not be developed on bicycle boulevards.

The primary emergency response routes used by the Emeryville Fire apparatus include the following:

- Hollis Street (entire length)
- San Pablo Avenue (entire length)
- Powell Street (from tip of peninsula to San Pablo Avenue)
- Park Avenue (Hollis Street to San Pablo Avenue)
- 40th Street (entire length, including overcrossing)

- Christie Avenue (Shellmound Street to 65th Street)
- Shellmound Way (entire length)
- Shellmound Street (Ashby/I-80 off-ramp/Aquatic Park to 40th Street)

Secondary access routes include 45th Street between Horton Street and San Pablo Avenue, 53rd Street between Horton Street and San Pablo Avenue, and Horton Street/Overland Avenue.

At this time, all of Emeryville's bicycle boulevards with vehicle volume data except Horton/Overland meet vehicle volume goals. Vehicle volumes on 45th Street and Stanford Avenue, and vehicle speeds and intersection delay on all bicycle boulevards should be measured to determine if additional treatments are necessary.

More extensive treatments are required along Horton/Overland to meet the proposed bicycle boulevard goals. The background supporting recommendations for Horton/Overland is described after the table. Prior to installation of any diverters a traffic study will be needed to determine the effects.

Table 6-5. Recommended Treatments for Existing and Proposed Bicycle Boulevards

Bicycle Boulevard	Recommended Treatments
45th Street Horton Street to Adeline Street	• Measure speeds and traffic volumes. • Install bicycle boulevard signage and pavement markings to bring up to Level 2 Treatments. • Consider speed lumps (similar to a speed hump with a gap that allows vehicles with a wider wheel bed to pass unencumbered) if measured speeds are higher than 20 mph. • If Spur Alley bicycle route is implemented, improve crossing with high visibility crosswalks and consider raised intersection.
53rd Street Horton Street to San Pablo Avenue	• Measure speeds and traffic volumes. • Install bicycle boulevard signage and pavement markings to bring up to Level 2 Treatments. • Consider green street treatments such as narrowing street and removing parking to provide bioswales or to daylight Temescal Creek. • If Spur Alley bicycle route is implemented, install high-visibility crosswalks and consider raised intersection. • At San Pablo Avenue, add bicycle pocket or narrow 53rd Street to one lane in either direction with shared lane marking. Adjust signal timing to provide enough time for bicyclists to cross San Pablo Avenue.
Doyle Street Ocean Avenue to 55th Street	• Measure speeds and traffic volumes. • Install wayfinding signage. • Add HAWK signal or full signal at Powell Street. • Install bicycle boulevard signage and pavement markings south of 59th Street to bring up to Level 2 Treatments.

Bicycle Boulevard	Recommended Treatments
Horton Street/Overland Avenue 65th Street to 40th Street	• Measure speeds and traffic volumes • Consider the installation of traffic diverters at key locations. • Explore roadway widening on Horton between 59th Street and Powell Street to better accommodate bicycle lanes. • At Horton and 40th Street install video detection and stripe a bicycle lane between right and left turn lanes to allow bicyclists to continue through northbound. Mark street to emphasize no through motor vehicles. • At Overland and 65th Street, evaluate the need for improvements to bicycle detection and turning movements. • Install three-way stop at intersection of 62nd Street and Horton Street • Enforce restrictions on parking and loading in bike lanes. • See Section 6.3.1 for background
Stanford Avenue Horton Street to Doyle Street	• Measure speeds and traffic volumes • Install bicycle boulevard signage to bring up to Level 2 Treatments. • Continue bicycle boulevard markings between Hollis Street and Doyle Street and include shared lane markings east of Doyle Street • Install bicycle detection in bicycle lane at Hollis Street.
59th Street Horton Street to Doyle Street	• Measure speeds and traffic volumes. • Install bicycle detection at Hollis Street. • Install bicycle boulevard signage to bring up to Level 2 Treatments.

6.3.1 Horton/Overland Treatments

The Horton/Overland bicycle boulevard provides a continuous north-south connection through most of Emeryville, and is a very important bicycle connection, providing access to the Transit Center, the future South Bayfront Bridge, and to Mandela Parkway/Bay Trail in Oakland. The entire bicycle boulevard is currently signed. Bicyclists share the travel lane with motorists north of 62nd Street and south of 53rd Street. Bike lanes are striped between 62nd Street and 53rd Street.

Twenty-four hour traffic counts conducted in fall 2010 show that sections of the bicycle boulevard exceed the 3,000 vehicles per day goal. Within a 24-hour weekday period 3,177 motorists were counted between Park Avenue and 40th Street, 4,859 motorists were counted between Stanford Avenue and 53rd Street, and 3,742 motorists were counted between 59th Street and Powell Street. Volumes along the bicycle boulevard are expected to increase with the construction of Emery Station West. The entrance for the transit center will be located on Horton Street at 59th Street, and the entrance to the garage that will serve the facility will be located along Horton Street just south of 62nd Street.

Delivery drivers and other motorists commonly park on the bicycle lanes on Horton Street between 62nd Street and Powell Street. Bicyclists have noted that it is difficult to merge with traffic to travel around parked vehicles.

The following treatments are recommended along the Horton/Overland bicycle boulevard:

- Measure speeds and traffic volumes
- Consider the installation of traffic diverters at key locations. Suggested locations are at 62nd Street and Stanford Avenue, and enhancements to the existing signed diversion at 40th Street. First develop a traffic study to analyze the impacts of traffic diversion. Then, any installation should be done on a trial basis, with final decisions after evaluation.
- Explore roadway widening on Horton between 59th Street and Powell Street to better accommodate bicycle lanes on both sides and loading lane on east side.
- At Horton and 40th Street install video detection and stripe a bicycle lane between right and left turn lanes to allow bicyclists to continue through.
- At Overland and 65th Street, evaluate the need for improvements to bicycle detection and turning movements.

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