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Details

File #: 2016-2599

Type: Regular Agenda Item

Body: [City Council](#)

On agenda: 2/24/2016

Title: Recommendation to Approve the Central Avenue Complete Streets Concept Including Safety and Other Street Improvements. (Public Works 310)

Attachments: [1. Exhibit 1 - Comments](#), [2. Exhibit 2 - Existing Conditions Memo](#), [3. Exhibit 3 - Recommended Concept Summary Memo](#), [4. Exhibit 4 - Recommended Concept Drawings](#), [5. Exhibit 5 - Order-of-Magnitude Cost Estimates](#), [6. External Correspondence](#), [7. Presentation](#), [8. External Correspondence?](#)

Text

Recommendation to Approve the Central Avenue Complete Streets Concept Including Safety and Other Street Improvements. (Public Works 310)

To: Honorable Mayor and Members of the City Council

From: Elizabeth D. Warmerdam, Interim City Manager

Re: Recommendation to Approve the Central Avenue Complete Streets Concept Including Safety and Other Street Improvements

BACKGROUND

The Central Avenue recommended concept for the 1.7-mile study area between Main Street/Pacific Avenue and Sherman Street/Encinal Avenue improves safety for all street users including people who walk, bicycle or drive. The Central Avenue concept achieves key community goals, including:

- Allows for a **safer street** within a neighborhood heavily concentrated with schools, and includes a center turn lane, which the Federal Highway Administration (FHWA) deems has substantial safety benefits when reducing travel lanes from four lanes to three lanes.
- Installs a **continuous bikeway** for 95 percent of the 1.7-mile study area compared to only 12 percent currently. Bikeways are recommended along the study area except near some parts of Webster Street and Eighth Street intersections to minimize delays for motorists.
- Makes it **easier and safer for people to walk** across Central Avenue with new stop lights, curb extensions, pedestrian refuge islands, rectangular rapid fire beacons and new crosswalks at key intersections.
- **Improves the streetscape** with more street trees, a gateway feature at Webster Street and improved water quality treatment.
- Improves bicycle and pedestrian access along the **San Francisco Bay Trail** on both Central Avenue in the west end to east of Fifth Street and on Boat Ramp Road.
- **Minimizes motorist delay** with end-to-end travel time for the study area during peak congestion expected to increase up to 1.2 minutes in 2016 and up to 1.6 minutes in 2035 assuming that all the new citywide development, including Alameda Point, is built as planned. This anticipated delay is significantly less than the up to 14 minute delay estimate for some of the alternatives reviewed earlier in the community input process. During off-peak times, no additional travel delay is expected.
- Provides a **net gain of 40 on-street parking** spaces with the highest gain in the west end by Alameda Point, on Boat Ramp Road and on the west side of Fourth Street. No parking spaces near the Webster Street business district would be removed.
- Provides **accessible** curb ramps and six accessible on-street parking spaces.

Community-Based Planning Process

This Central Avenue concept is the culmination of an extensive community based planning process that began in 1991 with the City's General Plan and continues as follows:

- The City Council approved the [City Design Element of the General Plan <http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch3.pdf>](http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch3.pdf) [<http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch3.pdf>](http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch3.pdf) (1991) with policies maximizing access to the shoreline, which includes Central Avenue to “*enhance the meeting of land and water.*”
- The City Council approved the [Transportation Element of the General Plan <http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch4.pdf>](http://alamedaca.gov/sites/default/files/document-files/files-inserted/general_plan_ch4.pdf) (2009), which lists Central Avenue as a transit priority street, a bicycle priority street and a truck route, in school and recreation zones and as an island arterial. The Transportation Element established objectives supporting streets that function better for all users such as:
 - Consider the transportation needs of individuals with limited mobility (4.1.5).
 - Plan, develop and implement a transportation system that enhances the livability of our residential neighborhoods (4.2.2).
 - Plan, develop and implement a transportation system that protects and enhances air and water quality, protects and enhances views and access to the water, and minimizes noise impacts on residential areas (4.2.3).
 - Enhance opportunities for pedestrian access and movement by developing, promoting, and maintaining pedestrian networks and environments (4.3.2).
 - Promote and encourage bicycling as a mode of transportation (4.3.3).
 - Assess the impacts on all transportation modes (including auto, transit, bike and pedestrian) when considering mobility and transportation improvements (4.3.5).
 - Coordinate and integrate the planning and development of transportation system facilities to meet the needs of users of all transportation modes (4.3.6).
- The City Council approved the [Pedestrian Plan <http://alamedaca.gov/public-works-key-documents>](http://alamedaca.gov/public-works-key-documents) [<http://alamedaca.gov/public-works-key-documents>](http://alamedaca.gov/public-works-key-documents) (2009) that prioritized the Central Avenue improvements as medium-priority pedestrian projects.
- The City Council approved the Bicycle Plan Update [<http://alamedaca.gov/sites/default/files/document-files/bikemasterplanupdateweb.pdf>](http://alamedaca.gov/sites/default/files/document-files/bikemasterplanupdateweb.pdf) <http://alamedaca.gov/sites/default/files/document-files/bikemasterplanupdateweb.pdf> (2010) that prioritized the Central Avenue bikeway project as a high-priority project.
- The Alameda County Transportation Commission (2012) included the project in the Countywide Bicycle and Pedestrian Plans

<http://www.alamedactc.org/app_pages/view/5275> <http://www.alamedactc.org/app_pages/view/5275> as part of the Bicycle Vision Network.

- Consistent with these abovementioned plans and policies, City staff secured a grant from Caltrans in 2013 to develop a concept proposal to improve Central Avenue between Pacific Avenue/Main Street and Sherman Street/Encinal Avenue (Figure 1). The concept focuses on school, transit, truck and jobs access, two five-legged intersections (with five streets connecting to the intersection), bikeway treatments and a reduction of travel lanes.

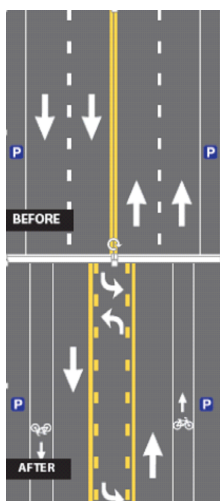
Figure 1: Central Avenue Concept Proposal Location



Outreach Effort

City Council approved the grant application in May 2013 and the consultant team contract, comprised of Placeworks and Kittelson & Associates in November 2014. The staff/consultant team then engaged in a community process to develop a safety improvement concept for the Central Avenue study area. Exhibit 1 shows a compilation and summary of community comments received during the entire planning process. The concept was updated throughout the process to respond to comments from community members and stakeholders. A summary of the outreach effort and participation is as follows:

- Community Workshops:** There were a total of approximately 200 community members who participated in one or more of the three community workshops:
 - April 14 (Overview): 73 sign-ins
 - June 4 (Preferred Options): 79 sign-ins
 - September 17 (Preferred Concept): 85 sign-ins
- Transportation Commission:** The majority of the 27 speakers on the Central Avenue agenda item in May 2015 were in favor of the preferred options. The majority of the 42 speakers on the Central Avenue agenda item in November 2015 were in favor of the recommended concept. The Transportation Commissioners unanimously approved the recommended concept. A summary of the feedback provided by the Transportation Commission is provided in a section below.
- Commission on Disability Issues:** In December, the Commissioners unanimously approved the concept. A summary of the feedback provided by the Commission on Disability Issues is provided in a section below.
- Open Forum** (<<http://alamedaca.gov/public-works/open-forum>>): The City used an on-line forum allowing community members to post and read comments, and to respond to the following surveys:
 - Goals:** Approximately 80 respondents and 306 visitors.
 - Revised Goals:** Approximately 126 respondents and 474 visitors.
 - Preferred Concepts:** Approximately 120 respondents and 489 visitors. The majority of respondents were favorable about a two-way separated bikeway in the west end, and the bike lane concept between Fourth Street and Sherman Street had mixed support.
- List Serv:** The Central Avenue concept list serv totals over 480 emails.
- Web Page:** <<http://alamedaca.gov/public-works/central-avenue-complete-street>>
- Outreach Materials:** Included press releases, flyers, project web page, email list servs, neighborhood barricades and three letters to properties within a 300 feet radius of the project.
- Advisory Committee:** Met three times and individually with key stakeholders, including representatives from the Alameda Police Department, Alameda Unified School District, Paden School, Encinal High School, Bike Walk Alameda, West Alameda Business Association, AC Transit, Association of Bay Area Governments for the SF Bay Trail and Caltrans.
- Engineer Reviews:** Obtained engineer reviews from Kittelson & Associates (project sub-consultants), Coastland (contract City Engineer), Caltrans (for Caltrans right-of-way section), Stantec (Public Works on-call consultant) and Carlson Barbee & Gibson, Inc. (for Alameda Point section).



Improves Safety

One of the main goals of this planning effort is to improve safety along the Central Avenue study area. According to the FHWA's [Separated Bike Lane Planning and Design Guide](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/) [<https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/>](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/) https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/, bikeways that are physically "separated" from motor vehicle travel provide more protection for bicyclists. According to the FHWA's [informational guide](http://alamedaca.gov/sites/default/files/document-files/fhwa_rdig.pdf) http://alamedaca.gov/sites/default/files/document-files/fhwa_rdig.pdf, streets with motor vehicle travel lane reductions from four lanes to three lanes (see image inset) have multiple safety benefits for people driving, walking and riding bikes, by achieving the following:

- Decreases vehicle travel lanes for pedestrians to cross;
- Allows for better visibility of pedestrians waiting or attempting to cross the street;
- Improves circulation for bicyclists when a bikeway is added;
- Reduces rear-end, sideswipe and left-turn collisions by at least 19 percent through the use of a center two-way left-turn lane;
- Improves speed limit compliance by three to five miles per hour, which reduces the severity of collisions; and
- Improves travel flow since through vehicles are separated from left turning vehicles.

FHWA also has issued a [case studies](http://alamedaca.gov/sites/default/files/document-files/roaddiet_cs_fhwa.pdf) http://alamedaca.gov/sites/default/files/document-files/roaddiet_cs_fhwa.pdf http://alamedaca.gov/sites/default/files/document-files/roaddiet_cs_fhwa.pdf document, which provides example corridors that are similar to the Central Avenue study area with the following project results:

- **Santa Monica - Ocean Park Blvd:** Area includes schools, neighborhood commercial district, 1.1 mile study area and 23,000 vehicles per day; Results: 65 percent reduction in collisions, and 60 percent reduction in injury collisions.
- **Seattle, Washington - Stone Way:** Area includes numerous bus routes, schools and parks, 0.9 mile study area and 13,000 vehicles per day; Results: More than 80 percent reduction in top speeders, 14 percent reduction in collisions, 33 percent reduction in injury collisions, 80 percent reduction in pedestrian collisions, 35 percent increase in bicyclists and no motorist diversions.
- **Reno, Nevada - Multiple Corridors:** Area includes 1.4 miles and 9,900 vehicles per day for California Avenue, 1.0 mile and 16,000 vehicles per day for Wells Avenue; Results: Reduction in collisions between 31 percent to 46 percent.

The Central Avenue concept is expected to improve safety, have minimal motor vehicle delays and operate similar to the mid-section of Broadway, which is a truck and bus route and has bike lanes. Local examples of motor vehicle travel lane reduction projects include the Fernside Blvd. and the Shoreline bikeway projects. The Fernside Blvd. project is more similar to the Central Avenue concept in that the lane reductions changed from four to three, which is also recommended in the Central Avenue concept. The Shore Line Drive project reduced motor vehicle lanes from four to two in about one-half of the corridor and from four to three in the other half. The before and after project results are as follows:

- **Fernside Blvd. (Otis Drive to Lincoln Middle School):** In 2009, the City reduced the motor vehicle travel lanes from four to three lanes for one-half mile between Otis Drive and Lincoln Middle School to allow space for a two-way bikeway on the school side of the street. **Results:** Motorists are now traveling at the speed limit, and the collision rate is lower. Where the two-way bikeway intersects with a driveway and Washington Court, only one isolated bicyclist-involved motorist collision has occurred in the bikeway over this six-year period. There is a significant increase in bicycling (from 18 to 226 bicyclists in the morning peak hour) as well as an increase of southbound motorists by about 1,000 motorists per day even though the motor vehicle travel lanes were reduced from four to three lanes.

Shore Line Drive/Westline Drive: Shore Line Drive and Westline Drive are significantly narrower streets than Central Avenue at 48 feet width compared to Central Avenue at 56 feet for much of the study area. The Shoreline bikeway project reduced motor vehicle travel lanes from four to three or two lanes depending on the street section. The Shoreline bikeway is adjacent to the beach so has no streets that intersect it. **Results:** Preliminary data was collected in October 2015, approximately seven months after construction. The preliminary data shows a decrease in collisions, motorist speeds and motorist volumes on Shore Line Drive and Westline Drive, and an increase in bicyclists. Public Works staff is conducting a comprehensive one-year post construction analysis and will present the results to the Transportation Commission in the next several months.

DISCUSSION

The purpose of this concept proposal effort is to make Central Avenue safer and more convenient and comfortable for all street users - people who walk, bike, drive and take transit in a neighborhood heavily concentrated with schools.

Existing Conditions

Exhibit 2 provides a memo of existing conditions, and was uploaded to the project web page on September 4, 2015. A summary of the street segments, adjacent land uses and reported injuries from collisions is shown below.

Streets

Sidewalks and on-street parking exist on both sides of the street for most of the study area. No bikeways exist except for a path between Boat Ramp Road and Main Street, which totals 0.20 miles or almost 12 percent of the study area. The San Francisco Bay Trail totals 0.75 miles and is located between Main Street and east of Fifth Street by Crown Drive where a trailhead exists. Boat Ramp Road also is designated as part of the SF Bay Trail, and is 0.32 miles long. In the west end, there are two motor vehicle travel lanes with 9,300 vehicles per day and speeds ranging between 30 and 31 miles per hour. East of Third Street, four motor vehicle travel lanes exist totaling 7,600 vehicles per day and speeds ranging between 32 and 33 miles per

hour. AC Transit Lines 20, W, 631 and 661 run along various segments of Central Avenue. Central Avenue is designated as State Highway 61 between Webster Street and Sherman Street, and is a designated truck route with truck volumes representing one to four percent of all motorist volumes.

Schools and Other Land Uses

There are a total of 12 schools along the study area with a combined enrollment of over 5,000 students. Nine of these schools have a citywide catchment area meaning that most of these schools have students enrolled from all over Alameda, which has caused an increase in congestion since these new charter and magnet schools have formed. There also is an increase in demand for the ferry service, which has a ferry terminal on Main Street in the west end and a potential future ferry terminal in the Sea Plane Lagoon at the terminus of Ralph Appezatto Memorial Parkway. Site A in Alameda Point is in the process of being developed with construction expected in 2017.

Collisions

This study area has a disproportionate number of injuries from collisions compared to other streets in the city. This is one of the main reasons that the staff/consulting team is recommending safety improvements such as the reduction of a motor vehicle travel lane. According to the Statewide Integrated Traffic Records System, there were 89 reported injuries from collisions along the Central Avenue study area between 2003 and 2014. The study area represents only 1.4 percent of the street mileage citywide yet 4.1 percent of the injuries that occurred citywide during this ten year period. Walking and bicycling injuries represent 20 percent and 25 percent of injuries along the study area, respectively, which is a disproportionate amount compared to citywide proportions at 16 percent for both walking and bicycling injuries over the past ten years. This data most likely represents only more severe collisions, since people involved in minor collisions tend not to report them to law enforcement. The number of collisions at a given location should be looked at in the context of the total number of bicyclists, motorists or pedestrians that typically travel through that location.

Table 1 shows that the injuries from collisions were dispersed throughout the study area with the two highest injury intersections being Webster Street and Eighth Street. Sixth Street, Eighth Street and Webster Street had the most pedestrian-involved injuries over the past ten years (Figure 2). Third Street, adjacent to the heavily trafficked Encinal High School, had the most bicyclist-involved injuries with a total of seven in the past ten years (Figure 3). This makes the case for a separated bikeway, a westbound bike lane and a traffic signal adjacent to Encinal High School. For motorist injuries from collisions, the intersections with the highest motorist-involved only injuries were Webster Street, Eighth Street, Ninth Street and St. Charles Street (Figure 4).

Table 1: Central Avenue Study Area Injuries from Collisions (2004 to 2013)

	Walking	Bicyclist	Motorist	Total	%
3rd St	0	7	1	8	9%
5th St	2	2	3	7	8%
6th St	4	0	0	4	4%
8th St	4	3	7	14	16%
9th St	0	1	7	8	9%
Ballena Bl	1	1	0	2	2%
Bay St	1	0	3	4	4%
Burbank	0	0	1	1	1%
Caroline	0	0	1	1	1%
Hoover	1	2	0	3	3%
Lincoln	0	0	1	1	1%
McKay	0	0	2	2	2%
Main	0	0	2	2	2%
Page	0	1	2	3	3%
Sherman	1	3	5	9	10%
St. Charles	0	0	6	6	7%
Weber	0	1	1	2	2%
Webster	4	1	7	12	13%
Total	18	22	49	89	100%
	20%	25%	55%		

Figure 2: Number of Pedestrian Injuries by Intersection (2004-2013)

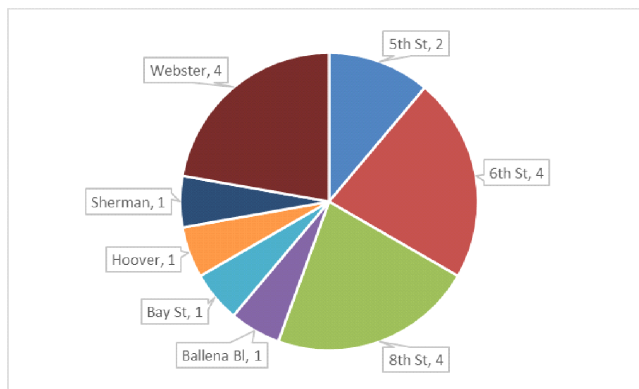


Figure 3: Number of Bicyclist Injuries by Intersection (2004-2013)

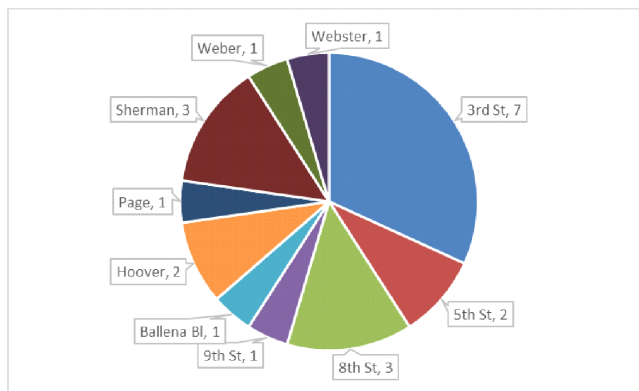
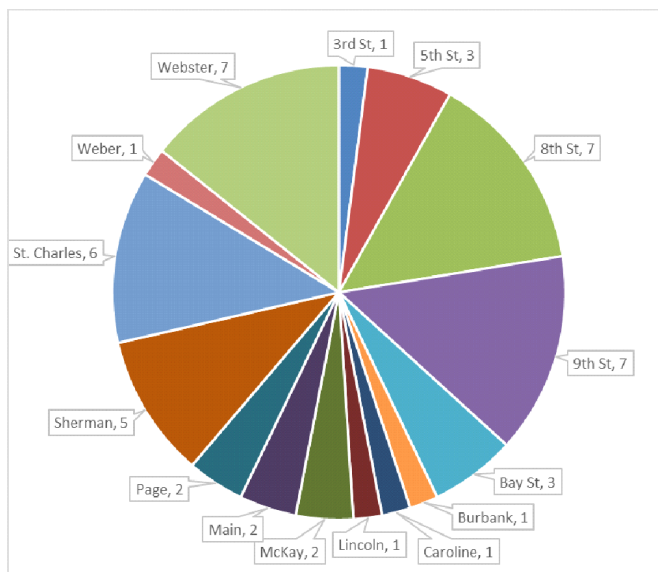


Figure 4: Number of Motorist Only Injuries by Intersection (2004-2013)



Goals

During the outreach for the concept proposal, participants ranked the below project goals in priority order. The results are not statistically significant in that staff received fewer than 150 responses. Nevertheless, staff used the results as a general gauge to help direct the concept recommendations.

1. Encourage bicycling and walking.
2. Improve safety.
3. Improve the streetscape.
4. Traffic calming.
5. Encourage transit use.
6. Revitalize West Alameda.
7. Improve public access to the San Francisco Bay.
8. Minimize disruptions to motorists.
9. Improve truck access.

Safety Improvement Recommendation Components

The staff/consultant team used community input, existing City policies and FHWA and other best practice documents to determine the recommended safety improvements for the Central Avenue study area, as shown below. Exhibit 3 provides a more in depth summary of the recommended safety improvements. Exhibit 4 shows the recommended concept drawings.

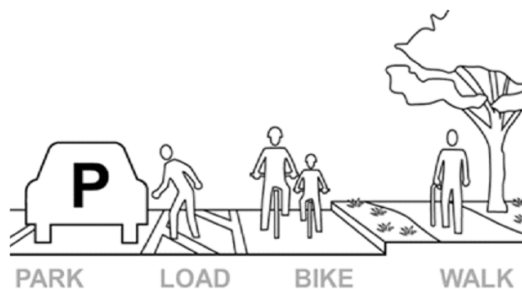
- a) **East End Section: Bike Lanes/Center Turn Lane:** The staff/consultant team recommends a motor vehicle travel lane reduction from four lanes to three lanes with bike lanes and a center lane between Sherman Street/Encinal Avenue and Paden School, which is west of Fifth Street (Figure 5). The concept would minimize motor vehicle travel delay by sharing motor travel lanes between motorists and bicyclists by Webster Street and Eighth Street and by installing a traffic signal at Fifth Street in the long term.

Figure 5: Class II Bike Lanes between Sherman Street and Paden School



- b) **West End Section: Bike Lane/Separated Bikeway/Center Turn Lane:** The staff/consulting team recommends extending the westbound bike lane, which is on the north side of the street, through this west end section and also installing a two-way separated bikeway on the south side of the street starting at Paden School and continuing it in front of Encinal High School until Main Street on the west side of the street by Alameda Point (Figure 6). This would provide a protected bikeway for students traveling by bicycle to/from the two main schools in the study area. For bicyclists headed westbound, they could travel in the bike lane until Paden School where they could choose to continue along the bike lane or to enter into the two-way separated bikeway on the south side of the street using a recommended mid-block crossing in front of Paden School. Bicyclists traveling eastbound would start in the two-way separated bikeway on the west side of Main Street, and then would continue in a Class II bike lane starting at Paden School. To minimize motor vehicle delay and to improve safety, the staff/consulting team recommends installing a traffic signal at Third Street/Taylor Avenue. To minimize conflicts between bicyclists using the two-way bikeway and motorists, the concept recommends narrowing the four driveways at Encinal High School and having a bike signal phase (timed for bicycles only) at the existing Fourth Street signal and at the proposed Third Street/Taylor Avenue signal. A two-way separated bikeway and walkway also would be installed on Boat Ramp Road.

Figure 6: Two-way Separated Bikeway and Westbound Bike Lane



- c) **Accessible On-street Parking Spaces:** To better accommodate individuals with disabilities, staff recommends providing **six** accessible on-street parking spaces at regular intervals along the corridor per state and federal guidelines for placement. Potential locations for accessible on-street parking include near Encinal High School, Paden School, Webster Street (two spaces), Washington Park and Weber Street.
- d) **Sidewalk Improvements:** The recommendation would ensure that all curb ramps are accessible and that a continuous path of travel exists along the sidewalks.
- e) **Traffic Signals:** Traffic signals are recommended to be installed at the following **two intersections:** Third Street/Taylor Avenue and Fifth Street in the long term to minimize motor vehicle delay and to improve safety.
- f) **Rectangular Rapid Fire Beacons:** These beacons flash using a strobe light when activated either by a push button or pad by pedestrians and bicyclists, and are recommended to be installed at the following **five locations:** Lincoln Avenue in front of Encinal High School, the new mid-block crossing in front of Paden School, the new marked crosswalk at the SF Bay Trail entrance east of Fifth Street, Page Street near Washington Park and Caroline Street.
- g) **Marked Crosswalks:** A total of **nine** marked crosswalks are recommended at the following locations: east side of Third Street intersection, across Taylor Avenue, mid-block in front of Paden School, east side of the Fifth Street intersection, at the SF Bay Trail entrance east of Fifth Street, St. Charles intersection (three additional ones), and the west side of the Bay Street intersection. A marked crosswalk would be eliminated on the west side of the Caroline Street intersection to consolidate pedestrian movements to the east side where the beacons are being recommended.
- h) **Curb Extensions:** Curb extensions make the curb larger to reduce the crossing distance and make pedestrians more visible to motorists. These are recommended at the following **14 intersections:** east side of Lincoln Avenue (two), Third Street/Taylor Avenue (four), Fourth Street (two), the mid-block crossing in front of Paden School (two), Fifth Street (one), the mid-block crossing in front of the San Francisco Bay Trail entrance (two), Sixth Street (two), Page Street (two), Eighth Street (one), Burbank Street (one), Ninth Street (three), Caroline Street (two), St. Charles Street (two) and Sherman Street/Encinal Avenue (three).
- i) **Transit Improvements:** Enhanced bus stops are recommended including the construction of a southbound bus island and a northbound bus loading area on Central Avenue at Main Street/Pacific Avenue. The bus loading area in front of Encinal High School and at Eighth Street in the westbound direction would be improved.
- j) **Parking Space Changes:** The study area would experience a **net gain of 40** on-street parking spaces. A summary of the recommendation is as follows:
- No parking spaces near the **Webster Street** business district would be removed.
 - An estimated 14 parking spaces would be eliminated to "daylight" the following intersections for **improved visibility:** in front of Paden School (two parking spaces), east side of Fifth Street intersection (two parking spaces), mid-block crossing at the SF Bay Trail entrance (two parking spaces), southeast of Eighth Street (one parking space), east side of Caroline Street (two parking spaces), southwest and northeast corners of St. Charles Street (two parking spaces) and east side of Sherman Street (three parking spaces).
 - In the **west end**, a net gain of 49 on-street parking spaces would occur. A total of 56 on-street parking spaces would be added including six

parking spaces on the west side of Central Avenue south of Main Street, two on the southeast corner of this intersection and 48 parking spaces on Boat Ramp Road between Central Avenue and West Hornet Road. At Encinal High School, a total of seven on-street parking spaces would be lost to provide improved visibility at the four driveways.

- At the **Fourth Street intersection**, eight parking spaces would be reallocated from the south side of the street to the north side of the street east of this intersection. On the west side, seven parking spaces would be added on the north side of the street and two would be removed on either side of the south side driveway.
- k) **Streetscape Improvements:** The concept would maintain and improve tree canopies, would install a gateway feature at Webster Street and storm water treatment with rain garden curb extensions, where appropriate.
- l) **Utility Improvements:** Staff is coordinating sewer and storm water utility improvements to occur before potential street improvements. Underground overhead utility lines could be considered and thereby eliminate some of the utility poles on the street.
- m) **Street Reconfiguration - West End:** The concept recommends moving the street further west into Alameda Point and away from the residents along Central Avenue, which would provide more bikeway and on-street parking options and would remove the intersection offset at Main Street/Pacific Avenue.
- n) **Pavement Resurfacing:** Staff will prioritize pavement resurfacing to occur after sidewalk and utility improvements, and will consider drainage improvements with the resurfacing.
- o) **San Francisco Bay Trail Gap Closure:** The staff/consulting team considered extending the SF Bay Trail east behind Encinal High School. Due to limited space behind Encinal High School, staff will not be pursuing this Bay Trail extension because it is considered too costly and disruptive to Encinal High School. Instead, the staff/consulting team recommends improving Boat Ramp Road as the continued way for Bay Trail access. The recommendation is for a two-way separated bikeway, on-street parking and sidewalks on Boat Ramp Road.
- p) **Truck Access:** The concept accommodates trucks with the design of curb radii to work for delivery trucks that regularly travel on the side streets. Staff will continue to work with adjacent property owners on adding potential loading zones, if needed. The travel lane widths of 10 to 11 feet are consistent with the National Association of City Transportation Officials (NACTO) for bus and truck routes because wider travel lane widths are associated with higher vehicle speeds.

Impacts to Motor Vehicle Travel

The motor vehicle travel lane reduction recommendation would reconfigure the street similar to the mid-section of Broadway, Atlantic Avenue and Fernside Blvd. (Table 2). The Central Avenue study area is well under the 20,000 vehicle per day threshold that FHWA uses as an upper limit for feasible motor vehicle travel lane reduction projects even when considering build-out of the City and Alameda Point at a maximum of 16,000 vehicles per day.

Table 2: Comparison of Traffic Volumes

Street Name	Vehicles/Day
Atlantic Avenue (Buena Vista to Constitution Way)	10,709
Broadway (Santa Clara Avenue to Otis Drive)	12,332
Fernside Blvd. (Tilden Way to High Street)	7,611
Fernside Blvd. (at Encinal Avenue)	15,296
Fernside Blvd. (Otis Drive to Washington Street)	17,131
Central Avenue (Main Street to Webster Street)	8,400
Central Avenue (Webster Street to Sherman Street)	7,600
Central Avenue: Future (average)	12,000
Central Avenue: Future (maximum)	16,000

This recommendation would have minimal impacts on motor vehicle travel time, and preserves the heaviest motor vehicle movements, which are morning westbound towards the tubes and afternoon eastbound return trips to Alameda. During off-peak times, no additional travel time is expected. During peak congestion, the end-to-end travel time for the study area is expected to increase up to 1.2 minutes today and up to 1.6 minutes in 2035 assuming that all the new citywide development including Alameda Point is built as planned, which is significantly less delay than the original "Three Lane" concept (Tables 3 and 4). The recommendation shown in the right-most column provides more motor vehicle lanes at Eighth Street and Webster Street than the "Three Lane" option so as to minimize motor vehicle travel delay, which requires bicyclists and motorists to share lanes at these intersections.

Note that this future build-out analysis is considered conservative because typically not all development that is planned gets built. Furthermore, the travel demand model assumes the current mode split without reductions to motor vehicle travel after implementation of improved bikeways and transportation demand management strategies by the developments.

Table 3: Existing Year Peak Hour End-to-End Travel Time Comparison

Time Period / Direction	Existing Lane Configuration	Three Lanes	Recommendation
Weekday AM Peak (7 to 9 a.m.)			
Eastbound	6.9 minutes	7.6 minutes	7.9 minutes
Westbound	6.8 minutes	15.2 minutes	8.0 minutes
Weekday PM Peak (4 to 6 p.m.)			
Eastbound	6.5 minutes	10.8 minutes	7.7 minutes
Westbound	7.0 minutes	8.6 minutes	8.2 minutes

Table 4: Year 2035 Peak Hour End-to-End Travel Time Comparison

Time Period / Direction	Existing Lane Configuration	Three Lanes	Recommendation
Weekday AM Peak (7 to 9 a.m.)			
Eastbound	8.4 minutes	9.4 minutes	8.7 minutes
Westbound	8.9 minutes	22.4 minutes	10.5 minutes
Weekday PM Peak (4 to 6 p.m.)			
Eastbound	9.1 minutes	20.0 minutes	9.7 minutes
Westbound	10.7 minutes	14.5 minutes	10.7 minutes

Alternatives Considered

The staff/consultant team considered the following concept ideas:

Do nothing different - leave as is - status quo: Does not improve safety per FHWA guidance in a neighborhood heavily concentrated with schools, and is inconsistent with the goals in the Transportation Element and the projects in the existing planning documents.

Santa Clara Avenue: Would not provide a safe cross island bikeway. Central Avenue already is a designated bikeway from the east end to the study area at Sherman Street/Encinal Avenue. Santa Clara Avenue serves as the island's main bus trunk line with Transbay Line O and local Line 51A running every few minutes during the peak periods. It is advantageous to move bicyclists from Santa Clara Avenue to Central Avenue to reduce bus/bicyclist conflicts. Santa Clara Avenue narrows in the west end, and is unable to accommodate bike lanes or a designated space for bicyclists.

Sharrows: These are shared lane markings in the street to provide a visual cue to motorists about the presence of bicyclists. The advantage is that the street configuration remains the same without any impacts to motor vehicle lanes. The disadvantage is that the safety benefits from a center turn lane are not captured, and bicyclists and motorists continue to share the travel space making conflicts more likely. Sharrows only are recommended on the approaches of Webster Street and Eighth Street to minimize motor vehicle delay and to maintain on-street parking.

Buffered Bike Lanes/Two-way Separated Bikeways/One-way Separated Bikeways for the Entire Length of the Corridor: The advantage is that these bikeways provide more protection for bicyclists, and are considered best practice bikeways in that they are physically separated from motor vehicle travel. The disadvantage is that for the majority of the study area either two motor vehicle travel lanes or one motor vehicle travel lane along with on-street parking on one side of the street would need to be removed. Separated bikeways, which are between the curb and on-street parking, would require on-street parking removal for 20 feet on either side of driveways according to the FHWA's [Separated Bike Lane Planning and Design Guide](https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/) https://www.fhwa.dot.gov/environment/bicycle_pedestrian/publications/separated_bikelane_pdg/. Separated bikeways are not recommended east of Paden School because of the frequency of driveways and intersections and thus frequent parking removal, and would require either a two lane street, which would increase delay, or the elimination of parking on one side of the street.

Education/Enforcement: Some community members stated that no changes to the street infrastructure are needed and that the City should focus on educating community members on safe driving and bicycling and on increasing enforcement along the Central Avenue study area. The City already implements a number of education and enforcement programs, including the Safe Routes to School program in Alameda, which most schools participate in, and the Alameda Police Department already performs enforcement in this area. While the City currently provides education and enforcement efforts and is always trying to find ways to expand them, City staff recommends that more needs be done to improve safety along this important corridor.

Responses to Commission Input

Transportation Commission

Washington Park Area Section

Comments: The staff/consulting team received a request by Transportation Commissioner Chris Miley to consider:

- 1) Installing an eastbound bike lane in Washington Park; and
- 2) Extending the westbound merge lane west of Eighth Street.

Response on #1 - Bike Lane in Washington Park: An eastbound bike lane in Washington Park compared to one in the street would remove the conflict between bicyclists and right-turning motorists that would cross the bike lane to turn southbound onto Eighth Street. Nevertheless, a separate bike-only signal phase would be required for eastbound cyclists to move from a park side bike lane into the on-street bike lane east of Eighth Street to address potential cyclist conflicts with both pedestrians and turning motorists. This would negatively impact motor vehicle operations at the Central Avenue / Eighth Street intersection. The additional motorist delay associated with the bike-only signal phase would offset the reduced motorist delay associated with maintaining two motor vehicle approach lanes in each direction. For this reason, an eastbound bike lane in Washington Park is not recommended. Furthermore, this park side bike lane would reduce park space, and would cause conflicts with pedestrians at the adjacent sidewalk. **City Council Action Requested:** None requested.

Response on #2 - Extend Westbound Merge Lane: The current length of the westbound merge lane west of Eighth Street is based on guidelines developed through a national research project led by Kittelson Associates, Inc., and represents the minimum merge distance at approximately 150 feet. An extension of the westbound merge lane west of Eighth Street from 150 feet to 200 feet would remove two on-street parking spaces at Washington Park. This extended merge zone further west for 50 feet would place the merge past the westbound bus stop. The removal of these two parking spaces by the park would impact the drop-off and pick up of youth participants at the Washington Park Recreation Center, managed by Alameda Recreation and Parks Department, as well as reduce the area available for school busses that pick up participants during the summer. This would affect pre-school, summer camps and after school programs due to the already limited street parking. **City Council Action Requested:** Extend the westbound merge lane west of Eighth Street from 150 feet to 200 feet to place the merge past the westbound bus stop and add a green curb with 24 minute parking limit between 8:00 a.m. and 6:00 p.m. for two on-street parking spaces at Washington Park.

Commercial Vehicle Loading Zones

Comments: In response to a discussion at the Transportation Commission on the potential for motorists to pass commercial vehicles that are double parked in the single travel lane for deliveries, the concept could provide commercial vehicle loading zones in the west end of the study area where commercial deliveries are more frequent and where off-street parking is lacking. Instead of double parking, drivers would use these more predictable loading zone parking spaces for deliveries. These loading zones also would help with moving van and Paratransit access.

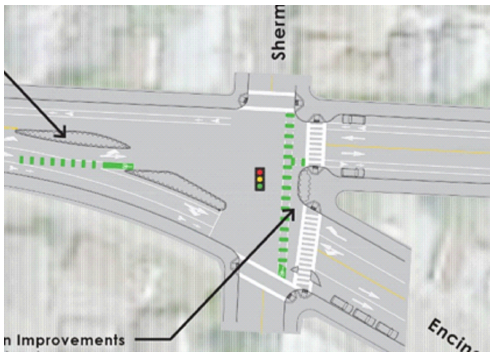
Response: Up to four yellow curb loading zones totaling 40 feet in length could be installed between Third Street and Sixth Street, which could be in effect between the hours of 9 a.m. and 6 p.m. These four loading zones would restrict parking to loading/unloading at eight on-street parking spaces between 9 a.m. and 6 p.m., and would convert to regular on-street parking during peak parking demand times in the evenings. **City Council Action Requested:** Install up to four 40-foot long loading zones in the study area between Third Street and Sixth Street to better accommodate deliveries, which would restrict up to eight on-street parking spaces between 9 a.m. and 6 p.m.

Commission on Disability Issues

Accessible On-street Parking

Comment: The Commission on Disability Issues' members unanimously approved the Central Avenue concept without any requests for further consideration. Nevertheless, two community members did express concerns about the availability of accessible on-street parking.

Response: Currently, no accessible on-street parking spaces exist in the Central Avenue study area. The concept would provide six new accessible on-street parking spaces at regular intervals along the corridor, which complies with the draft United States Access Board guidelines for ADA facilities in the public right-of-way (2011). If additional accessible on-street parking is requested at locations with seven foot wide parking, the City could provide it by using part of the landscape strip to accommodate the eight feet width that is needed. **City Council Action Requested:** None requested.



Two-Stage Turn Queue Boxes

Comment: City staff received a request to improve the safety of bicyclists making left turns along the Central Avenue study area corridor. Two-stage turn queue boxes allow bicyclists to turn left in two steps rather than using a left-turn motor vehicle lane. The Central Avenue concept shows a two-stage turn queue box at the Sherman Street/Encinal Avenue intersection for eastbound bicyclists traveling northbound to Sherman Street (see inset). This two-stage turn queue box helps reduce turning conflicts between motorists and bicyclists, and also helps orient bicyclists properly for safe crossings. While two-stage turn queue boxes are designed to increase bicyclist comfort, this best practice also increases bicyclist delay. Thus, more experienced bicyclists still may prefer to turn with motorists. Furthermore, when insufficient space exists for a queue box, bicyclists may queue in a bikeway, crosswalk or sidewalk.

Response: The consistent use of two-stage turn queue boxes throughout the Central Avenue study area would help encourage this safer way for bicyclists to turn left at intersections. Figure 7 shows a NACTO example of a two-stage turn queue box. NACTO guidelines state that if insufficient space exists for a queue box, designs should consider adjusting the adjacent crosswalk or provide a queue box behind the crosswalk.

City Council Action Requested: Use two-stage turn queue boxes throughout the Central Avenue study area. If insufficient space exists for a two-stage turn queue box, consider adjusting the adjacent crosswalk or providing a queue box behind the crosswalk.

Figure 7: Two-Stage Turn Queue Boxes



Summary of Requested City Council Action

City staff requests City Council approval of the recommended concept and three additional items based on input received to date as summarized below:

1. **Recommended Concept:** Approve the concept as shown in Exhibit 4.
2. **Extend Merge Lane:** Extend the westbound merge lane west of Eighth Street from 150 feet to 200 feet to place the merge past the westbound bus stop, which would remove two on-street parking spaces at Washington Park.
3. **Loading Zones:** Install up to four 40-foot long loading zones in the study area between Third Street and Sixth Street to better accommodate deliveries, which would restrict up to eight on-street parking spaces between 9 a.m. and 6 p.m.
4. **Two-stage Turn Queue Boxes:** Use two-stage turn queue boxes throughout the Central Avenue study area. If insufficient space exists for a two-stage turn queue box, consider adjusting the adjacent crosswalk or providing a queue box behind the crosswalk.

FINANCIAL IMPACT

There is no impact to the General Fund. This corridor concept proposal was funded by Caltrans through a Community-based Transportation Planning grant totaling \$232,000. The local match was paid for by the Alameda County Transportation Commission through Measure B - Alameda County's transportation sales tax - totaling \$25,800.

Exhibit 5 shows order-of-magnitude cost estimates for concept design, construction and contingency, which totals almost \$9 million. The costs are broken out by section as follows:

1.	Alameda Point (Pacific Avenue/Main Street to Boat Ramp Road):	\$2.4 million
2.	Encinal High School (Lincoln Ave. to 210' east of Third St./Taylor Ave.):	\$1.0 million
3.	Paden School (210' east of Third St./Taylor Ave. to 200' east of Fifth St):	\$900,000
4.	Bay Trail Connection to McKay Avenue:	\$530,000
5.	Caltrans Right-of-Way (Webster St to Washington Park):	\$1.0 million
6.	Caltrans Right-of-Way (Eighth Street to Sherman Street/Encinal Ave.):	\$1.3 million
7.	Contingency, Mobilization, Traffic Control, Plans and Specifications:	\$1.8 million
	Total:	\$9 million

Out of the \$7 million construction costs, the largest line items are as follows:

- New asphalt/pavement resurfacing: \$2.4 million
- Boat Ramp Road (widened street): \$781,000
- Curb extensions: \$713,000
- Traffic signals (new and modified): \$605,000
- Street lights: \$570,000
- Trees/landscaping/biofiltration: \$411,000

The cost to design and construct this project could be secured from a variety of funding sources, and the project could be phased as the monies are obtained. Possible funding sources include Caltrans for right-of-way segments, Alameda Point developers for west-end sections adjacent to the Base, and internal sources potentially within Public Works and Alameda Municipal Power for street and lighting improvements.

The project is expected to be competitive with federal, state, regional and countywide funding sources such as the state's Active Transportation Program, the federal Highway Safety Improvement Program and Alameda County's Measure B/BB discretionary grants. Should the project be approved, staff would prioritize pursuing these outside funding sources as a primary means of funding the project.

MUNICIPAL CODE/POLICY DOCUMENT CROSS REFERENCE

This action does not affect the Alameda Municipal Code. The Transportation Element of the City's General Plan lists Central Avenue as a transit priority street, a bicycle priority street and a truck route, in school and recreation zones and as an island arterial. The Central Avenue concept directly supports several Transportation Element objectives as shown in the above background section.

ENVIRONMENTAL REVIEW

In accordance with the California Environmental Quality Act (CEQA), this project is Categorically Exempt under the CEQA Guidelines Section 15301(c) - Existing Facilities (Minor alterations to existing facilities including bicycle facilities) and Section 15304 (h) - Minor Alterations to Land and the creation of bicycle lanes on existing public rights of way. On a separate and independent basis, the project is also statutorily exempt from CEQA pursuant to Public Resources Code Section 21080.20.5 (restriping of streets and highways for bike lanes in an urbanized area that is consistent with a bike plan). The City prepared an assessment of the project-related traffic and safety impacts, and recommended a concept that alleviates potential vehicular traffic impacts and bicycle and pedestrian safety impacts. No further environmental review is required because the project fits within the above categorical and statutory exemptions that are specifically designed for these types of bicycle infrastructure projects in urban areas.

RECOMMENDATION

Recommend approval of the Central Avenue Complete Streets concept including safety and other street improvements.

Respectfully submitted,
Jennifer Ott, Chief Operating Officer - Alameda Point

By
Gail Payne, Transportation Coordinator

Financial Impact section reviewed,
Elena Adair, Finance Director

Exhibits

1. Staff Responses and Compilation of Community Comments
2. Existing Conditions Memo (September 4, 2015)
3. Recommended Concept Summary Memo
4. Recommended Concept Drawings
5. Order-of-Magnitude Cost Estimates