

APPENDIX A

March 16, 2011 Notice of Preparation, Public Scoping, and Comments

June 17, 2011 Notice of Preparation and Comments

CITY OF OAKLAND



250 FRANK H. OGAWA PLAZA, OAKLAND, CALIFORNIA 94612 – 2032

Community and Economic Development Agency
Planning & Zoning Services Division

(510) 238-3941
FAX (510) 238-6538
TDD (510) 238-3254

March 16, 2011

NOTICE OF PREPARATION (NOP) OF A DRAFT ENVIRONMENTAL IMPACT REPORT (EIR) FOR PROPOSED AMENDMENTS TO THE BROADWAY/MACARTHUR/SAN PABLO REDEVELOPMENT PLAN

The City of Oakland Community and Economic Development Agency, Planning and Zoning Division, is preparing a Draft Environmental Impact Report (EIR) for Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan ("Project" or "Proposed Amendments"), and is requesting comments on the scope and contents of the EIR. The EIR will address the potential environmental effects for each of the environmental topics outlined in the California Environmental Quality Act (CEQA). The City has not prepared an Initial Study and all CEQA topics will be addressed in the EIR.

The City of Oakland is the Lead Agency for the Project and is the public agency with the greatest responsibility for approving the Project or carrying it out. This notice is being sent to Responsible Agencies and other interested parties. Responsible Agencies are those public agencies, besides the City of Oakland, that also have a role in approving or carrying out the Project. When the Draft EIR is published, it will be sent to all Responsible Agencies and to others who respond to this NOP or who otherwise indicate that they would like to receive a copy.

Responses to this NOP and any questions or comments should be directed in writing to: Ulla-Britt Jonsson, Planner II, City of Oakland, Strategic Planning Division, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612; (510) 238-3322 (phone); (510) 238-4730 (fax); or e-mailed to ujonsson@oaklandnet.com. Comments on the NOP must be received at the above mailing or e-mail address by 5:00 p.m. Monday April 15, 2011. Please reference environmental review case number ER11-001 in all correspondence. Comments should focus on discussing possible impacts on the physical environment, ways in which potential adverse effects might be minimized, and alternatives to the Project in light of the EIR's purpose to provide useful and accurate information about such factors. In addition, comments may be provided at the EIR Scoping Meeting to be held before the City Planning Commission as indicated below.

**CITY PLANNING COMMISSION
SCOPING MEETING
April 6, 2011, 6:00 p.m.
Oakland City Hall
Sergeant Mark Dunakin Hearing Room (Hearing Room One)
One Frank H. Ogawa Plaza
Oakland, CA 94612**

PROJECT TITLE: Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan ("Project" or "Proposed Amendments")

CASE NO.: ER11-001

PROJECT SPONSOR: City of Oakland and Redevelopment Agency of the City of Oakland

EXISTING CONDITIONS: The Broadway/MacArthur/San Pablo Redevelopment Plan (Redevelopment Plan) was adopted by the City of Oakland on July 25, 2000 and subsequently amended on March 6, 2007. The existing Redevelopment Project Area (Project Area) consists of two non-contiguous sub areas: Broadway/MacArthur and San Pablo. Together, the two sub areas include approximately 676 acres. As shown in the attached map, the Broadway/MacArthur sub area incorporates roughly the area between Highway 24 and Broadway from 27th Street to 42nd Street. The San Pablo sub area incorporates a portion of the Golden Gate neighborhood between Vallejo Street and San Pablo Avenue from 53rd to 67th streets.

The Redevelopment Plan provides the Oakland Redevelopment Agency (Agency) with the powers, duties and obligations to implement and further its plan for the redevelopment, rehabilitation and revitalization of the Project Area. The Redevelopment Plan contains specific measures which provide financing authority to the Agency through activities such as collecting tax increment funds and issuing bonds. The Redevelopment Plan also provides the authority for use of eminent domain in the Project Area through 2012.

In 2009, the City received a community petition request to have the boundaries of the Broadway/MacArthur/San Pablo Redevelopment Project Area expanded to include approximately 1,300 parcels that make up the Lowell/Gaskill neighborhood (Amendment Area). These parcels are generally built out with urban uses including an established residential neighborhood with older industrial structures used for warehousing and manufacturing. Light industrial activities are focused along the arterial corridors such as Stanford Avenue and Lowell Street. Many of the existing industrial structures are in disrepair and potentially abandoned. On July 20, 2010, the City Council adopted the Lowell/Gaskill neighborhoods area as a Redevelopment Survey Area which is being studied for the purpose of considering amending the Broadway/MacArthur/San Pablo Redevelopment Plan to include this area.

PROJECT LOCATION: The Amendment Area covers approximately 150 acres in North Oakland, generally between 67th Street to the north, 53rd Street to the south, San Pablo Avenue to the west, and Adeline and Market streets to the east. The north and south borders of the Amendment Area are defined by the city borders of Emeryville and Berkeley. (See attached map)

PROJECT DESCRIPTION: The proposed CEQA Project is the implementation of the three Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan. The first amendment would expand the Project Area boundaries to include the 1,300 parcels and 150 acres that is the Lowell/Gaskill neighborhood (Amendment Area) (see attached map). Redevelopment activities envisioned for the Amendment Area would focus in the area along Lowell Street and Stanford Avenue and include streetscape improvements, right-of-way adjustments, building renovations, and new housing, live/work, industrial incubator, and/or commercial development consistent with the existing HBX Housing and Business Mix Zone and General Plan land use designation. Other redevelopment programs within the Amendment Area would be consistent with those currently being implemented through the existing Redevelopment Plan.

The second amendment would renew eminent domain authority for the Redevelopment Plan to extend beyond 2012. However, the Agency does not anticipate use of eminent domain to facilitate the redevelopment activities described above.

The third amendment would increase the bonding capacity cap to finance proposed redevelopment activities in the Amendment Area without drawing from the existing bonding capacity which is required to implement the existing Redevelopment Plan. The bonding capacity cap would be increased in an amount proportional to the redevelopment needs of the Amendment Area.

The EIR will analyze the effects of changes in the environment resulting from the Proposed Amendments and implementation of redevelopment project activities resulting from those amendments.

PROBABLE ENVIRONMENTAL EFFECTS: The City is seeking feedback on the potential impacts of the Proposed Amendments that should be studied in the EIR. It is anticipated that the Proposed Amendments may have environmental impacts on the following, all of which will be addressed in the EIR: aesthetics, shadow and wind; air quality and greenhouse gases; biological resources; cultural and historic resources; geology, soils and seismicity; hazardous materials; hydrology, water quality and water supply; land use; noise; population and housing; public services and utilities; and traffic, transportation and circulation, among other topics.

The Draft EIR will also examine a reasonable range of alternatives to the Proposed Amendments, including the CEQA-mandated No Project Alternative, and other alternatives that may be capable of reducing or avoiding potential environmental effects.



Eric Angstadt,
Deputy Director, Community & Economic Development Agency
and Oakland City Planning Director

File Number: ER11-001

Date of Notice: March 16, 2011

Attachment: Broadway/MacArthur/San Pablo Redevelopment Plan Project Area Map

Broadway/MacArthur/San Pablo Redevelopment Plan Amendments
Scoping Session
April 6, 2011

City Planning Commission Agenda Item No. 6 (Lowell/Gaskill)

Agenda: <http://www2.oaklandnet.com/oakca/groups/ceda/documents/agenda/oak026959.pdf>

(On DVD at minute 2:51)

(Overview by Ulla Britt Jonsson)

Public Comment

James (Jim) Meara: Expressed appreciation for receiving notice of the hearing at his house. Expressed strong support for project. Beautifully redeveloped area (MacArthur Transit Village is a piece of that) and in the middle of it you've got an area where people dump trash, and speed and shoot guns. It would be lovely to know that the city is supportive of this last little piece of ongoing decades of work to improve this area of the East Bay.

Sanjiv Handa, East Bay News Service: Issue 1: traffic. What is going to be done to deal with the thousands of double- and triple-parked cars? USPS, FedEx, UPS, delivery trucks, that even when there is space to park legally, they won't do so because they don't want to risk being blocked in. 2. Americans with Disability Act – when will the sidewalks be widened to accommodate people in wheelchairs? 3. Usage of sidewalks for al fresco dining or other retail usage, must have a minimum 60" clearance requirement and that is not being provided so what are the steps that will be taken to do that? 4. The actual number of cars versus the guesstimates that are being made based on the number of out of state vehicles and others that are within the confines of this area. So if those could be addressed in the EIR that would be helpful.

Commissioner Comments

Commissioner Galvez: My question is Ms. Britt Jonsson. Are there any projects that are being considered for this area?

Ulla Britt Jonsson: It's primarily for streetscape improvements.

Kathy Klienbaum: Primary purpose is streetscape improvements on Lowell Street, providing basic infrastructure that is currently missing. It's likely as a redevelopment area that (Redevelopment) will be rehabbing or demolishing and rebuilding infill housing along the Lowell corridor. However there are no projects that are proposed or conceived of yet.

Commissioner Zayas-Mart: I just wanted to make sure that the EIR includes information on the quality of pedestrian experience; that we look at environmental impacts in terms of stormwater management; to look at a more integrated approach to making improvements to the street... perhaps we can look at an EIR that is less focused on cars and moving cars through, but is more integrated looking at the needs of pedestrians, transit, and bikes.

Commissioner Huntsman: My concern is when we talk about eminent domain – if there's no anticipation of using it, why are we putting it in there?

Kathy Kleinbaum: The issue of eminent domain for the Lowell Street area hasn't been determined; that would be decided by the members of the Project Area Committee. The eminent domain proposal that is under discussion in the EIR is for the existing redevelopment area to extend the current authority which would expire in 2012 for another 12 year, 13 year period. That is something the PAC for the area has requested be done.

Vice-Chair Truong: I'd like know how including this wider redevelopment area would impact low-income households? I'd like that to be studied in the EIR.

ESA Summary

1. Traffic, commercial vehicle parking
2. Sidewalks to accommodate ADA
3. Al fresco dining and other retail incursions into sidewalks
4. Traffic counts rather than traffic "guesstimates"
5. Pedestrian experience
6. Stormwater management
7. Integrated approach to traffic planning emphasizing needs of pedestrians, transit, bikes
8. Impact of Amendments on low-income households in the area
9. Eminent Domain should be explained in the DEIR



May 6, 2011

Ulla-Britt Jonsson
240 Frank H. Ogawa Plaza Suite 3315
Oakland, CA 94612
UJonsson@Oaklandnet.com

SUBJECT: Comments on the Notice of Preparation (NOP) of a Draft Environmental Impact Report (DEIR) for Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan in the City of Oakland

Dear Ms. Jonsson:

Thank you for the opportunity to comment on the Notice of Preparation (NOP) for a Draft Environmental Impact Report (DEIR) for the City of Oakland. The Project Amendment Area covers approximately 150 acres in North Oakland. Generally between 67th Street to the north, 53rd Street to the south, San Pablo Avenue to the west, and Adeline and Market streets to the east. The north and south borders of the Amendment Area are defined by the city borders of Emeryville and Berkeley. The 3 proposed Amendments are:

- Expand Project Area boundaries to include the 1,300 parcels and 150 acres that is Lowell/Gaskill neighborhood. It would include redevelopment along Lowell Street and Stanford Avenue and include streetscape improvements, right-of-way adjustments, building renovations, and new housing, live/work, industrial incubator, and/or commercial development consistent with the existing HBX Housing and Business Mix Zone and General Plan land use designation
- Renew eminent domain authority for the Redevelopment Plan to extend beyond 2012
- Increase bonding capacity cap to finance proposed redevelopment activities in the Amendment Area without drawing from existing bonding capacity

The Alameda County Transportation Commission (Alameda CTC), on behalf of the Alameda County Congestion Management Agency (ACCMA) through the powers delegated to Alameda CTC by the joint powers agreement which created Alameda CTC, respectfully submits the following comments:

- The City of Oakland adopted Resolution No. 69475 on November 1, 1992 establishing guidelines for reviewing the impacts of local land use decisions consistent with the Alameda

County Congestion Management Program (CMP). If the proposed project is expected to generate at least 100 p.m. peak hour trips over existing conditions, the CMP Land Use Analysis Program requires the City to conduct a traffic analysis of the project using the Countywide Transportation Demand Model for projection years 2015 and 2035 conditions. Please note the following paragraph as it discusses the responsibility for modeling.

- o The CMP was amended on March 26th, 1998 so that local jurisdictions are responsible for conducting the model runs themselves or through a consultant. The Alameda CTC and ACCMA have a Countywide model that is available for this purpose. The City of Oakland and the ACCMA signed a Countywide Model Agreement on November 16, 2007. Before the model can be used for this project, a letter must be submitted to the Alameda CTC requesting use of the model and describing the project. A copy of a sample letter agreement is available upon request.

Potential impacts of the project on the Metropolitan Transportation System (MTS) need to be addressed. (See 2009 CMP Figure 2). The MTS roads in the city of Oakland in the project study area are; Grand Avenue, Broadway, Telegraph, Shattuck, Adeline, 51st Avenue, College Avenue, Powell, Rte. 24, I-580 and I-980.

- The DEIR should address all potential impacts of the project on the MTS roadway and transit systems. These include MTS roadways as shown in the attached map as well as BART and AC Transit. Potential impacts of the project must be addressed for 2015 and 2035 conditions.
 - o Please note that the ACCMA and Alameda CTC have *not* adopted any policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP. Professional judgment should be applied to determine the significance of project impacts (Please see chapter 6 of 2009 CMP for more information).
 - o For the purposes of CMP Land Use Analysis, 2000 Highway Capacity Manual is used.
- The adequacy of any project mitigation measures should be discussed. On February 25, 1993, the ACCMA Board adopted three criteria for evaluating the adequacy of DEIR project mitigation measures:
 - Project mitigation measures must be adequate to sustain CMP service standards for roadways and transit;
 - Project mitigation measures must be fully funded to be considered adequate;
 - Project mitigation measures that rely on state or federal funds directed by or influenced by the CMA must be consistent with the project funding priorities established in the Capital Improvement Program (CIP) section of the CMP or the Regional Transportation Plan (RTP).

The DEIR should include a discussion on the adequacy of proposed mitigation measures relative to these criteria. In particular, the DEIR should detail when proposed roadway or transit route improvements are expected to be completed, how they will be funded, and what would be the effect on LOS if only the funded portions of these projects were assumed to be built prior to project completion.

- Potential impacts of the project on CMP transit levels of service must be analyzed. (See 2009 CMP, Chapter 4). Transit service standards are 15-30 minute headways for bus service and 3.75-15 minute headways for BART during peak hours. The DEIR should address the issue of transit funding as a mitigation measure in the context of the Alameda CTC / ACCMA policies discussed above.
- The DEIR should also consider demand-related strategies that are designed to reduce the need for new roadway facilities over the long term and to make the most efficient use of existing facilities (see 2009 CMP, Chapter 5). The DEIR should consider the use of TDM measures, in conjunction with roadway and transit improvements, as a means of attaining acceptable levels of service. Whenever possible, mechanisms that encourage ridesharing, flextime, transit, bicycling, telecommuting and other means of reducing peak hour traffic trips should be considered. The Site Design Guidelines Checklist may be useful during the review of the development proposal. A copy of the checklist is enclosed.
- The EIR should consider opportunities to promote countywide bicycle routes identified in the Alameda Countywide Bicycle Plan, which was approved by the ACCMA Board in October 2006. The approved Countywide Bike Plan is available at <http://www.accma.ca.gov/pages/HomeBicyclePlan.aspx>.
- The Alameda Countywide Strategic Pedestrian Plan, developed by the Alameda County Transportation Improvement Authority (ACTIA), was adopted by both the ACTIA and ACCMA Boards in September 2006 and October 2006, respectively. The EIR should consider opportunities to promote pedestrian improvements identified in the Plan through the project development review process. The approved Plan is available at http://www.actia2022.com/ped-toolkit/Full_Ped_Plan.pdf
- For projects adjacent to state roadway facilities, the analysis should address noise impacts of the project. If the analysis finds an impact, then mitigation measures (i.e., soundwalls) should be incorporated as part of the conditions of approval of the proposed project. It should not be assumed that federal or state funding is available.
- Local jurisdictions are encouraged to consider a comprehensive Transit Oriented Development (TOD) Program, including environmentally clearing all access improvements necessary to support TOD development as part of the environmental documentation.

Thank you for the opportunity to comment on this Notice of Preparation. Please do not hesitate to contact me at 510.208.7415 if you require additional information.

Sincerely,



Beth Walukas, Deputy Director of Planning

Cc: Laurel Poeton, Assistant Transportation Planner

File: CMP – Environmental Review Opinions – Responses - 2011

CITY OF OAKLAND



250 FRANK H. OGAWA PLAZA, OAKLAND, CALIFORNIA 94612 – 2032

Community and Economic Development Agency
Planning & Zoning Services Division

(510) 238-3941
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TDD (510) 238-3254

June 17, 2011

REVISED NOTICE OF PREPARATION (NOP) OF A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT (SEIR) FOR PROPOSED AMENDMENTS TO THE BROADWAY/MACARTHUR/SAN PABLO REDEVELOPMENT PLAN

The City of Oakland Community and Economic Development Agency, Planning and Zoning Division, is preparing a Draft Supplemental Environmental Impact Report (SEIR) for Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan ("Proposed Amendments"), and is requesting comments on the scope and contents of the SEIR. The SEIR will Supplement the Broadway/MacArthur/San Pablo Redevelopment Plan EIR (File No. ER 99-06, State Clearinghouse No. 99052061, certified on July 25, 2000). The SEIR will describe and analyze the changes to the Broadway/MacArthur/San Pablo Redevelopment Plan (i.e. the Proposed Amendments) and will address the potential environmental effects of these changes for each of the environmental topics outlined in the California Environmental Quality Act (CEQA). The City has **not** prepared an Initial Study and all CEQA topics will be addressed in the SEIR.

The City of Oakland is the Lead Agency for the Project and is the public agency with the greatest responsibility for approving the Project or carrying it out. On March 16, 2011, the City of Oakland distributed an NOP for the preparation of Draft Environmental Impact Report for the Project. The City provided a 30-day comment period for the receipt of written responses, comments and/or questions on the NOP and an EIR Scoping Meeting was held before the City Planning Commission on April 6, 2011. During this time, one written and six oral comments were received on the original NOP. This revised NOP is issued only to specify that the City will prepare an SEIR, rather than a Draft EIR, as previously noticed in the NOP dated March 16, 2011. This notice is being sent to Responsible Agencies and other interested parties. Responsible Agencies are those public agencies, besides the City of Oakland, that also have a role in approving or carrying out the Project. When the Draft SEIR is published, it will be sent to all Responsible Agencies and to others who responded to the original NOP published in March 16, 2011 and/or to this revised NOP, or who otherwise indicate that they would like to receive a copy.

Responses to this NOP and any questions or comments should be directed in writing to: Ulla-Britt Jonsson, Planner II, City of Oakland, Strategic Planning Division, 250 Frank H. Ogawa Plaza, Suite 3315, Oakland, CA 94612; (510) 238-3322 (phone); (510) 238-4730 (fax); or e-mailed to ujonsson@oaklandnet.com. Comments on the NOP must be received at the above mailing or e-mail address by 5:00 p.m. Monday July 18, 2011. Please reference environmental review case number ER11-001 in all correspondence. Comments should focus on discussing possible impacts on the physical environment, ways in which potential adverse effects might be minimized, and alternatives to the Project in light of the SEIR's purpose to provide useful and accurate information about such factors.

PROJECT TITLE: Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan ("Proposed Amendments")

CASE NO.: ER11-001

PROJECT SPONSOR: City of Oakland and Redevelopment Agency of the City of Oakland

EXISTING CONDITIONS: The Broadway/MacArthur/San Pablo Redevelopment Plan (Redevelopment Plan) was adopted by the City of Oakland on July 25, 2000 and subsequently amended on March 6, 2007. The existing Redevelopment Project Area (Project Area) consists of two non-contiguous subareas: Broadway/MacArthur and San Pablo. Together, the two subareas include approximately 676 acres. As shown in the attached map, the Broadway/MacArthur subarea incorporates roughly the area between Highway 24 and Broadway from 27th Street to 42nd Street. The San Pablo subarea incorporates a portion of the Golden Gate neighborhood between Vallejo Street and San Pablo Avenue from 53rd to 67th streets.

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PROJECT DESCRIPTION: The proposed CEQA Project is the implementation of the three Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan. The first amendment would expand the Project Area boundaries to include the 1,300 parcels and 150 acres that is the Lowell/Gaskill neighborhood (Amendment Area) (see attached map). Redevelopment activities envisioned for the Amendment Area would focus in the area along Lowell Street and Stanford Avenue and include streetscape improvements, right-of-way adjustments, building renovations, and new housing, live/work, industrial incubator, and/or commercial development consistent with the existing HBX Housing and Business Mix Zone and General Plan land use designation. Other redevelopment programs within the Amendment Area would be consistent with those currently being implemented through the existing Redevelopment Plan.

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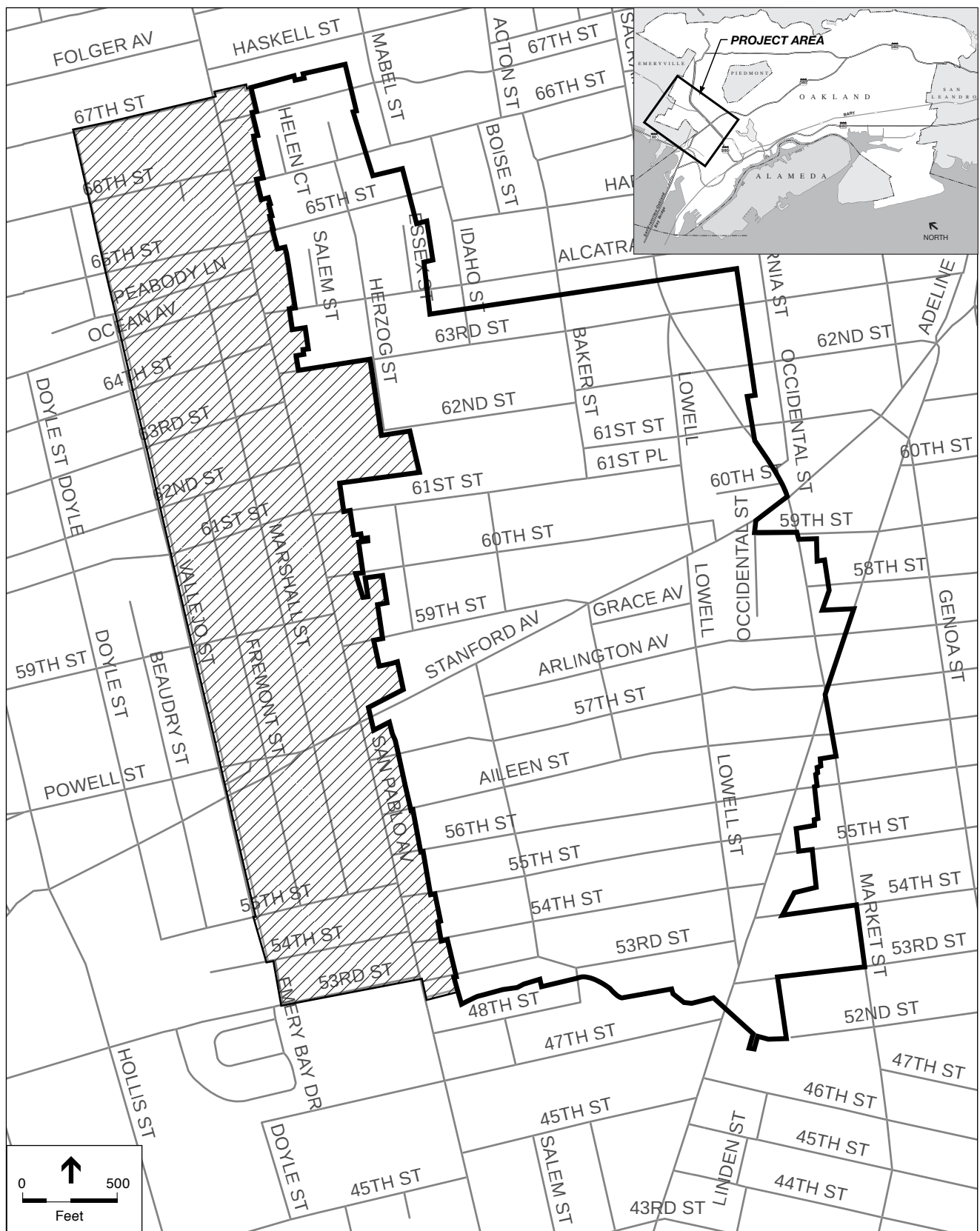
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Eric Angstadt,
Deputy Director, Community & Economic Development Agency
and Oakland City Planning Director

File Number: ER11-001
2011 NOP State Clearinghouse No.: 1999052061
2000 EIR State Clearinghouse No.: 99052061
Date of Notice: June 17, 2011

Attachment: Broadway/MacArthur/San Pablo Redevelopment Plan Amendment Area Map



 Existing Redevelopment Project Area  Amendment Area

SOURCE: City of Oakland, 2009

Figure 1
Broadway/MacArthur/San Pablo
Amendment Area Map

DEPARTMENT OF TRANSPORTATION

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P. O. BOX 23660
OAKLAND, CA 94623-0660
PHONE (510) 286-5541
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*Flex your power!
Be energy efficient!*

July 18, 2011

ALAGEN251
SCH#1999052061

Ms. Ulla-Bitt Jonsson
City of Oakland
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

**Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan –
Notice of Preparation**

Thank you for including the California Department of Transportation (Department) in the environmental review process for the Proposed Amendments to the Broadway/MacArthur/ San Pablo Redevelopment Plan. The following comments are based on the Notice of Preparation.

At this time, the Department has no comments in regards to this project. However, please continue to send any future project updates for our review.

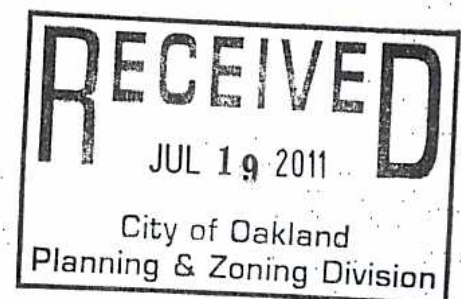
Should you have any questions regarding this letter, please call Yatman Kwan of my staff at (510) 622-1670.

Sincerely,

A handwritten signature in black ink, appearing to read "Gary Arnold".

GARY ARNOLD
District Branch Chief
Local Development - Intergovernmental Review

c: State Clearinghouse

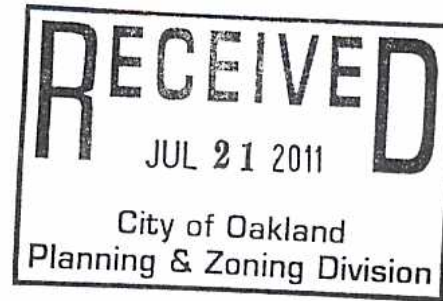


PUBLIC UTILITIES COMMISSION

505 VAN NESS AVENUE
SAN FRANCISCO, CA 94102-3298

July 18, 2011

Ulla-Britt Jonsson
City of Oakland
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612



Re: Notice of Preparation, Draft Environmental Impact Report (DEIR)
Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan
SCH# 1999052061

Dear Ms. Jonsson:

As the state agency responsible for rail safety within California, the California Public Utilities Commission (CPUC or Commission) recommends that development projects proposed near rail corridors be planned with the safety of these corridors in mind. New developments and improvements to existing facilities may increase vehicular traffic volumes, not only on streets and at intersections, but also at at-grade highway-rail crossings. In addition, projects may increase pedestrian traffic at crossings, and elsewhere along rail corridor rights-of-way. Working with CPUC staff early in project planning will help project proponents, agency staff, and other reviewers to identify potential project impacts and appropriate mitigation measures, and thereby improve the safety of motorists, pedestrians, railroad personnel, and railroad passengers.

The Circulation and Land Use Elements needs to evaluate traffic safety issues to the at-grade railroad crossings. Any increase in traffic to the at-grade crossings by this project need to be evaluated for potential impacts to safety and hazards.

In general, the major types of impacts to consider are collisions between trains and vehicles, and between trains and pedestrians. Measures to reduce adverse impacts to rail safety need to be considered in the DEIR. General categories of such measures include:

- Installation of grade separations at crossings, i.e., physically separating roads and railroad track by constructing overpasses or underpasses
- Improvements to warning devices at existing highway-rail crossings
- Installation of additional warning devices
- Improvements to traffic signaling at intersections adjacent to crossings, e.g., traffic preemption
- Installation of median separation to prevent vehicles from driving around railroad crossing gates

- Prohibition of parking within 100 feet of crossings to improve the visibility of warning devices and approaching trains
- Installation of pedestrian-specific warning devices, channelization and sidewalks
- Construction of pull out lanes for buses and vehicles transporting hazardous materials
- Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way
- Elimination of driveways near crossings
- Increased enforcement of traffic laws at crossings
- Rail safety awareness programs to educate the public about the hazards of highway-rail grade crossings

Commission approval is required to modify an existing highway-rail crossing or to construct a new crossing.

Please forward the Traffic Impact Study (T.I.S) scope of services to ensure that the at-grade railroad crossings are included in the analysis.

Thank you for your consideration of these comments. If you have any questions, please contact me at (415) 713-0092 or email at ms2@cpuc.ca.gov.

Sincerely,



Moses Stites
Rail Corridor Safety Specialist
Consumer Protection and Safety Division
Rail Transit and Crossings Branch
180 Promenade Circle, Suite 115
Sacramento, CA 95834-2939



July 18, 2011

Ulla-Britt Jonsson
240 Frank H. Ogawa Plaza Suite 3315
Oakland, CA 94612
UJonsson@Oaklandnet.com

SUBJECT: Comments on the Revised Notice of Preparation (NOP) of a Draft Supplemental Environmental Impact Report (SEIR) for Proposed Amendments to the Broadway/MacArthur/San Pablo Redevelopment Plan in the City of Oakland

Dear Ms. Jonsson:

Thank you for the opportunity to comment on the Revised Notice of Preparation (NOP) for a Draft Supplemental Environmental Impact Report (SEIR) for the City of Oakland. The Project Amendment Area covers approximately 150 acres in North Oakland. Generally between 67th Street to the north, 53rd Street to the south, San Pablo Avenue to the west, and Adeline and Market streets to the east. The north and south borders of the Amendment Area are defined by the city borders of Emeryville and Berkeley. The three proposed Amendments are:

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- Renew eminent domain authority for the Redevelopment Plan to extend beyond 2012
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The Alameda County Transportation Commission (Alameda CTC), on behalf of the Alameda County Congestion Management Agency (ACCMA) through the powers delegated to Alameda CTC by the joint powers agreement which created Alameda CTC, respectfully submits the following comments:

- The City of Oakland adopted Resolution No. 69475 on November 1, 1992 establishing guidelines for reviewing the impacts of local land use decisions consistent with the Alameda County Congestion Management Program (CMP). If the proposed project is expected to generate at least 100 p.m. peak hour trips over existing conditions, the CMP Land Use

Analysis Program requires the City to conduct a traffic analysis of the project using the Countywide Transportation Demand Model for projection years 2020 and 2035 conditions. Please note the following paragraph as it discusses the responsibility for modeling.

- The CMP was amended on March 26th, 1998 so that local jurisdictions are responsible for conducting the model runs themselves or through a consultant. The Alameda CTC and ACCMA have a Countywide model that is available for this purpose. The City of Oakland and the ACCMA signed a Countywide Model Agreement on November 16, 2007. Before the model can be used for this project, a letter must be submitted to the Alameda CTC requesting use of the model and describing the project. A copy of a sample letter agreement is available upon request.

Potential impacts of the project on the Metropolitan Transportation System (MTS) need to be addressed. (See 2009 CMP Figure 2). The MTS roads in the city of Oakland in the project study area are: Grand Avenue, Broadway, Telegraph Avenue, Shattuck, Adeline, 51st Avenue, College Avenue, Powell Street, Rte. 24, I-580 and I-980.

- The DEIR should address all potential impacts of the project on the MTS roadway and transit systems. These include MTS roadways as shown in the attached map as well as BART and AC Transit. Potential impacts of the project must be addressed for 2020 and 2035 conditions.
 - Please note that the ACCMA and Alameda CTC have *not* adopted any policy for determining a threshold of significance for Level of Service for the Land Use Analysis Program of the CMP. Professional judgment should be applied to determine the significance of project impacts (Please see chapter 6 of 2009 CMP for more information).
 - For the purposes of CMP Land Use Analysis, 2000 Highway Capacity Manual is used.
- The adequacy of any project mitigation measures should be discussed. On February 25, 1993, the ACCMA Board adopted three criteria for evaluating the adequacy of DEIR project mitigation measures:
 - Project mitigation measures must be adequate to sustain CMP service standards for roadways and transit;
 - Project mitigation measures must be fully funded to be considered adequate;
 - Project mitigation measures that rely on state or federal funds directed by or influenced by the CMA must be consistent with the project funding priorities established in the Capital Improvement Program (CIP) section of the CMP or the Regional Transportation Plan (RTP).

The DEIR should include a discussion on the adequacy of proposed mitigation measures relative to these criteria. In particular, the DEIR should detail when proposed roadway or transit route improvements are expected to be completed, how they will be funded, and what would be the effect on LOS if only the funded portions of these projects were assumed to be built prior to project completion.

- Potential impacts of the project on CMP transit levels of service must be analyzed. (See 2009 CMP, Chapter 4). Transit service standards are 15-30 minute headways for bus service

and 3.75-15 minute headways for BART during peak hours. The DEIR should address the issue of transit funding as a mitigation measure in the context of the Alameda CTC/ACCMA policies discussed above.

- The DEIR should also consider demand-related strategies that are designed to reduce the need for new roadway facilities over the long term and to make the most efficient use of existing facilities (see 2009 CMP, Chapter 5). The DEIR should consider the use of TDM measures, in conjunction with roadway and transit improvements, as a means of attaining acceptable levels of service. Whenever possible, mechanisms that encourage ridesharing, flextime, transit, bicycling, telecommuting and other means of reducing peak hour traffic trips should be considered. The Site Design Guidelines Checklist may be useful during the review of the development proposal. A copy of the checklist is enclosed.
- The EIR should consider opportunities to promote countywide bicycle and pedestrian routes identified in the Alameda Countywide Bicycle and Pedestrian Plan, which were approved in 2006. The approved Countywide Bike Plan and Pedestrian Plan are available at http://www.actia2022.com/app_pages/view/58
- For projects adjacent to state roadway facilities, the analysis should address noise impacts of the project. If the analysis finds an impact, then mitigation measures (i.e., soundwalls) should be incorporated as part of the conditions of approval of the proposed project. It should not be assumed that federal or state funding is available.
- Local jurisdictions are encouraged to consider a comprehensive Transit Oriented Development (TOD) Program, including environmentally clearing all access improvements necessary to support TOD development as part of the environmental documentation.

Once again, thank you for the opportunity to comment. Should you have any questions or require any additional information, please do not hesitate to contact me at (510) 208-7405.

Sincerely,



Beth Walukas, Deputy Director of Planning

Cc: Laurel Poeton, Assistant Transportation Planner
File: CMP – Environmental Review Opinions – Responses - 2011

Design Strategies Checklist
for the
Transportation Demand Management Element
of the
Alameda County CMP

The Transportation Demand Management Element included in the Congestion Management Program requires each jurisdiction to comply with the “Required Program”. This requirement can be satisfied in three ways: 1) adoption of “Design Strategies for encouraging alternatives to auto use through local development review” prepared by ABAG and the Bay Area Quality Management District; 2) adoption of new design guidelines that meet the individual needs of the local jurisdictions and the intent of the goals of the TDM Element or 3) evidence that existing policies and programs meet the intent of the goals of the TDM Element.

For those jurisdictions who have chosen to satisfy this requirement by Option 2 or 3 the following checklist has been prepared. In order to insure consistency and equity throughout the County, this checklist identifies the components of a design strategy that should be included in a local program to meet the minimum CMP conformity requirements. The required components are highlighted in bold type and are shown at the beginning of each section. A jurisdiction must answer Yes to each of the required components to be considered consistent with the CMP. Each jurisdiction will be asked to annually certify that it is complying with the TDM Element. Local jurisdictions will not be asked to submit the back-up information to the CMA justifying its response; however it should be available at the request of the public or neighboring jurisdictions.

Questions regarding optional program components are also included. You are encouraged but not required to answer these questions. ACTAC and the TDM Task Force felt that it might be useful to include additional strategies that could be considered for implementation by each jurisdiction.

CHECKLIST

Bicycle Facilities

Goal: To develop and implement design strategies that foster the development of a countywide bicycle program that incorporates a wide range of bicycle facilities to reduce vehicle trips and promote bicycle use for commuting, shopping and school activities. (Note: an example of facilities are bike paths, lanes or racks.)

Note: Bold type face indicates those components that must be included the “Required Program” in order to be found in compliance with the Congestion Management Program.

Local Responsibilities:

1a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

1a.1 provides a system of bicycle facilities that connect residential and/or non-residential development to other major activity centers?

Yes No

1a.2 bicycle facilities that provide access to transit?

Yes No

1a.3 that provide for construction of bicycle facilities needed to fill gaps, (i.e. gap closure), not provided through the development review process?

Yes No

1a.4 that consider bicycle safety such as safe crossing of busy arterials or along bike trails?

Yes No

1a.5 that provide for bicycle storage and bicycle parking for (A) multi-family residential and/or (B) non-residential developments?

Yes No

1b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance

Design Review

Standard Conditions of Approval

Capital Improvement Program

Specific Plan

Other

Pedestrian Facilities

Goal: To develop and implement design strategies that reduce vehicle trips and foster walking for commuting, shopping and school activities.

Local Responsibilities

2a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that incorporate the following:

2a.1 that provides reasonably direct, convenient, accessible and safe pedestrian connections to major activity centers, transit stops or hubs parks/open space and other pedestrian facilities?

Yes No

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

2a.2 that provide for construction of pedestrian paths needed to fill gaps, (i.e. gap closure), not provided through the development process?

Yes No

2a.3 that include safety elements such as convenient crossing at arterials?

Yes No

2a.4 that provide for amenities such as lighting, street trees, trash receptacles that promote walking?

Yes No

2a.5 that encourage uses on the first floor that are pedestrian oriented, entrances that are conveniently accessible from the sidewalk or transit stops or other strategies that promote pedestrian activities in commercial areas?

Yes No

2b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance

Design Review, such as ADA Accessibility Design Standards

Standard Conditions of Approval

Capital Improvement Program

Specific Plan

Other

Transit

Goal: To develop and implement design strategies in cooperation with the appropriate transit agencies that reduce vehicle trips and foster the use of transit for commuting, shopping and school activities.

Local Responsibilities

3a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

3a.1 provide for the location of transit stops that minimize access time, facilitate intermodal transfers, and promote reasonably direct, accessible, convenient and safe connections to residential uses and major activity centers?

Yes No

3a.2 provide for transit stops that have shelters or benches, trash receptacles, street trees or other street furniture that promote transit use?

Yes No

3a.3 that includes a process for including transit operators in development review?

Yes No

3a.4 provide for directional signage for transit stations and/or stops?

Yes No

3a.5 that include specifications for pavement width, bus pads or pavement structure, length of bus stops, and turning radii that accommodates bus transit?

Yes No

3.b How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance

Design Review

Standard Conditions of Approval

Capital Improvement Program

Specific Plan

Other

Carpools and Vanpools

Goal: To develop and implement design strategies that reduce the overall number of vehicle trips and foster carpool and vanpool use.

Local Responsibilities:

4a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

4a.1 For publicly owned parking garages or lots, are there preferential parking spaces and/or charges for carpools or vanpools?

Yes No

4a.2 that provide for convenient or preferential parking for carpools and vanpools in non-residential developments?

Yes No

Note: Bold type face indicates those components that must be included the "Required Program" in order to be found in compliance with the Congestion Management Program.

4.b How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance

Design Review

Standard Conditions of Approval

Capital Improvement Program

Specific Plan

Other

Park and Ride

Goal: To develop design strategies that reduce the overall number of vehicle trips and provide park and ride lots at strategic locations.

Local Responsibilities:

5a. In order to achieve the above goal, does your jurisdiction have design strategies or adopted policies that include the following:

5a.1 promote park and ride lots that are located near freeways or major transit hubs?

Yes No

5a.2 a process that provides input to Caltrans to insure HOV by-pass at metered freeway ramps?

Yes No

5b. How does your jurisdiction implement these strategies? Please identify.

Zoning ordinance

Design Review

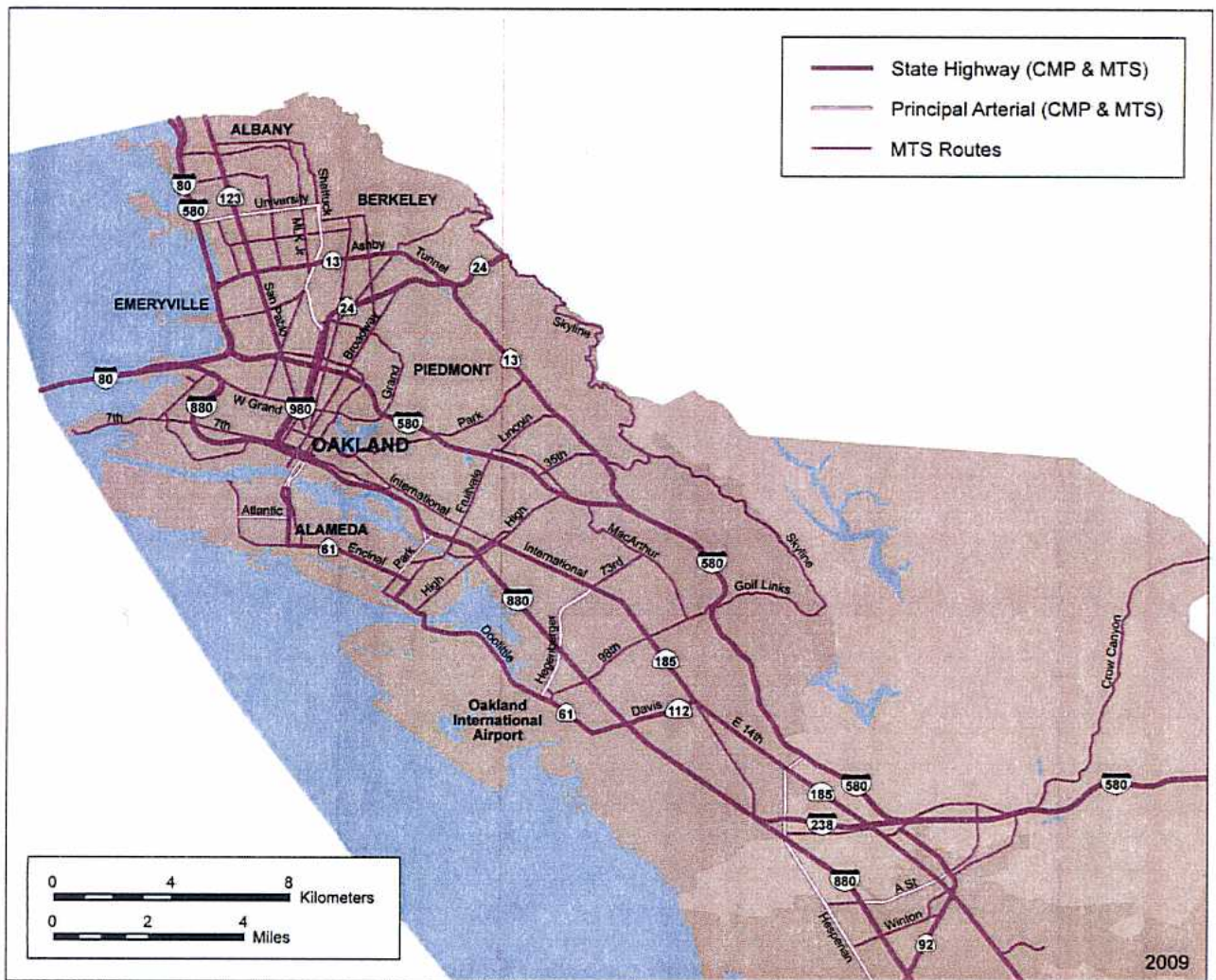
Standard Conditions of Approval

Capital Improvement Program

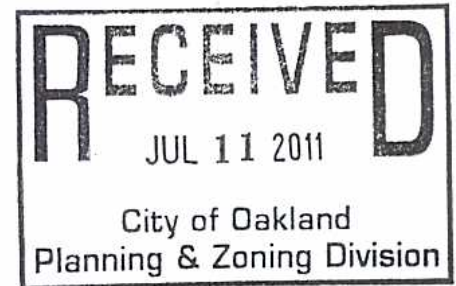
Specific Plan

Other

Figure 2—Designated System Map for Alameda, Albany, Berkeley, Emeryville, Oakland and Piedmont



July 6, 2011



Ulla-Britt Jonsson, Planner II
City of Oakland Strategic Planning Division
250 Frank H. Ogawa Plaza, Suite 3315
Oakland, CA 94612

Re: Notice of Preparation of a Draft Supplemental Environmental Impact Report
for Proposed Amendments to the City of Oakland Broadway / Macarthur / San
Pablo Redevelopment Plan (Case No. ER11-001)

Dear Ms. Jonsson:

East Bay Municipal Utility District (EBMUD) appreciates the opportunity to comment on the Notice of Preparation of a Draft Supplemental Environmental Impact Report (SEIR) for Proposed Amendments to the City of Oakland (City) Broadway / Macarthur / San Pablo Redevelopment Plan. EBMUD has the following comments.

WATER SERVICE

The Notice of Preparation does not reference specific development project within the existing redevelopment project area or the proposed amendment area. Any development project within these areas will be subject to the following general requirements:

Depending on the size and/or square footage, the lead agency for future individual projects within the existing redevelopment project area or the proposed amendment area should contact EBMUD to request a Water Supply Assessment (WSA) that meets the threshold of a WSA pursuant to Section 15155 of the California Environmental Quality Act Guidelines, and Section 10910-10915 of the California Water Code. EBMUD requires project sponsors to provide future specific land use data estimates for individual project sites for the water demand analysis of the WSA. Please be aware that the WSA can take up to 90 days to complete from the day on which the request is received.

EBMUD's Central Pressure Zone, with a service elevation between 0 and 100 feet and Aqueduct Pressure Zone, with service elevation between 100 and 200 feet serve the existing redevelopment project area and the proposed amendment area. Main extensions that may be required to serve any specific development projects that will provide adequate domestic water supply, fire flows, and system redundancy will be at the project sponsor's expense. Pipeline and fire hydrant relocations and replacements due to modifications of existing streets, and off-site pipeline improvements, also at the project sponsor's expense, may be required depending on EBMUD metering requirements and fire flow requirements set by the local fire department. All project sponsors should

contact EBMUD's New Business Office and request a water service estimate to determine costs and conditions of providing water service to the development. Engineering and installation of new and relocated pipeline and services requires substantial lead-time, which should be provided for in the project sponsor's development schedule.

EBMUD will not inspect, install or maintain pipeline in contaminated soil or groundwater (if groundwater is present at any time during the year at the depth piping is to be installed) that must be handled as a hazardous waste or that may pose a health and safety risk to construction or maintenance personnel wearing Level D personal protective equipment. Nor will EBMUD install piping in areas where groundwater contaminant concentrations exceed specified limits for discharge to sanitary sewer systems or sewage treatment plants. Applicants for EBMUD services requiring excavation in contaminated areas must submit copies of existing information regarding soil and groundwater quality within or adjacent to the project boundary. In addition, the applicant must provide a legally sufficient, complete and specific written remedial plan establishing the methodology, planning and design of all necessary systems for the removal, treatment, and disposal of all identified contaminated soil and/or groundwater.

EBMUD will not design the installation of pipelines until such time as soil and groundwater quality data and remediation plans are received and reviewed and will not install pipelines until remediation has been carried out and documentation of the effectiveness of the remediation has been received and reviewed. If no soil or groundwater quality data exists or the information supplied by the applicant is insufficient, EBMUD may require the applicant to perform sampling and analysis to characterize the soil being excavated and groundwater that may be encountered during excavation or perform such sampling and analysis itself at the applicant's expense.

WASTEWATER SERVICE

EBMUD's Main Wastewater Treatment Plant (MWWTP) and Interceptor System are anticipated to have adequate dry weather capacity to treat the proposed wastewater flows from this project, provided that the project and the wastewater generated by the project meet the requirements of the current EBMUD Wastewater Control Ordinance. However, wet weather flows are a concern. EBMUD has historically operated three Wet Weather Facilities to provide treatment for high wet weather flows that exceed the treatment capacity of the MWWTP. On January 14, 2009, due to Environmental Protection Agency's (EPA) and the State Water Resources Control Board's (SWRCB) re-interpretation of applicable law, the Regional Water Quality Control Board (RWQCB) issued an order prohibiting further discharges from EBMUD's Wet Weather Facilities. Additionally, on July 22, 2009 a Stipulated Order for Preliminary Relief issued by EPA, the SWRCB, and RWQCB became effective. This order requires EBMUD to begin work that will identify problem infiltration/inflow areas, begin to reduce infiltration/inflow

through private sewer lateral improvements, and lay the groundwork for future efforts to eliminate discharges from the Wet Weather Facilities.

Currently, there is insufficient information to forecast how these changes will impact allowable wet weather flows in the individual collection system subbasins contributing to the EBMUD wastewater system, including the subbasin in which the proposed project is located. As required by the Stipulated Order, EBMUD is conducting extensive flow monitoring and hydraulic modeling to determine the level of flow reductions that will be needed in order to comply with the new zero-discharge requirement at the Wet Weather Facilities. It is reasonable to assume that a new regional wet weather flow allocation process may occur in the East Bay, but the schedule for implementation of any new flow allocations has not yet been determined. In the meantime, it would be prudent for the lead agency to require the project applicant to incorporate the following measures into the proposed project: (1) replace or rehabilitate any existing sanitary sewer collection systems, including sewer lateral lines, to reduce infiltration/inflow and (2) ensure any new wastewater collection systems, including sewer lateral lines, for the project are constructed to prevent infiltration/inflow to the maximum extent feasible. Please include such provisions in the environmental documentation and other appropriate approvals for this project.

WATER RECYCLING

The amendment area's southern boundary is within the boundary of the East Bayshore recycled water main transmission pipeline that currently serves Emeryville and terminates at Hollis and 53rd Streets. Potential projects within the amendments area's southern boundary could present opportunities for recycled water uses ranging from landscape irrigation, toilet flushing and other non-potable commercial and industrial uses.

EBMUD's Policy 9.05 requires that customers use non-potable water, including recycled water, for non-domestic purposes when it is of adequate quality and quantity, available at reasonable cost, not detrimental to public health and not injurious to plant, fish and wildlife to offset demand on EBMUD's limited potable water supply. EBMUD recommends that the City and project sponsors for individual projects maintain continued coordination and consultation with EBMUD as they plan and implement the specific projects, as described in the redevelopment plan for the San Pablo Area, regarding the feasibility of providing recycled water for appropriate non-potable uses.

WATER CONSERVATION

Individual projects within the existing redevelopment project area or the proposed amendment area may present an opportunity to incorporate water conservation measures. EBMUD requests that the City include in its conditions of approval a requirement that the project sponsor comply with the City's Landscape Water Conservation Section, Article

10 of Chapter 7 of the Oakland Municipal Code. Project sponsors should be aware that Section 31 of EBMUD's Water Service Regulations requires that water service shall not be furnished for new or expanded service unless all the applicable water-efficiency measures described in the regulation are installed at the project sponsor's expense.

If you have any questions concerning this response, please contact David J. Rehnstrom, Senior Civil Engineer, Water Service Planning at (510) 287-1365.

Sincerely,



for William R. Kirkpatrick
Manager of Water Distribution Planning

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APPENDIX B

Major Projects List

CITY OF OAKLAND - ACTIVE MAJOR DEVELOPMENT PROJECTS
December 2010- January 2011

PROJECT NAME	APPLICANT CONTACT	LOCATION (ADDRESS AND/OR APN)	COUNCIL DISTRICT	DESCRIPTION	CITY CONTACT	STATUS
RESIDENTIAL PROJECTS						
Pre-Application Discussions						
1 ~California Hotel	EBALDC Natalie Bonnewit (510)287-5353	3501 San Pablo Ave APN: 005 -0479-002-01	3	■Rehabilitation and conversion of the existing studio and affordable units and ground floor commercial into 137 affordable apartments	Jason Madani 238-4790	Pre-application filed.
2 5701 Skyline Blvd	Armstrong Real Estate Advisors (310)600-6682	5701 Skyline Blvd APN: 048H-7523-009-00 048H-7523-008-00 048H-7523-008-03	1	■Proposal change Zoning and General Plan designation	Lynn Warner 238-6983	Pre-application filed.
3 Felton Acres	Robert Felton (510)548-4637	Devon Way APN: 048H-7600-007-00	1	■Subdivision into 25 units and two new roads	Lynn Warner 238-6983	Pre-application filed.
4 9400 International Blvd	Acts Community Development Colby Northridge (949)660-7272	9400-9500 International Blvd APN: 046 -5423-022-00 046 -5423-001-01 046 -5423-018-002	7	■56 affordable units	Leigh McCullen 238-4977	Pre-application filed.
Application Submitted – Under Review						
5 ~116 E 15th Street	Satellite Housing, Inc. (510)647-0700	116 E 15th Street, 1507 2nd Ave, 1521 2nd Ave APN: 020 -0181-016-00 020 -0181-013-01 020 -0181-005-01	3	■90 affordable senior units	Leigh McCullen 238-4977	Application filed. Environmental scoping underway.
6 ~4311-4317 Macarthur Blvd	Pacific Companies/AMG (818)317-4168	4311- 4317 Macarthur Blvd APN:030 -1982-121-00 030 -1982-122-00	4	■115 apartment senior housing facility ■3,446 S.F. retail	Lynn Warner 238-6983	Application filed. Environmental scoping underway.
7 ~St. John's Episcopal Church Parking and New Sanctuary	St. John's Episcopal Church Jerry Moran (510)557-1015	5928 Thornhill Dr, 1707 Gouldin Rd APN: 048F-7390-003-03 048F-7390-004-09	4	■Demolition of house at 5928 Thornhill Drive ■Constructing a new access bridge over creek ■Restoration of the creek ■Construction of a 5,500 S.F. sanctuary	Cesar Quitevis 238-6343	Application filed. NOP and Initial Study published 03/06/08. DEIR published 11/17/10. PC DEIR hearing 12/15/10.
8 Uptown Parcel 4 (Telegraph/19th Street)*	Forest City Residential, Inc. Susan Smartt (415) 836-5980	Telegraph/19th Street/New Street/Williams Street	3	■370 residential units	Catherine Payne, Major Projects, 238-6168	Application filed. Design Review Committee 07/25/07.
9 1443 Alice Street*	The Real Estate Transformation Group Mark Borsuk (415)922-4740	1443 Alice Street / 1434 Harrison Street APN: 008 -0626-016-00 008 -0626-023-00	2	■245 residential units	Darin Ranelletti 238-3663	Application filed. Environmental scoping underway. Design Review Committee 05/23/07. Project inactive.

* 10K PROJECT (project includes residential units located in Downtown)

~Denotes new project, a recent change to the project description, or status.

Complied by Planning and Zoning, (510) 238-3941.

CITY OF OAKLAND - ACTIVE MAJOR DEVELOPMENT PROJECTS
December 2010- January 2011

10	~325 7th Street*	YHLA Yui Hay Lee (510)836-6688	325 7th Street APN:001 -0189-005-00 001 -0189-013-00 001 -0189-014-01	2	■382 residential units ■9,000 S.F. commercial	Heather Klein 238-3659	Design Review Committee 11/0707. NOP published 12/18/07. DEIR published 10/18/10. LPAB DEIR hearing 11/8/10. PC DEIR hearing 12/1/10. FEIR preparation underway.
11	1309 Madison Street*	Toby Levy (415)777-0561	1309 Madison Street APN:002 -0079-005-00	2	■72 condominium units	Lynn Warner 238-6983	Application filed. Design Review Committee 09/05/07.
12	~250 12th Street*	YHLA Yui Hay Lee (510)836-6688	250 12th Street APN:002-0069-002	2	■215 residential units ■8,000 S.F. retail	Heather Klein 238-3659	Withdrawn
13	Emerald Views * (formerly 19th Street Residential Condominiums)	Ian Birchall (415)512-9660	222 19th Street APN: 008-0634-003-00	3	■370 residential units ■933 S.F. cafe	Heather Klein 238-3659	Application filed. NOP published 11/09/07. DEIR preparation underway. LPAB for design review 04/14/08. Design Review Committee 04/23/08.
14	~Skyline Ridge Estates	Collim Mbanugo (510) 272-9610	Equestrian Trail APN: 037A-3141-001-15	6	■22 single-family lots	Heather Klein 238-3659	Denied
Application Approved							
15	~Aspire Public Schools	Charles Robitaille 925-698-1118	1009 66th Ave APN:041-4056-003-00	6	■Demolish vacant industrial building/construct a school with 420 students	Aubrey Rose 238-2071	Application not formally filed with the City. The Charter School is a state school. Building permit #B1004127.
16	~Cathedral Gardens *	AEH Housing Benny Kwong (415)295-8857	2126 M L King Jr Way 616 21st St. 620 21st St. APN:008 -0659-023-00 008 -0647-016-00 008 -0647-017-00	3	■100 affordable housing ■Rehabilitation of the Rectory building	Peterson Vollmann 238-6167	Planning Commission approval 07/20/10.
17	Lion Creek Crossing (formerly Coliseum Gardens)	EBALDC Carlos Castellmos (510) 287-5335	66th Ave. at San Leandro Street APN-Multiple	6	Phase IV ■72 residential units	Catherine Payne 238-6168	Planning Commission approval 02/04/09. General Plan Amendment City Council approval 03/17/09. Under construction.
18	720 E 11th Street	Robert Stevenson (415)786-6631	720 E 11th Street APN: 019 -0033-010-02	2	■55 affordable units	Moe Hackett 238-3973	Planning Commission approval 01/21/09. Building permit #B0904389.
19	~1032 39th Street	Madison Park Financial (510)452-2944	1032 39th Street APN: 012 -0953-027-00	1	■25 residential units in Oakland ■75 residential units in Emeryville	Catherine Payne, 238-6168 Miroo Desai Emeryville Senior Planner Senior Planner (510) 596-3785	Oakland Planning Commission 12/3/08. Emeryville City Council approval 01/20/08. Extension granted 11/22/10.

* 10K PROJECT (project includes residential units located in Downtown)
~Denotes new project, a recent change to the project description, or status.
Complied by Planning and Zoning, (510) 238-3941.

CITY OF OAKLAND - ACTIVE MAJOR DEVELOPMENT PROJECTS
December 2010- January 2011

20	The Creekside Mixed Use Project formerly (5132 Telegraph)	George Hauser Hauser Architects (415)519-5398	5132 Telegraph Ave APN: 014 -1226-013-00	1	■120 residential units ■7,700 S.F. of commercial	Darin Ranelletti 238-3663	Application filed. Design Review Committee 03/28/07 and 05/23/07. EIR Scoping Session 01/09/08. NOP published 12/21/07. DEIR published 08/15/08. Planning Commission approval 11/19/08.
21	~1417-1431 Jefferson Street*	Menlo Capital group LLC Bob Hemati (415) 762-8200	1417-1431 Jefferson Street APN: 003 -0071-018-00 003 -0071-017-00	5	■54 residential units ■3,000 SF ground floor commercial	Ulla-Britt Jonsson, 238-3322	Approval 07/09/08. NEPA environmental review underway.
22	~Wattling Street	Phil Lesser (650)347-6014	3927 Wattling Street APN: 033-2170-003-00	5	■18 condominium units ■61 townhome units	Leigh McCullen 238-4977	Application filed. Environmental scoping underway. Design Review Committee 10/24/07. Planning Commission approval 06/18/08. Revisions submitted 10/20/10.
23	~St Joseph's	BRIDGE Housing Corp Smitha Seshadri (415) 989-1111	2647 International Blvd APN: 025 -0701-004-01	5	■Rehabilitation of the historic building ■84 units senior housing ■15,000 S.F. office	Joann Pavlinec 238-6344	Application filed. LPAB 08/13/07 and 09/24/07. Planning Commission certification of the FEIR and project approval 12/19/07. Building permit for Phase I #B0705698. Planning Commission approval of Phase II 08/05/09.
24	~2985 Ford Street	8855 San Leandro St. LLC (510)465-3700	2985 Ford Street APN:025 -0673-007-00	5	■56 condominium units ■15 work/live units	Robert Merkamp, 238-6283	Application filed. Planning Commission approval of project and TPM 11/07/07. Extension granted 2/19/10.
25	~Bakery Lofts	Madison Park Financial Frank Flores (510)452-2944	945 53rd Street APN: 049 -1173-002-00	1	<i>Phase III</i> ■61 units ■3161 S.F. of commercial	Lynn Warner 238-6983	Application filed. Design Review Committee 03/28/07. Planning Commission approval 08/01/07. Extension granted. Grading permit #GR0800085. Building permit #B0705781 expired.
26	Courthouse Condominiums (formerly 2935 Telegraph Ave.)	MBH Architects (510) 865-8663	2935 Telegraph Ave.	3	■142 residential units ■3,000 S.F. retail	Joann Pavlinec 238-6344	Application filed. NOP and Initial Study published 10/06/06. DEIR published 03/19/07; Design Review Committee 03/28/07 and 05/23/07. Planning Commission certification of the FEIR and project approval 08/01/07. Planning Commission 04/01/09 for revisions to Conditions of Approval. Applicant withdrew request for revisions 04/20/09. Building Permit #B0901385.

* 10K PROJECT (project includes residential units located in Downtown)
~Denotes new project, a recent change to the project description, or status.
Complied by Planning and Zoning, (510) 238-3941.

CITY OF OAKLAND - ACTIVE MAJOR DEVELOPMENT PROJECTS
December 2010- January 2011

27	HFH Apartments	Andy Getz (510)652-4191	1401-1405 Wood Street APN: 000O-0310-012-00	3	■Phase I 159 apartments ■Phase II 142 apartments	Eric Angstadt 238-6190	Planning Commission approval 08/01/07. Grading permit #GR0800100.
28	4801 Shattuck Ave	Steven Tiffin (510)550-4200	4801 Shattuck Ave APN: 013-1162-009-01 013-1162-009-02 013-1162-010-00	1	■44 units	Peterson Vollmann 238-6167	Design Review Committee 01/24/07. Planning Commission approval 04/04/07. Appeal denied by City Council 07/17/07. Litigation ruling in favor of project. Extension granted 09/11/08.
29	1538 Broadway*	Forum Design Marc DiGiacomo (415)252-7063	1538 Broadway APN: 008-0622-007	3	■69 residential units ■Ground floor food sales	Peterson Vollmann 238-6167	Administrative approval 03/07/07. Extension granted 03/05/09.
30	~2116 Brush Street	AGI Capital Tom Holt (415) 775-7005	2101-2116 Brush Street; 760 22nd Street APN: 003 -0025-010-00 thru 011-00 003-0035-006-00 thru 005-00 003-0023-007-01 thru 011-02	3	Parcel A ■63 residential units Parcel B ■18 residential units Parcel C ■65 residential units	Heather Klein 238-3659	Design Review Committee 10/25/06. Planning Commission approval 02/07/07. Extension granted 07/25/07. Extension granted 01/20/10.
31	459 23rd Street	Toby Levy (415)777-0561	459 23rd Street APN: 008 -0658-004-01 008 -0658-002-01	3	■60 residential units ■Ground floor retail	Peterson Vollmann 238-6167	Approved 12/28/06. Revision to increase the number of units to 70 approved 08/14/07. Grading permit expired. Extension granted 12/15/08.
32	1614 Campbell Street	Madison Park Frank Flores (510)452-2944	1614 Campbell Street APN:007 -0560-001-02	3	■92 live/work conversion	Peterson Vollmann 238-6167	Planning Commission approval 12/13/06. Revised to include only live/work units. Revision approved 07/29/08.
33	377 2nd Street*	Marge Vincent Vanguard Properties (415) 321-7077	377 2nd Street APN: 001 -0143-008-00 001 -0143-007-00 001-0143-010-00	3	■96 units ■4,000 S.F. retail	Heather Klein 238-3659	LPAB 06/12/06. LPAB for design review 10/16/06. Planning Commission approval 12/13/06. Extension granted 1/12/09.
34	3250 Hollis	Bill Lightner (415)267-2900	3250 Hollis Entire Block of 007-0593	3	■46 live/work units ■74 residential units	Peterson Vollmann 238-6167	Design Review Committee 08/23/06. Planning Commission approval 10/18/06. Extension granted 12/21/06. Extension granted 08/13/09.
35	Hollis 34	Dogtown Development (510)428-1714	3241 Hollis Entire Block of 007-0620	3	■124 live/work units	Peterson Vollmann 238-6167	Application filed. Design Review Committee 08/23/06. Planning Commission approval 10/18/06. TPM approval 10/18/06. Extension granted 01/16/09.

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36	~Tassafaronga Village	Housing Authority of the City of Oakland Bridget Galka (510)587-2142	68-81st Ave. & 1001 83 rd Ave. APN:042 -4281-007-04 042 -4280-001-01 041 -4206-001-00	7	■ General Plan Amendment from Business Mix to Mixed Housing Type ■ Redevelopment Plan Amendment from Industrial to Residential ■ Rezoning ■ 179 mixed housing residential (apartment, live/work, for sale, and affordable)	Aubrey Rose 238-2071	Design Review Committee 05/24/06. Planning Commission approval and Mitigated Negative Declaration certification 06/20/06. City Council approval of General Plan Amendment, Redevelopment Plan Amendment, and Rezoning 10/03/06. Planning Commission approval of TTM 02/13/08. City Council approval of TTM 06/08 Building Permit # #B0801540; Project under construction.
37	~721-741 Broadway *	Carona Engineering Debo Sodipo (510)444-8311	721-741 Broadway APN: 001-0201-015-00	3	■ 48 residential units ■ 5 live/work units ■ 2,300 S.F. retail	Joann Pavlinec 238-6344	LPAB 06/12/06. Planning Commission approval 8/16/06. Planning Commission approval for administrative design review 10/04/06. TPM approval 05/24/07. Extension granted 08/16/09.
38	460 Grand Ave	Jim Burns (510)339-8880	460 Grand Ave APN: 010-0779-012-00 010-0779-014-01 010-0779-015-01	3	■ 74 residential units	Darin Ranelletti, 238-3663	Design Review Committee 02/22/06. Planning Commission approval 06/07/06. Appeal denied by City Council 07/18/06. Extension granted 05/20/09.
39	2538 Telegraph Ave*	Rina Davis 2538 Telegraph LLC (510)390-4408	2538 Telegraph Ave 437 26th St APN: 009 -0683-021-01 009 -0683-024-00	3	■ 97 residential units ■ 9,000 S.F. of commercial space	Catherine Payne, 238-6168	Design Review Committee 11/16/05.; Planning Commission approval 01/04/06. Extension granted 12/10/08. TPM granted 02/19/09.
40	51st & Telegraph, Civiq	Roy Alper 5110 Telegraph, LLC (510)550-7175	Area bounded by Telegraph, 51st and Clark Streets APN: - Multiple	3	■ 68 residential units ■ Less than 3,000 S.F. of commercial space ■ 4 buildings built over, ■ Subterranean Parking	Darin Ranelletti 238-3663	Design Review Committee 11/16/05. Planning Commission approval 1/18/06. Appealed to City Council. Appeal withdrawn at City Council 03/21/06. Extension granted 09/08/08.
41	~116 6th St*	Affordable Housing Associates Adam Deromedi (510) 649-8500	116 6th Street 609 6th Street APN: 001-0173-009-00	2	■ 70 senior affordable apartment units	Heather Klein 238-3659	Planning Commission approval 01/21/09. Building permit #B1003049.
42	Valdez & 23rd Street Project*	The Enterprise Group Walter Cohen (415) 221-2534	Valdez St./Webster/23rd St./24th Streets APN: 008-0668-004-00 008-0668-009-07 008-0668-005-00	3	■ 281 residential units ■ 500 car parking structure including 250 public spaces ■ 12,000 S.F. retail	Heather Klein 238-3659	Design Review Committee 10/26/05; Planning Commission approval 12/07/05. TPM approval 02/28/06. Extension granted 09/19/07. Extension granted 01/21/09.

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43	Emerald Parc	Tom Dolan (510) 839-7200	2400 Filbert Street APN: 005-0433-018-04	3	■55 townhomes	Peterson Vollmann 238-6167	Planning Commission approval. 11/16/05. Appeal denied by City Council 02/21/06. Extension granted 02/14/08 and 02/19/09.
44	Arcadia Park	Pulte Homes Andy Cost (925) 249-3200	98th Ave. at San Leandro St., APN - multiple	7	■168 residential units (previously approved for 366 residential units)	Darin Ranelletti 238-3663	Planning Commission approval 9/21/05. City Council denial of appeal and approval of General Plan amendment, rezoning approval and project 12/06/05. P-job permit issued. Project under construction. Revisions approved by Planning Commission 08/05/09. Additional revisions under review.
45	Red Star	National Affordable Communities David Booker (949) 222-9119	1396 5th Street APN: 004-0069-004-00	3	■119 affordable senior units ■3,300 S.F. commercial space	Darin Ranelletti 238-3663	Design Review Committee 04/27/05. Planning Commission approval 06/17/05. Revised project submitted 04/16/08. Design Review Committee 05/28/08. Extension granted 06/06/08 and 06/15/09.
46	~2501 Chestnut Street	Bridge Housing Kristy Wang (415) 989-1111	2501 Chestnut Street APN: 005-0436-002-00	3	■50 live/work units	Heather Klein 238-3659	Design Review Committee 08/11/04. Planning Commission approval 10/06/04. Vesting TPM submitted 08/21/06. Extensions granted 09/29/06, 11/13/07, 10/15/08, and 10/15/10. Site cleanup occurring.
47	Jackson Center Two*	EBOP Associates, LLC	11th, 12th, and Alice Streets APN: 002-0075-002-00	2	■110 condominium units ■5,000 S.F. retail	Heather Klein 238-3659	Design Review Committee 07/23/03; Planning Commission approval 09/03/03. Application filed for revisions to project. Design Review Committee 07/27/05; Administrative approval 09/16/05. TPM approval 02/14/06. Building permit #B0504575 expired. Extension granted 08/20/09.
48	~1331 Harrison Project*	Toby Levy (415)777-0561	14th and Harrison Street APN: 002-0065-006-01	2	■98 condominium units ■9,000 S.F. commercial ■Structured parking	Heather Klein 238-3659 Catherine Payne, 238-6168	Planning Commission approval 12/3/03. Design Review Committee approval for revisions 03/23/05. Project revisions approved administratively 04/25/05. Foundation permit #B0504335 expired. Extension granted 04/20/09. An application to re-establish a previous parking lot on the site filed 09/16/09 (Case File Number CU09-197). City Council approval of parking lot 07/20/10.

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49	~3884 Martin Luther King Jr. Way	Neil Cotter (650) 259-9303	3884 Martin Luther King Jr. Way APN: 012-0968-031-00	1	■40 residential units	Darin Ranelletti 238-3663 Kathy Kleinbaum, Redevelopment Division, 238-7185	Planning Commission approval 9/20/06. Extension granted 6/18/09.
50	~3860 Martin Luther King Jr. Way	Neil Cotter (650) 259-9303	3860 Martin Luther King Jr. Way APN: 012 -0968-030-01	1	■34 residential units	Darin Ranelletti 238-3663	Planning Commission approval 9/06/06.
51	~188 11th Street *	Lakeshore Partners Tom Peterson (510) 444-7191	176 11th Street, 198 11th Street, 1110 Jackson APN: 002 -0081-008-00 002-0081-007-00 002-0081-002-00	2	Option 1 ■287 residential units ■3,660 S.F. retail Option 2 n99 affordable apartment units n18,000 S.F. health clinic and ground floor commercial	Heather Klein 238-3659	Option 1: Planning Commission approval 12/07/05. Vesting TPM approval 07/31/06. Demolition permit #RB0603034. Extension granted 10/09/07. Extension granted 12/16/08. Option 2: approved administratively 11/24/10.
52	~2847 Peralta Street	William Lightner (415)267-2900	2847 Peralta Street APN: 007 -0589-018-02 007 -0589-023-00	3	■76 dwelling units and 24 live work units	Peterson Vollmann 238-6167	Planning Commission approval 01/18/06. Grading permit #GR0600068. Extension granted 05/05/08. Extension granted 09/22/09.
53	Siena Hills	Hillside Homes Edward Patmont (925) 946-0583	Between Rilea Way and Greenridge Drive on Keller Ave. APN: 04A-3457-033-01	6	■22 single-family homes	Heather Klein 238-3659	DEIR published 01/05/05; FEIR published 2/18/05; Planning Commission certification of the FEIR and approval of the project 03/02/05; TTM approval 06/1/05. Grading permit #GR0500061. Building permits # RB0501810-13 and 15-18. City Council GHAD approval 12/05/06. Project under construction. Extension granted 06/18/08.
54	~City Walk City Center T10 (2005)*	Alta City Walk, LL (415)888-8075	13th/14th/MLK/Jefferson APN: 002-0029-001-00	3	■3,000 S.F. retail ■252 residential units	Patrick Lane, Redevelopment Agency 238-7362 Don Smith, Bldg. Permits, 238-4778	Planning Commission approval 08/18/04. Building permit #B0500525. Project under construction.
55	Monte Vista Villas (formerly Leona Quarry)	The DeSilva Group David Chapman (925) 828-7999	7100 Mountain Boulevard APN: 037A-3151-001-01	6	■214 residential units	Bill Quesada, Building Services, 238-6345	City Council approval 12/03/02; City Council re-approval 02/17/04; Grading permit #GR0400025. Project under construction.

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MIXED-USE PROJECTS							
Pre-Application Discussions							
Application Submitted - Under Review							
56	1938 Broadway*	Encinal Jackson, LLC CB Wong (510) 628-9060	1930 Broadway 1944 Broadway 1941 Franklin APN: 008-0638-007-07 008-0638-005-00 008-0638-007-08	3	■ approx. 85,200 S.F. retail/fitness club ■ approx. 829,500 S.F. of commercial space ■ 220 residential units ■ 384 parking stalls ■ Rehabilitation of the Tapscott Building	Heather Klein 238-3659	Withdrawn
57	Kaiser Center	Tomas Schoenberg The SWIG Company (415)291-1100	300 Lakeside Drive Area bounded by 20th and 21st Streets and Webster and Harrison Streets	3	■ Demolition of 280,000 S.F. ■ 2 new towers: 42-stories with 780,000 S.F. office 34-stories with 565,000 S.F. office and 22,000 S.F. retail	Heather Klein 238-3659	NOP published 05/22/08. Environmental Scoping Session before the LPAB 06/09/08 and Planning Commission 06/18/08. DEIR published 8/23/10. LPAB DEIR hearing 10/4/10. PC DEIR hearing 10/6/10. FEIR preparation underway.
58	Oak Knoll Redevelopment Project	SunCal Oak Knoll LLC Pat Kelliher (510)251-0711	167 acre site 8750 Mountain Blvd. APN: Multiple	7	■ 960 residential units (408 SFD, 248 townhomes, 304 condominiums) ■ 82,000 S.F. commercial	Eric Angstadt 238-6190	Request for General Plan conformity 05/06. Director's determination of General Plan conformity 05/16/06. Request for amended General Plan conformity 12/06. Director's determination of amended General Plan conformity 12/20/06. NOP and Initial Study to prepare a Supplemental EIR issued 02/08/07. Environmental Scoping Session 02/28/07. Planning Commission denied the Appeal and upheld the General Plan determination 03/07/07. SEIR was published 09/06/07. Public hearing for the Draft SEIR 10/10/07. Design Review Committee 09/26/07. SunCal requests no further work fall of 08.

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59	Mandela Grand Mixed Use Project	KS Properties, LLC Peter Sullivan (415)362-1700	13.3 acre site bounded by Mandela, W. Grand, Poplar, and 18th Street	3	■1,577 residential units ■approx. 300,000 non-residential S.F.	Eric Angstadt 238-6190	Environmental application filed. NOP published 04/06/06. Environmental Scoping Session before LPAB 04/17/06 and Planning Commission 04/19/06. DEIR published 12/18/06. DEIR hearings before Planning Commission 01/17/07 and LPAB 01/29/07. FEIR and response to comments published 06/29/07. Project inactive.
60	Gateway Community Development Project (The Gateway)	Pacific Thomas Capital Randall Worsley (925) 939-7401	East 12th St. between 25th Ave. and Derby St.; APN - multiple	5	■810 residential units ■26,000 S.F. commercial	Darin Ranelletti 238-3663	Application filed. NOP published 11/23/05. Environmental Scoping Session 12/07/05. DEIR published 08/10/07. DEIR hearing session 09/05/07. Project inactive.
Application Approved							
61	~Mandela Transit Village	Capital Stone Group Dr. Thomas Casey (510) 689-8094	1357 5th Street APN 000O-0390-010-07	3	■120 residential units ■38,500 sq. ft. commercial	Darin Ranelletti 238-3663	Originally approved by Planning Commission on 8/6/03. Re-approved by Planning Commission on 2/18/09.
62	~Macarthur BART Transit Village	Macarthur Transit Community Partners, LLC Deborah Castles (510) 273-2002	7 acre site located between Telegraph, 40th, and Macarthur and Highway 24	1	■624 residential units ■42,500 S.F. retail/commercial space	Catherine Payne 238-6168 Kathy Kleinbaum, Urban Development, 238-7185	Planning Commission certification of the FEIR and project approval 06/04/08. City Council approval of the Rezoning on 07/15/08. Owner Participation Agreement and Development Agreement approval by City Council 07/21/09. Stage 1 FDP pending approval of the City council 12/21/10. Stage 2 FDP application filed 12/17/10.

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63	Oak to Ninth Mixed Use	Oakland Harbor Partners, LLC Patrick Van Ness (925) 463-1122	64.2 acre waterfront site bounded by Fallon Street, Embarcadero Road, 10th Ave., and the Oakland Estuary APN: 0430-001-02, 0430-001-04 (por), 0460-003,004,0465-002, 0470-002 (por).	3 & 2	■ General Plan Amendment from Central City East Redevelopment Plan Amendment and Central District Urban Renewal Plan Amendment ■ New Planned Waterfront Zoning District ■ Zoning Map Amendments ■ 3,100 residential units ■ 200,000 S.F. commercial ■ 3,950 structured parking spaces ■ 29.9 acres public open space ■ 2 renovated marinas; 170 boat slips ■ wetlands restoration area	Eric Angstadt 238-6190	DEIR published 09/01/05. Design Review Committee 01/25/06. FEIR published 02/01/06. PRAC 02/08/06. LPAB 02/27/06. Planning Commission approval 03/15/06. Appeal filed 3/24/06. City Council denial of the appeal and approval of the project, amendments, rezoning, etc 06/20/06 and 07/18/06. Under litigation. Revised EIR published 09/30/08. Revised EIR certified by City Council on 1/20/2009.
64	Wood Street (formerly Central Station) Mixed-Use Project	Carol Galante BUILD West Oakland, LLC PCL Associates, LLC (415) 989-1111 Andy Getz HFH Central Station Village, LLC Central Station Land, LLC (510) 652-4191	West Oakland Station Site – 16th and Wood Streets APN: various	3	■ 1557 residential units (including 186 live/work units) ■ 13,000 S.F. commercial ■ 1.39 acres public open space ■ 2.82 acres private open space ■ Renovation of train station	Eric Angstadt 238-6190	General Plan and Zoning Amendments required. DEIR published; Planning Commission certification of the FEIR and approval of the project 03/16/05. Appeal denied by City Council 05/17/05. Individual projects including Pacific Cannery Lofts, 14th Street Apartments, Zephyr Gate, and HFH Apartments proposals are approved.
65	Jack London Square Redevelopment	Jack London Square Partners, Dean Robinson, (415)391-9800	Eight Development areas within Jack London Square bounded by Alice, 2nd, Harrison, and Embarcadero. APN - Multiple	3	<i>Master Plan-</i> 1.2 million S.F. of mixed-use retail, commercial, and office Sites A-B,D,E,H, I: (1,700 seat movie theater, 250 room hotel, supermarkets, restaurants, and offices) Site C (10 Clay Street/505 Embarcadero West) (Ferry Landing) Site F (65 Harrison Street) (Jack London Market) Site G (255-2nd Street) (Jack London Parking Garage) 66 Franklin (Haslett Building)	Catherine Payne 238-6168	DEIR published 09/08/03; FEIR published 2/11/04. Planning Commission approval 03/17/04. City Council approval 04/04. Site C, F, and G completed.

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66	~1640 Broadway Mixed Use Project*	1640 Broadway Associates Marge Cafarelli (415) 512-8118	17th and Broadway 1640 Broadway APN: 008-0622-001-01	3	■177,600 S.F. of office ■4,710 S.F. ground floor retail ■Structured parking ■Alternative approved for 254 residential units with ground floor retail	Heather Klein 238-3659	Project approved 10/00; all residential alternative approved by Planning Commission 10/01. Administrative extension of approval granted for one year 10/04. Planning Commission re-approval 05/04/05. Vesting TPM approved 11/21/06. Extension granted 05/21/08.
67	Broadway West Grand (formerly known as Negherbon Mixed Use Project)*	Signature Properties Doug Park (925) 463-1122	2345 Broadway APN: 008 -0666-007-00	3	Parcel B ■367 residential units ■8,500 S.F. retail	Catherine Payne 238-6168	DEIR published 08/26/04. LPAB hearing 09/20/04. Planning Commission approval 10/06/04. TTM approval 06/20/06. Parcel B seeking amendments to the project. Design Review Committee 04/23/08. Planning Commission approval 06/04/08.
68	Safeway (Broadway @ Pleasant Valley)	Benner Stange Associates Architects L. Owen Chrisman (530) 670-0234	5050-5100 Broadway APN: 014-1242-002-03, 014-1242-005-07	1	■Redevelopment of existing shopping center with new 260,000 SF shopping center	Darin Ranelletti 238-3663	Application filed. NOP published 06/26/09. Environmental Scoping Session before Planning Commission 07/15/09. DEIR being prepared.
COMMERCIAL, INDUSTRIAL, CIVIC PROJECTS							
Pre-Application Discussions							
69	~Spanish Speaking Citizens Foundation	Joe DeCredico (510)883-1521	1470 Fruitvale Ave APN: 033 -2121-023-00	5	■40,000 S.F. 5-story civic building	Leigh McCullen 238-4977	Pre-application filed.
Application Submitted - Under Review							
70	~Replacement of Embarcadero Bridge	City of Oakland (510)883-1521	80 Fallon Street, 1 5th Ave APN: 000O-0430-001-04 000O-0430-001-02	5	■Replacement of the Embarcadero Bridge over Lake Merritt Channel	Leigh McCullen 238-4977	Pre-application filed.
71	~Victory Court Ballpark Development	City of Oakland Redevelopment Agency Gregory Hunter (510)238-2992	Victory Court Site -22 acre area generally located between Oak Street and the Lake Merritt Channel and I-880 and Embarcadero APN: various	3	■Up to 39,000 seat MLB ballpark ■Up to 180,000 S.F. retail ■540,000 S.F. office ■700 residential units	Peterson Vollmann 238-6167	NOP published 11/10/10. Environmental Scoping Session before Planning Commission 12/1/10. DEIR preparation underway.
72	~Oakland Zoo (Master Plan Amendment)	East Bay Zoological Society Nik Haas-Dejehia (510) 623-9525 x138	9777 Golf Links Rd APN - multiple	7	■Revisions to the Oakland Zoo Master Plan previously approved in 1998	Darin Ranelletti 238-3663	Application filed. Informational Briefing Session before Planning Commission 04/21/10. Environmental review underway.

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73	~Safeway	Ken Lowney (510)836-5400	6310 College Ave APN: 048A-7070-001-01	3	■New 50,000 SF grocery story and ground floor retail	Peterson Vollmann 238-6167	Application filed. NOP published 10/30/09. Environmental Scoping Session before Planning Commission 11/18/09. DEIR preparation underway.
74	~Foothill Square Redevelopment Project	Jay-Phares Corp. John Jay (510)562-9500	10700 Mac Arthur Boulevard APN: 047 -5589-001-00 047 -5589-001-06 047 -5589-001-05 047 -5589-001-04	7	■Redevelopment of a commercial shopping center approx. 13.8 acres ■72,000 sf supermarket	Aubrey Rose 238-2071	Application filed. Environmental scoping underway.
75	~633 Hegenberger (formerly Coliseum Center)	City of Oakland Redevelopment Agency	633 Hegenberger APN: 042-4218-001-16	7	■Retail facility containing approx. 139,000 SF	Darin Ranelletti 238-3663	Application filed. Environmental scoping underway. Design Review Committee 08/13/08. Application revised 06/08/09. Project inactive.
Application Approved							
76	~Alta Bates Summit Medical Center- Summit Campus Master Plan	Alta Bates Summit Medical Center Shahrokh Sayadi (415)203-6345	23-acre campus generally between Telegraph and Webster, and between 30th Street and 34th Street APN - Multiple	3	ABSMC Master Plan <i>Phase 1</i> ■Demolition of the Merritt Classroom and other small buildings ■Construction of a new 230,000 sq. ft. (11-story) acute care hospital ■1,090-space (7-story) parking garage. <i>Phase 2</i> ■Longer-term campus-wide improvements, new medical office buildings, classrooms and closure of a portion of Summit Street for development of a new campus plaza.	Scott Gregory (contract planner) (510) 535-6690	Application filed. NOP published 01/23/09. DEIR published 12/21/09. FEIR published 5/7/10. Planning Commission approval 05/19/10. Appealed to City Council. Council denial of the appeal and approval of the project 07/06/10.

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77	East Oakland Sports Center	City of Oakland Community and Economic Development Agency Project Delivery Division Lyle Oehler (510) 238-3389	9175 Edes Avenue APN: 044-5053-001-06	7	■Phased Master Plan for a sports center at Ira Jinkins Park. <i>Phase I</i> ■26,000:indoor swimming pool/water slide (natatorium), a dance/exercise room, a multi-purpose room/learning center, and other accessory activities. If funded a fitness/weight room and two outdoor basketball courts <i>Phase II</i> ■23,000 square foot facility and outdoor amenities	Lynn Warner 238-6983	Application filed. PRAC 01/09/08. Design Review Committee 02/27/08. Environmental impacts for the project were analyzed under Measure DD Implementation Project. Planning Commission certified the FEIR 02/13/08. Planning Commission approval 04/02/08. Building Permit #B0804025. Project under construction.
78	~City Center T12 (2005)*	Shorenstein Realty Investors Tom Hart (415) 772-7000	11th/12th/MLK/Jefferson APN: 002-0027-007-00	3	■Revision in program from 450 residential units to 600,000 SF office.	Lynn Warner 238-6983	Revision from residential units to office square footage. Design Review Committee 09/26/07. Planning Commission approval and Addendum certification 12/05/07. Building permit #B0803952. Project stopped construction. Redevelopment Agency renegotiated City Center DDA extending the completion requirements.
79	~1100 Broadway	Steven Wolmark SKS Investments (415)421-8200	1100 Broadway APN:002-0051-006-02	2	■Rehabilitation of the Key System Building ■310,285 S.F. of office ■9,810 S.F. of retail.	Heather Klein 238-3659	LPAB on 11/5/07 and 12/10/07. Design Review Committee on 10/24/07. Planning Commission approval and Addendum certification 02/13/08. Extension granted 08/17/09.
80	~Lake Merritt Channel Wetland and Widening Project	City of Oakland	Lake Merritt Channel between Lake Merritt and I-880 APN: 000O-0450-001, 002, 000O-0455-001-01, 001-07, 008-05,012, 013, 015-02	2	■Widening and tidal restoration improvements along Lake Merritt in association with the 12th Street Reconstruction Project, 10th Street Bridge Project, and Lake Merritt Channel Improvement Project at the 7th Street Flood Control Station.	Lesley Estes, Watershed Improvement Program Supervisor, 238-7431	DEIR published 04/14/05; Planning Commission hearing DEIR 5/17/05. Planning Commission certification of the FEIR and project approval 07/05/06. This project also is included in the Measure DD EIR. The DEIR for Measure DD was published 07/20/07. The Planning Commission certification of the FEIR 02/13/08. Appeal denied by City Council 04/01/08. Project under construction.

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81	Kaiser Permanente	Kaiser Permanente Judy DeVries (510) 752-2004	Generally the area surrounding the intersection of Broadway and Macarthur Boulevard.	1 and 3	■ Master Plan for new Hospital <i>Phase II</i> ■ 1,216 space parking structure ■ Hospital building (346 beds, approx. 1.06 MSF) ■ Central utility plant <i>Phase III</i> - n Demolition of existing hospital tower and low-rise (except for recent Emergency Department addition and Fabiola Building) ■ Conversion of ground-floor parking on Site 7 (38 spaces) to accommodate an additional 6,000 SF. of retail ■ Conversion of Emergency Department addition to temporary medical services use ■ Construction of parking lot of approximately 189 spaces ■ Construction of a new Central Administration MSB (approx. 60,000 SF)	Scott Gregory (contract planner) (510) 535-6690	Planning Commission certification of the FEIR and approval of the project 06/07/06. City Council approval of GPA, RPA and re-zoning 6/27/06. Planning Commission approval of the design of Phase I MOB 11/1/06. Design Review Committee for Phase II Hospital 12/12/07 and 5/28/08. Planning Commission approval of Design review for Phase 2 Hospital 11/19/08. Building Permits for hospital sent to OSHPD review. Demolition permit, Grading permit, and Building permit for garage issued. Project under construction.
82	City Center T5/T6 (2005)	Shorenstein Realty Investors Nick Loukianoff (415) 772-7062	11th/12th/Clay/Broadway APN: 002-0097-038-00 through 002-0097-040-00	3	■ 600,000 S.F. office ■ 7,500 S.F. commercial	Patrick Lane, Redevelopment Agency 238-7362	Planning Commission approval of PPUD 4/00.

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SUCCESSFUL COMPLETIONS							
Residential Projects							
1	Ironhorse Apartments at Central Station (formerly 14th Street Apartments -Wood Street)	Bridge Housing Ben Metcalf (415)989-1111	Portions of APN: 0006-0029-001 and 0000-0315-006.	3	■99 Affordable housing units	Eric Angstadt 238-6190	Project completed.
2	~Altenheim Senior Housing	Citizens Housing Corporation Kaori Tokunhea (415) 421-8605	1720 Macarthur Boulevard APN: 023-0494-001-07	5	<i>Phase II</i> ■ 83 apartments units (new construction)	Joann Pavlinec 238-6344	Project completed.
3	Housewives Market*	A. F. Evans Steve Kuklin (415) 591-2204	8th/9th/Clay and Jefferson 801-807 Clay Street APN: 001-0209-001, 002, 003, 004	3	<i>Phase II</i> ■72-86 condominium units ■14,000 S.F. flexible space	Don Smith, Bldg. Permits 238-4778	Project completed.
4	630 Thomas Berkley Square Housing *	SUDA/ Alan Dones (510) 715-3491	630 Thomas L. Berkley Way APN: N/A - TPM7541 Parcel 3	3	■88 residential condominium units ■3 commercial spaces	Heather Klein, Major Projects, 238-3659	Project completed.
5	1755 Broadway*	1755 Broadway LLC Andrew Brog (310)963-7878	1755 Broadway APN:008 -0640-005-00	3	■Conversion of floors 2-5 of office to 24 live/work condominiums.	Mike Rivera, 238-6417	Project completed.
6	Fox Courts	Deni Adaniya (510) 841.4410, ext.19	Uptown Parcel 6 555-19th Street, 550-18th Street APN 008-0642-017	3	80 residential units; 2500 sf. childcare; art space	Catherine Payne, Major Projects, 238-6168	Project completed.
7	311 2nd St*	Embarcadero Pacific Michael Reynolds (510) 444-4064	311 2nd Street APN:001 -0149-007-00	3	■105 residential condominium units	Heather Klein, Major Projects, 238-3659	Project completed.
8	100 Grand*	Essex Property Trust John Eudy (650) 849-1600	124 Grand Ave and 2264 Webster St. APN: 008-0655-007-00 & 008-0655-009-01	3	■241 residential units	Darin Ranelletti, Major Projects, 238-3663	Project completed.
9	Siena Hills	Hillside Homes Edward Patmont (925) 946-0583	Between Rilea Way and Greenridge Drive on Keller Ave. APN: 04A-3457-033-01	6	■10 single-family homes	Heather Klein, Major Projects, 238-3659	Project completed.
10	Pacific Cannery Lofts	PCL Associates Cal Inman (510)547-2122	1111-1119 Pine Street APN: 006-0029-002-00	3	■99 condo warehouse lofts ■45 live/work lofts ■15 townhouse lofts ■4 work/live lofts (part Wood Street Development)	Marge Stanzione, Major Projects 238-4932	Project completed.
11	Zephyr Gate -Wood Street	Pulte Homes (925) 249-3268	Wood Street APN: 006-0029-001-00	3	■130 residential condominium units	Marge Stanzione, Major Projects 238-4932	Project completed.

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12	3860 Martin Luther King Jr. Way	Neil Cotter (650) 259-9303	3860 & 3880 Martin Luther King Jr. Way APN: 012-0968-030-01 012-0968-031-00	1	■34 residential units	Darin Ranelletti, Major Projects, 238-3663 Kathy Kleinbaum, Redevelopment Division, 238-7185	Project completed.
13	~Jackson Courtyard Condominiums*	Gerald Green (415)377-5286	210 – 14th Street APN 008 –0627-020-00	3	■45 condominium units	Heather Klein, Major Projects, 238-3659	Project completed.
14	Uptown Project *	Forest City Residential, Inc. Susan Smartt (415) 836-5980	Area bounded by San Pablo, Telegraph, 18th and 20th Streets APN - Multiple	3	■Parcel I ■Parcel II ■Parcel III ■Park	Catherine Payne, Major Projects, 238-6168	Project completed.
15	Lion Creek Crossing (formerly Coliseum Gardens)	EBALDC Carlos Castellmos (510) 287-5335	66th Ave. at San Leandro Street APN-Multiple	6	■283 residential units ■7,500 S.F. of civic and commercial space ■park	Catherine Payne, Major Projects, 238-6168	All phases completed.
16	Monte Vista Villas (formerly Leona Quarry)	The DeSilva Group David Chapman (925) 828-7999	7100 Mountain Boulevard APN: 037A-3151-001-01	6	■209 residential units ■3,350 S.F. community center	Bill Quesada, Building Services, 238-6345	Project completed.
17	Packard Lofts* (formerly 2355 Broadway)	2355 Broadway LLC John Protopappas (510) 452-2944	2355 Broadway APN: 008-0666-006-00	6	■Adaptive re-use of historic building into 24 condominiums and ground floor retail	Heather Klein, Major Projects, 238-3659	Project completed.
18	46th Street Lofts (formerly Flecto Project)	Levin, Menzies, Kelly Paul Menzies (925) 937-4111	47th and Adeline; land area is in both Oakland and Emeryville. 119 Linden Street APN: 049-1172-002 013-1172-003 013-1172-004	1	■79 units and 3,000 S.F. commercial space ■Adaptive reuse of and addition to the former Flecto building.	Catherine Payne, Major Projects 238-6168	Project completed.
19	The Ellington* (formerly 3rd/Broadway Mixed Use)	The Enterprise Group Walter Cohen (415) 221-2534	200/210/228 Broadway APN: 001 –0141-002-01 001 –0141-011-00	3	■134 residential units ■11,000 S.F. retail	Heather Klein, Major Projects 238-3659 Don Smith, Bldg. Permits 238-4778	Project completed.
20	901 Jefferson*	Pyatok Architects Inc Gary Struthers (510)465-7010	901& 907 Jefferson Street APN: 002-0025-007-00 through 002-0025-009-00	3	■75 condominium units ■1,030 S.F. retail	Darin Ranelletti, Major Projects, 238-3663	Project completed.
21	Madison Lofts*	Affordable Housing Associates Mark Garrel (510) 649-8500	160 14th St. APN: 008-0628-005-01	3	■Approximately 76 condominium units ■2,666 S.F. of retail	Neil Gray 238-3878	Project completed.

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22	8 Orchids*	BayRock Residential Marilyn Ponte (510) 594-8811	620-636 Broadway APN: 001-0197-002-00	2	■3,600 S.F. retail ■157 condominium units	Heather Klein, Major Projects, 238-3659	Project completed.
23	Mandela Gateway Townhomes	Bridge Housing Kristy Wang (415) 989-1111	1431 8th Street APN: 004-0067-021-00	3	■14 condominiums	Heather Klein, Major Projects, 238-3659	Project completed.
24	66th & San Pablo	The Olson Company (925) 242-1050	6549 San Pablo Ave APN: 016-1506-001-02	1	■72 condominium units	Lynn Warner, Major Projects, 238-6983	Project completed.
25	288 Third Street* (formally 300 Harrison Street)	Signature Properties Chris Weekley (925) 463-1122	300 Harrison Street APN: 001-0153-016	3	■91 condominiums units	Joann Pavlinec, Major Projects, 238-6344	Project completed.
26	Altenheim Senior Housing	Citizens Housing Corporation Kaori Tokunhea (415) 421-8605	1720 Macarthur Boulevard APN: 023-0494-001-07	5	■ 93 apartment units ■ Rehabilitation of existing historic buildings	Joann Pavlinec, Major Projects, 238-6344	Phase I completed.
27	206 Second Street*	MV Jackson Robison Brown (415) 284-1200	206 Second Street APN: 001-0157-003-00	3	■2,380 S.F. of live/work ■1,310 S.F. of retail space ■75 condominium units	Heather Klein, Major Projects, 238-3659	Project completed.
28	1511 Jefferson *	Meritage Homes of California Randall Harris (925) 256-6042	1511 Jefferson Street APN:003-0071-006-00	3	■78 condominium units	Robert Merkamp 238-6283	Project completed.
29	Wheelink Project*	Jordan Real Estate Wayne Jordan (510) 663-3865	4th and Alice Street; JLS District 426 Alice Street APN 001 -0155-001-00	3	■94 residential units ■9,800 S.F. office	Scott Miller,238-2235 Don Smith, Bldg. Permits 238-4778	Project completed.
30	Ford Street Lofts	Signature Properties (905) 436-9350	3041, 3061, and 3065 Ford Street APN: 025-0666-002-00	5	■81 condominium residential units	Scott Miller, 238-2235	Project completed.
31	Lincoln Court Senior Housing	Domus Development 415-558-9500	2400 Macarthur Blvd APN: 029 -0993-020-01	4	■82 senior housing apartment units	Robert Merkamp 238-6283	Project completed.
32	Housewives Market*	A.F. Evans Steve Kuklin (415) 591-2204	8th/9th/Clay and Jefferson 801-807 Clay Street APN: 001-0209-001, 002, 003, 004	3	<i>Phase I</i> ■Between 102 -111 condominium units ■11,000 S.F. flexible space ■3,000 S.F. of retail ■Structured parking	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed
33	Aqua Via* (Harbor View or Second Street Lofts)	Urban Developments Marge Cafarelli (415) 512-8118	121-129 2nd Street APN: 001-0165-015-00	3	■100 condominium units ■5,190 S.F. of commercial / office	Heather Klein, Major Projects, 238-3659	Project completed.

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34	Cotton Mill Studios	Tom Dolan Architects (510) 839-7200	1091 Calcot Place APN: 019-0055-001-04	5	■74 unit live/work conversion	Joann Pavlinec, Major Projects, 238-6344	Project completed.
35	Glascok Residential Project “The Estuary”	Signature Properties Patrick Van Ness (925) 463-1122	2893 Glascok at Derby 4.1 Acres APN: 025-0674-001-00 025-0674-002-00 025-0674-003-00	5	■100 residential units	Scott Miller 238-2235	Project completed.
36	Green City Loft Project	Green City Development Martin Samuels (510) 635-7698	41st and Adeline; land area is in both Oakland and Emeryville. 1007 41st Street APN: 012 –1022-001-00	1	■62 lot units on former office/warehouse site	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed
37	City Limits Project (Formerly FABCO)	Pulte Homes Dennis O'Keefe (925)249-3218	1165 and 1249 67th Street west of San Pablo Ave. APN: 049-1507-004-00 016 –1507-008-03 016 –1507-009-02	1	■92 condominium residential units	Scott Miller 238-2235	Project completed.
38	Palm Villas Residential Project	Em Johnson Interest (510) 839-3057	9001-9321 MacArthur Blvd. APN: 047-5484-006-04, 007- 03, 010-02, 011, 012, 013, 022- 01, 022-02, 023	7	■78 single family homes	Don Smith, Bldg. Permits, 238-4778	Project completed.
39	Ettie Street/Mandela Parkway	David Baker Architects (415) 896-6700	2818 Mandela Parkway APN: 007-0587-002-05	3	■91 live/work units	Gary Patton, Major Projects Manager, 238-6281	Project completed
40	Arioso Project*	SNK Development (415) 896-1186	901 Franklin Street APN: 002-0096-004-00	2	■88 condominium units ■6,000 S.F. commercial structured parking	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed
41	Mandela Gateway Gardens (formerly Westwood Gardens)	Oakland Housing Authority and Bridge Housing Pete Nichol (415) 989-1111	1431 7th Street APN: 004-0067-021-00	3	■200 residential units (40 units in replacement of existing Westwood Gardens) 15,000 S.F. of retail space - combination rental and ownership; Some live/work units.	Heather Klein, Major Projects, 238-3659	Project completed.
42	Telegraph Gateway Project *	Tom Dolan Architects Scott Galka (510) 839-7200	Telegraph Ave. and 24th Street 2401 Telegraph Avenue APN: 008-0675-004-00	3	■50 new residential lots ■5,300 S.F. ground floor retail	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed.

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43	Durant Square	Signature Properties (925) 463-1122	International Blvd. And Durant Ave. 10970 International Blvd. APN: 047-5519-043-00	7	■43 new single family ■168 new townhouses ■40 new live/work (60 total) ■Food 4 Less ■Renovated building with continued commercial uses	Heather Klein, Major Projects, 238-3659 Bill Quesada, Building Permits, 238-6345	Project completed.
44	Preservation Park III*	Signature Properties (905) 436-9350	11th – 12th and MLK on a vacant parcel 655 12th Street APN: 002-0021-011-01 002-0021-012-00	3	■92 residential townhouses	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits, 238-4778	Project completed.
45	San Pablo Affordable Senior Housing	Oakland Community Housing Inc. (510) 763-7676	3255 San Pablo Avenue between 32nd and 34th Streets APN: 005-0470-017-01	3	■ 50+ residential units	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits	Project completed.
46	Bridge Housing – Linden Court	Bridge Housing (415) 989-1111	1089 26th Street. Near McClymonds High School in West Oakland APN: 005-0435-001-00	3	■Low-income housing (approx. 79 units)	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits	Project completed.
47	Bridge Housing - Chestnut Court	Bridge Housing (415) 989-1111	2240 Chestnut Street, at West Grand APN: 005-0428-001-00	3	■Hope IV project in conjunction with OHA ■58 affordable rental housing units ■6 affordable for sale housing units ■14 loft units, 4,000 S.F. retail ■4,000 S.F. supportive services	Don Smith, Bldg. Permits 238-4778	Project completed.
48	The Essex - Lake Merritt*	Lakeshore Partners Tom Peterson (510)-444-7191	17th and Lakeshore 108 - 17th Street APN: 008-0633-002-01	2	■270 residential units	Gary Patton, Major Projects Manager, 238-6281 Jim Oakley, Bldg. Permits 238-3637	Project completed.
49	Safeway Building*	Reynolds & Brown Dana Perry (925) 674-8400	4th and Jackson Streets 201 4th Street APN: 001-0155-008-00	3	■Reuse existing warehouse and add new top floor for approximately 46 live/work units ■4,500 S.F. ground floor commercial ■6,500 S.F. office	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits, 238-4778	Project completed.
50	Allegro Project*	SNK Development (415) 896-1186	3rd and Jackson Streets 208 Jackson Street APN:001-0159-006-00	3	■312 units ■13,500 S.F. commercial ■4 new buildings	Gary Patton, Major Projects Manager, 238-6281	Project completed.

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Commercial, Industrial, and Civic Projects							
51	~Auto Chlor System	Tulloch Construction Brian Tulloch (510) 655-3400	1325 14th Street APN: 005-0375-002-01, 005-0373-010-03, 005-0373-005-01	3	■64,512 S.F. concrete tiltup light manufacturing building	Ulla-Britt Jonsson, 238-3322	Project completed.
52	~Kaiser Permanente	Kaiser Permanente Judy DeVries (510) 752-2004	Generally the area surrounding the intersection of Broadway and Macarthur Boulevard.	1 and 3	Phase I West Broadway Medical Services Building and Garage	Scott Gregory (contract planner) (510) 535-6690 Gary Patton, Major Projects Manager, 238-6281	Project completed.
53	~Jack London Square Redevelopment	Jack London Square Partners, Stuart Richard, (415)391-9800	Eight Development areas within Jack London Square bounded by Alice, 2nd, Harrison, and Embarcadero. APN - Multiple	3	■commercial, office, and parking	Catherine Payne, Major Projects, 238-6168	Site C, G and F completed.
54	Fox Theater	City of Oakland Redevelopment Agency	1807-1829 Telegraph Ave APN: 008 -0642-001-00	3	■Rehabilitation of the historic theater ■20,000 S.F. addition	Joann Pavlinec, Major Projects, 238-6344	Project completed.
55	Head Royce School	John Malick & Associates John Malick (510)595-8042	4315 Lincoln Ave APN: 029A-1367-004-04	4	■Development of the Masterplan	Heather Klein, Major Projects, 238-3659	Project completed.
56	Cathedral of Christ the Light	CMA Eileen Ash (415) 597-8414	2121 Harrison Street and Grand Avenue APN:008-0653-024	3	■ 255,000 S.F. Cathedral	Catherine Payne, Major Projects, 238-6168	Project completed.
57	Center 21	John Sutton Prentiss Properties (510)465-2101	2100 Franklin Street APN:008 -0651-003-01	3	■15,000 S.F. retail ■218,000 S.F. office	Catherine Payne, Major Projects, 238-6168	Project completed.
58	Cox Cadillac Mixed Use	Bond Company Robert Bond (312) 853-0070	Intersection of Harrison St., 27th and Bay Place 230 Bay Place APN 010 -0795-027-01	3	■56,000 S.F. commercial ■Renovation of historic Cadillac Showroom	Joann Pavlinec, Major Projects, 238-6344 Don Smith, Bldg. Permits, 238-4778	Project completed.
59	66 Franklin Street*	Komorous-Towey Klara Komorous (510)446-2244	66 Franklin Street APN:001-0060-322	3	■Renovation of existing building with approximately 95 S.F. of commercial	Joann Pavlinec, Major Projects, 238-6344	Project completed.
60	17th Street Parking Garage	California Commercial Investments Phil Tagami (510) 268-8500	16th and 17th Streets and San Pablo Avenue 1630 San Pablo APN: 008 -0620-015-00 008 -0620-014-00 008 -0620-009-01	3	■+330 -space parking garage	Heather Klein, Major Projects, 238-3659 Patrick Lane, Redevelopment, 238-7362	Project completed.

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61	Thomas Berkley Square	SUDA/ North County Center for Self Sufficiency Alan Dones (510) 715-3491	San Pablo Ave between MLK Jr. Way, Thomas L. Berkley Way, and 21st Street. 630 20th Street APN: 008-0645-015-01 008-0645-01801 and 02 0080645-019 through 025	3	■ 114,000 S.F. office for the Alameda County Social Services Division and the North County Self Sufficiency Center ■ 5,000 S.F. of retail	Heather Klein, Major Projects, 238-3659 Don Smith, Bldg. Permits 238-4778	Project completed.
62	Infiniti of Oakland	Hendricks Automotive Ron Tye (925) 463-9074	Oakport Road at Hassler Way APN: 034-2295-005-04	7	■ New automotive dealership	Heather Klein, Major Projects, 238-3659 Jay Musante, Redevelopment, 238-6658	Project completed.
63	Perkins Street Residential Care	A.F. Evans John Rimbach (510) 891-444-7191	468-484 Perkins St. APN: 010-0767-014-00	3	■ 56 room care facility for elderly residents	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed.

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Mixed-Use Projects							
63	Seven Directions	Pyatok Architects Inc, Curtis Caton, (510)465-7010	2946 International Boulevard APN: 025-0716-012-00	3	■38 housing units ■20,115 S.F. clinic space	Joann Pavlinec, Major Projects, 238-6344	Project completed.
64	Broadway West Grand (formerly known as Negherbon Mixed Use Project)*	Signature Properties Doug Park (925) 463-1122	2345 Broadway APN: 008 -0666-007-00	3	Parcel A ■132 residential units ■21,300 S.F. retail	Catherine Payne, Major Projects, 238-6168	Project completed.
65	Jack London Square Redevelopment	Jack London Square Partners, Stuart Richard, (415)391-9800	Eight Development areas within Jack London Square bounded by Alice, 2nd, Harrison, and Embarcadero. APN - Multiple	3	■Site C	Catherine Payne, Major Projects, 238-6168	Project completed; partial temporary certificate of occupancy.
66	Dreyer's Site Residential Lofts* The Sierra	COD Builders Kava Massih (510)644-1920	311 Oak Street APN: 001-0163-012-00	3	■220 units ■30,000 S.F. commercial	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed.
67	Fruitvale Transit Village Phase I	FDC, Evelyn Johnson, (510) 535-6911	Fruitvale BART Station	5	■Masterplan for residential and commercial/civic use and new parking structure	Darin Ranelletti, Major Projects, 238-3663 Jim Oakley, Bldg. Permits 238-3637	Project completed.
68	Rainin Instruments	Carl Groch, (415) 592-3950	Edgewater Drive & Hassler Road 7500 Edgewater Drive	7	■180,000 S.F. office/manufacturing/R&D facility	Jay Musante, Redevelopment, 238- 6658	Project completed.
69	Lexus Dealership	Lance Gidel (408) 370-0280	Oakport St. at Hassler Way APN: 034-2295-005-04	7	■22,000 S.F. building for auto sales, service, repair of parts ■Outdoor auto sales lot for 275- 290 cars	Heather Klein, Major Projects, 238-3659	Project completed.
70	Zhone Technologies	Joe Ernst (510) 864-5985	66th Avenue and Oakport Street 7195 Oakport	7	■300,000 S.F. high-tech research and development campus	Don Smith, Bldg. Permits, 238-4778	Project completed.
71	Just Desserts	Just Desserts John Schmiedel (415) 864-6450	550 85th Avenue APN: 042 -4313-001-00	7	■64,525 S.F. bakery and warehouse	Don Smith, Bldg. Permits, 238-4778	Project completed.

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72	City Center T9 (2000)	Shorenstein Realty Investors Nick Loukianoff (415) 772-7062	11 th /12 th /Clay/Jefferson APN: 002-0033-006-00 through 015-00	3	■450K office ■7,500 S.F. retail	Gary Patton, Major Projects Manager, 238-6281 Don Smith, Bldg. Permits 238-4778	Project completed.
73	Extended Stay American Hotel – OTR Site	Extended Stay America Dan Stearns (425) 603-1530	Yerba Buena and Mandela Parkway APN: 007-0617-014-01	3	■149 hotel rooms	Gary Patton, Major Projects Manager, 238-6281	Project completed.
74	Courtyard by Marriott Hotel	Marriott, Don Celli (916) 369-4050	350 Hegenberger Road	7	■154-room hotel	Don Smith, Bldg. Permits, 238-4778	Project completed.
75	Oakland Garden Hotel (Courtyard Marriott)	Michael Chan Oakland Garden Hotel (510) 251-6440	9 th and Broadway 900 Broadway APN: 002-0094-002-00	2	■150-room hotel	Don Smith, Bldg. Permits 238-4778	Project completed.
76	1111 Jackson Street – Phase I	Peter Wong (510) 628-9060	1111 Jackson Street APN 002-75-002-00	2	■Renovation of existing 111,000 S.F. State office building	Gary Patton, Major Projects Manager, 238-6281	Project completed.
77	Rotunda Building Reuse	Phil Tagami (510) 268-8500	1500 Broadway APN: 008-0619-004-01	3	■Rehabilitation of historic building for office & commercial uses ■187,000 S.F. office ■50,000 S.F. retail	Gary Patton, Major Projects Manager, 238-6281	Project completed.
78	IKEA Parking Structure	Ikea Property, Inc. Doug Pass (925) 249-0317	Shellmound at I-80 4300 Shellmound Street	3	■Additional 3-level parking structure for 800 cars in portion of existing surface parking lot	Gary Patton, Major Projects Manager, 238-6281	Project completed.
79	Best Buy Retail Store	Best Buy – Architects MBH – Sherry Fraiser (510) 865-8663	Yerba Buena and Mandela Parkway (Portion of OTR site) APN: 007-0617-014-01	3	■45,000 S.F. Best Buy retail store proposed	Gary Patton, Major Projects Manager, 238-6281	Project completed.
80	Expo Design Center	Mike Abate (714) 940-5810	Horton St., East Bay Bridge Shopping Center. Part of Oakland/Emeryville JPA	3	■KMART vacating present store ■Home Expo Center has assumed lease. ■Exterior / interior remodeling	Gary Patton, Major Projects Manager, 238-6281	Project completed.
81	Edgewater Distribution Center	AMB Property Corp.	7200 Edgewater Drive APN: 041 –3902-003-17	7	■406,700 S.F. warehouse/industrial use	Port of Oakland Commercial Real Estate 627-1210	Project completed.

* 10K PROJECT (project includes residential units located in Downtown)
 ~Denotes new project, a recent change to the project description, or status.
 Compiled by Planning and Zoning, (510) 238-3941.

APPENDIX C

Greenhouse Gases, and Noise Supplemental Information

Appendix C-1: GHG Quantification for Construction

- URBEMIS2007 Results
- GHG Worksheet

Appendix C-2: GHG Quantification for Operations

- URBEMIS2007 for BGM (Existing and Proposed)
- BGM Results (Existing and Proposed)
- GHG Electrical Adjustments

Appendix C-3: Traffic Noise Appendix

APPENDIX C-1

Greenhouse Gas Quantification for Construction

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\mxm\Desktop\Weekend Work Shortcuts\210505.02 - BMSP EIR\AQ Data\BMSP Construction.urb924

Project Name: BMSP Proposed Construction

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

CONSTRUCTION EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012 TOTALS (tons/year unmitigated)	0.34	4.06	1.76	0.01	4.13	0.18	4.31	0.86	0.17	1.03	651.96
2013 TOTALS (tons/year unmitigated)	0.68	4.24	5.24	0.00	5.34	0.25	5.60	1.12	0.23	1.35	837.71
2014 TOTALS (tons/year unmitigated)	0.57	3.22	6.30	0.01	0.04	0.17	0.21	0.01	0.15	0.17	1,066.93
2015 TOTALS (tons/year unmitigated)	0.52	2.92	5.87	0.01	0.04	0.16	0.19	0.01	0.14	0.16	1,065.43
2016 TOTALS (tons/year unmitigated)	6.03	1.83	3.06	0.00	0.02	0.09	0.11	0.01	0.08	0.09	599.87

Construction Unmitigated Detail Report:

CONSTRUCTION EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

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	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10 Dust</u>	<u>PM10 Exhaust</u>	<u>PM10</u>	<u>PM2.5 Dust</u>	<u>PM2.5 Exhaust</u>	<u>PM2.5</u>	<u>CO2</u>
2012	0.34	4.06	1.76	0.01	4.13	0.18	4.31	0.86	0.17	1.03	651.96
Demolition 01/02/2012-12/31/2012	0.34	4.06	1.76	0.01	4.13	0.18	4.31	0.86	0.17	1.03	651.96
Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Demo Off Road Diesel	0.13	0.88	0.59	0.00	0.00	0.06	0.06	0.00	0.06	0.06	91.39
Demo On Road Diesel	0.21	3.17	1.04	0.01	0.02	0.11	0.13	0.01	0.11	0.11	547.25
Demo Worker Trips	0.00	0.01	0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.00	13.32
2013	0.68	4.24	5.24	0.00	5.34	0.25	5.60	1.12	0.23	1.35	837.71
Fine Grading 01/02/2013-06/14/2013	0.15	1.22	0.71	0.00	5.32	0.06	5.38	1.11	0.05	1.17	138.62
Fine Grading Dust	0.00	0.00	0.00	0.00	5.32	0.00	5.32	1.11	0.00	1.11	0.00
Fine Grading Off Road Diesel	0.15	1.21	0.65	0.00	0.00	0.06	0.06	0.00	0.05	0.05	132.59
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.03
Asphalt 06/15/2013-01/02/2014	0.19	1.11	0.86	0.00	0.00	0.09	0.09	0.00	0.09	0.09	119.66
Paving Off-Gas	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.18	1.09	0.71	0.00	0.00	0.09	0.09	0.00	0.08	0.08	100.71
Paving On Road Diesel	0.00	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	2.64
Paving Worker Trips	0.00	0.01	0.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	16.32
Building 06/15/2013-06/15/2016	0.34	1.91	3.68	0.00	0.02	0.10	0.12	0.01	0.09	0.10	579.42
Building Off Road Diesel	0.20	0.99	0.72	0.00	0.00	0.07	0.07	0.00	0.06	0.06	115.10
Building Vendor Trips	0.06	0.80	0.64	0.00	0.01	0.03	0.04	0.00	0.03	0.03	204.11
Building Worker Trips	0.07	0.12	2.31	0.00	0.01	0.01	0.02	0.00	0.01	0.01	260.21

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2014	0.57	3.22	6.30	0.01	0.04	0.17	0.21	0.01	0.15	0.17	1,066.93
Asphalt 06/15/2013-01/02/2014	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.69
Paving Off-Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving Off Road Diesel	0.00	0.01	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.42
Paving On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04
Paving Worker Trips	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23
Building 06/15/2013-06/15/2016	0.57	3.21	6.29	0.01	0.04	0.17	0.21	0.01	0.15	0.17	1,065.25
Building Off Road Diesel	0.34	1.69	1.29	0.00	0.00	0.11	0.11	0.00	0.10	0.10	211.57
Building Vendor Trips	0.11	1.31	1.09	0.00	0.01	0.05	0.06	0.00	0.04	0.05	375.19
Building Worker Trips	0.12	0.21	3.91	0.00	0.02	0.01	0.04	0.01	0.01	0.02	478.49
2015	0.52	2.92	5.87	0.01	0.04	0.16	0.19	0.01	0.14	0.16	1,065.43
Building 06/15/2013-06/15/2016	0.52	2.92	5.87	0.01	0.04	0.16	0.19	0.01	0.14	0.16	1,065.43
Building Off Road Diesel	0.31	1.57	1.26	0.00	0.00	0.10	0.10	0.00	0.09	0.09	211.57
Building Vendor Trips	0.10	1.16	1.02	0.00	0.01	0.04	0.06	0.00	0.04	0.05	375.22
Building Worker Trips	0.11	0.19	3.60	0.00	0.02	0.01	0.04	0.01	0.01	0.02	478.65

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2016	6.03	1.83	3.06	0.00	0.02	0.09	0.11	0.01	0.08	0.09	599.87
Building 06/15/2013-06/15/2016	0.22	1.22	2.51	0.00	0.02	0.06	0.08	0.01	0.06	0.06	485.84
Building Off Road Diesel	0.13	0.67	0.56	0.00	0.00	0.04	0.04	0.00	0.04	0.04	96.46
Building Vendor Trips	0.04	0.47	0.43	0.00	0.01	0.02	0.02	0.00	0.02	0.02	171.09
Building Worker Trips	0.04	0.08	1.51	0.00	0.01	0.01	0.02	0.00	0.00	0.01	218.29
Trenching 01/02/2016-06/15/2016	0.08	0.61	0.50	0.00	0.00	0.03	0.03	0.00	0.03	0.03	107.20
Trenching Off Road Diesel	0.08	0.61	0.46	0.00	0.00	0.03	0.03	0.00	0.03	0.03	101.16
Trenching Worker Trips	0.00	0.00	0.04	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.03
Coating 06/16/2016-12/31/2016	5.73	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.83
Architectural Coating	5.73	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Coating Worker Trips	0.00	0.00	0.05	0.00	0.00	0.00	0.00	0.00	0.00	0.00	6.83

Phase Assumptions

Phase: Demolition 1/2/2012 - 12/31/2012 - Type Your Description Here

Building Volume Total (cubic feet): 0

Building Volume Daily (cubic feet): 74995.59

On Road Truck Travel (VMT): 1041.61

Off-Road Equipment:

1 Concrete/Industrial Saws (10 hp) operating at a 0.73 load factor for 8 hours per day

1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 1 hours per day

2 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 6 hours per day

Phase: Fine Grading 1/2/2013 - 6/14/2013 - Default Fine Site Grading Description

Total Acres Disturbed: 18.04

Maximum Daily Acreage Disturbed: 4.51

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

Page: 5

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On Road Truck Travel (VMT): 0

Off-Road Equipment:

- 1 Graders (174 hp) operating at a 0.61 load factor for 6 hours per day
- 1 Rubber Tired Dozers (357 hp) operating at a 0.59 load factor for 6 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day
- 1 Water Trucks (189 hp) operating at a 0.5 load factor for 8 hours per day

Phase: Trenching 1/2/2016 - 6/15/2016 - Type Your Description Here

Off-Road Equipment:

- 2 Excavators (168 hp) operating at a 0.57 load factor for 8 hours per day
- 1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Paving 6/15/2013 - 1/2/2014 - Default Paving Description

Acres to be Paved: 4.51

Off-Road Equipment:

- 4 Cement and Mortar Mixers (10 hp) operating at a 0.56 load factor for 6 hours per day
- 1 Pavers (100 hp) operating at a 0.62 load factor for 7 hours per day
- 2 Paving Equipment (104 hp) operating at a 0.53 load factor for 6 hours per day
- 1 Rollers (95 hp) operating at a 0.56 load factor for 7 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Building Construction 6/15/2013 - 6/15/2016 - Default Building Construction Description

Off-Road Equipment:

- 1 Cranes (399 hp) operating at a 0.43 load factor for 6 hours per day
- 2 Forklifts (145 hp) operating at a 0.3 load factor for 6 hours per day
- 1 Generator Sets (49 hp) operating at a 0.74 load factor for 8 hours per day
- 1 Tractors/Loaders/Backhoes (108 hp) operating at a 0.55 load factor for 8 hours per day
- 3 Welders (45 hp) operating at a 0.45 load factor for 8 hours per day

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Phase: Architectural Coating 6/16/2016 - 12/31/2016 - Default Architectural Coating Description

Rule: Residential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Residential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Interior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Rule: Nonresidential Exterior Coatings begins 1/1/2005 ends 12/31/2040 specifies a VOC of 250

Construction Emissions		EMISSIONS in tons		
		CO2	CH4	N2O
		4221.9 (from URBEMIS)		
From CCAR GPR 3.1 (2009)	Table C-6			
Diesel emission of CO2		10.15 kg CO2/gal 0.00058 kg CH4/gal 0.00026 kg N2O/gal		
So for Mobile sources...	CH4 emission = N2O emissions =	5.71E-05 percent of CO2 Emissions 2.56E-05 percent of CO2 Emissions		
Total Construction emissions in tons =				
		CO2 4221.90	CH4 0.24	N2O 0.11
				Total GHG 4222.25
Total construction emissions as eCO2 in tons =				
		4221.90	5.07	33.53
Total construction Emissions as eCO2 on Metric tons =		3830.02	4.60	30.41
				3865.03
40-Year Amortized Construction emissions =				
				96.62583

APPENDIX C-2

Greenhouse Gas Quantification for Operations

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Urbemis 2007 Version 9.2.4

Detail Report for Annual Operational Unmitigated Emissions (Tons/Year)

File Name: C:\Documents and Settings\mxm\Application Data\Urbemis\Version9a\Projects\BMSP AQ Data\BMSP BGM Run.urb924

Project Name: Oakland BMSP BGM Run Existing Uses

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

OPERATIONAL EMISSION ESTIMATES (Annual Tons Per Year, Unmitigated)

<u>Source</u>	ROG	NOX	CO	SO2	PM10	PM25	CO2
Apartments low rise	0.05	0.05	0.43	0.00	0.06	0.01	33.95
Supermarket	0.05	0.07	0.60	0.00	0.09	0.02	49.80
Warehouse	0.41	0.32	2.59	0.00	0.39	0.08	216.23
General light industry	0.02	0.02	0.21	0.00	0.03	0.01	16.92
General heavy industry	0.84	0.94	8.32	0.01	1.13	0.22	641.40
TOTALS (tons/year, unmitigated)	1.37	1.40	12.15	0.01	1.70	0.34	958.30

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2011 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments low rise	0.75	3.33	dwelling units	12.00	39.96	191.81

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Summary of Land Uses

Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Supermarket		18.18	1000 sq ft	3.30	59.99	287.97
Warehouse		1.60	1000 sq ft	162.80	260.48	1,250.30
General light industry		20.00	1000 sq ft	1.00	20.00	96.00
General heavy industry		4.84	1000 sq ft	155.00	750.20	3,600.96
					1,130.63	5,427.04

Vehicle Fleet Mix

Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.3	0.9	98.7	0.4
Light Truck < 3750 lbs	12.4	1.6	96.0	2.4
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.8	0.0	75.0	25.0
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.3	0.0	15.4	84.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	62.1	37.9	0.0
School Bus	0.0	0.0	0.0	0.0
Motor Home	0.6	0.0	83.3	16.7

Travel Conditions

	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	4.8	4.8	4.8	4.8	4.8	4.8
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Supermarket				2.0	1.0	97.0
Warehouse				2.0	1.0	97.0
General light industry				50.0	25.0	25.0
General heavy industry				90.0	5.0	5.0

Operational Changes to Defaults

Home-based work urban trip length changed from 10.8 miles to 4.8 miles

Home-based shop urban trip length changed from 7.3 miles to 4.8 miles

Home-based other urban trip length changed from 7.5 miles to 4.8 miles

Commercial-based commute urban trip length changed from 9.5 miles to 4.8 miles

Commercial-based non-work urban trip length changed from 7.35 miles to 4.8 miles

Commercial-based customer urban trip length changed from 7.35 miles to 4.8 miles

Urbemis 2007 Version 9.2.4

Combined Annual Emissions Reports (Tons/Year)

File Name: C:\Documents and Settings\mxm\Application Data\Urbemis\Version9a\Projects\BMSP AQ Data\BMSP BGM Run Proposed.urb924

Project Name: BMSP BGM Run Proposed Uses

Project Location: Alameda County

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

Summary Report:

AREA SOURCE EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	3.95	0.67	0.76	0.00	0.00	0.00	828.55

OPERATIONAL (VEHICLE) EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	2.97	3.45	30.30	0.02	4.60	0.88	2,574.83

SUM OF AREA SOURCE AND OPERATIONAL EMISSION ESTIMATES

	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
TOTALS (tons/year, unmitigated)	6.92	4.12	31.06	0.02	4.60	0.88	3,403.38

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Area Source Unmitigated Detail Report:

AREA SOURCE EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOx</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM2.5</u>	<u>CO2</u>
Natural Gas	0.05	0.66	0.34	0.00	0.00	0.00	826.48
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	1.31
Landscape	0.03	0.01	0.42	0.00	0.00	0.00	0.76
Consumer Products	3.30						
Architectural Coatings	0.57						
TOTALS (tons/year, unmitigated)	3.95	0.67	0.76	0.00	0.00	0.00	828.55

Area Source Changes to Defaults

- Percentage of residences with wood stoves changed from 35% to 0%
- Percentage of residences with wood fireplaces changed from 10% to 0%
- Percentage of residences with natural gas fireplaces changed from 55% to 100%

Operational Unmitigated Detail Report:

OPERATIONAL EMISSION ESTIMATES Annual Tons Per Year, Unmitigated

<u>Source</u>	<u>ROG</u>	<u>NOX</u>	<u>CO</u>	<u>SO2</u>	<u>PM10</u>	<u>PM25</u>	<u>CO2</u>
Apartments low rise	0.58	0.67	5.94	0.00	0.89	0.17	501.18
Apartments mid rise	1.43	1.57	13.90	0.01	2.09	0.40	1,171.79
Industrial park	0.96	1.21	10.46	0.01	1.62	0.31	901.86
TOTALS (tons/year, unmitigated)	2.97	3.45	30.30	0.02	4.60	0.88	2,574.83

Operational Settings:

Does not include correction for passby trips

Does not include double counting adjustment for internal trips

Analysis Year: 2012 Season: Annual

Emfac: Version : Emfac2007 V2.3 Nov 1 2006

<u>Summary of Land Uses</u>						
Land Use Type	Acreage	Trip Rate	Unit Type	No. Units	Total Trips	Total VMT
Apartments low rise	5.62	6.56	dwelling units	90.00	590.40	2,833.92
Apartments mid rise	7.37	4.93	dwelling units	280.00	1,380.40	6,625.92
Industrial park		9.73	1000 sq ft	110.00	1,070.30	5,137.44
					3,041.10	14,597.28

<u>Vehicle Fleet Mix</u>				
Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
Light Auto	54.4	0.7	99.1	0.2
Light Truck < 3750 lbs	12.3	1.6	96.0	2.4
Light Truck 3751-5750 lbs	19.8	0.5	99.5	0.0
Med Truck 5751-8500 lbs	6.3	0.0	100.0	0.0
Lite-Heavy Truck 8501-10,000 lbs	0.8	0.0	75.0	25.0
Lite-Heavy Truck 10,001-14,000 lbs	0.6	0.0	50.0	50.0
Med-Heavy Truck 14,001-33,000 lbs	1.3	0.0	15.4	84.6
Heavy-Heavy Truck 33,001-60,000 lbs	0.8	0.0	0.0	100.0
Other Bus	0.1	0.0	0.0	100.0
Urban Bus	0.1	0.0	0.0	100.0
Motorcycle	2.9	58.6	41.4	0.0

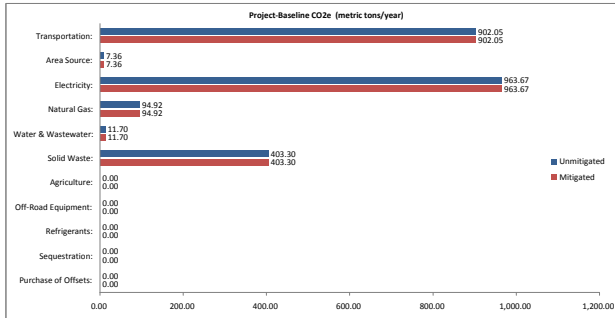
<u>Vehicle Fleet Mix</u>				
Vehicle Type	Percent Type	Non-Catalyst	Catalyst	Diesel
School Bus	0.0	0.0	0.0	0.0
Motor Home	0.6	0.0	83.3	16.7

	<u>Travel Conditions</u>					
	Residential			Commercial		
	Home-Work	Home-Shop	Home-Other	Commute	Non-Work	Customer
Urban Trip Length (miles)	4.8	4.8	4.8	4.8	4.8	4.8
Rural Trip Length (miles)	16.8	7.1	7.9	14.7	6.6	6.6
Trip speeds (mph)	35.0	35.0	35.0	35.0	35.0	35.0
% of Trips - Residential	32.9	18.0	49.1			
% of Trips - Commercial (by land use)						
Industrial park				41.5	20.8	37.8

Summary Results

Project Name: Oakland BMSP BGM Run Existing Uses		
Project and Baseline Years: 2011 N/A		
Results	Unmitigated Project- Baseline CO2e (metric tons/year)	Mitigated Project- Baseline CO2e (metric tons/year)
Transportation:	902.05	902.05
Area Source:	7.36	7.36
Electricity:	963.67	963.67
Natural Gas:	94.92	94.92
Water & Wastewater:	11.70	11.70
Solid Waste:	403.30	403.30
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	2,382.99	2,382.99

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				902.05	37.85%
Area Source:	6.90	0.02	0.00	7.36	0.31%
Electricity:	962.13	0.01	0.00	963.67	40.44%
Natural Gas:	94.68	0.01	0.00	94.92	3.98%
Water & Wastewater:	11.68	0.00	0.00	11.70	0.49%
Solid Waste:	2.94	19.06	N/A	403.30	16.92%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				2,382.99	100.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS. After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]). Finally, CO2e is adjusted to account for th low carbon fuels rule.

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				902.05	37.85%
Area Source:	6.90	0.02	0.00	7.36	0.31%
Electricity:	962.13	0.01	0.00	963.67	40.44%
Natural Gas:	94.68	0.01	0.00	94.92	3.98%
Water & Wastewater:	11.68	0.00	0.00	11.70	0.49%
Solid Waste:	2.94	19.06	N/A	403.30	16.92%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				2,382.99	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: [Transpa_Detail Mit](#) for a list of the transportation mitigation measures selected (in URBEMIS)

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

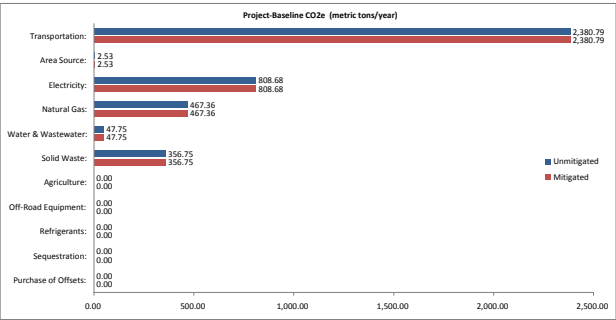
Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

Summary Results

Project Name: BMSP BGM Run Proposed Uses		
Project and Baseline Years: 2012 N/A		
	Unmitigated Project-Baseline CO2e (metric tons/year)	Mitigated Project-Baseline CO2e (metric tons/year)
Results		
Transportation:	2,380.79	2,380.79
Area Source:	2.53	2.53
Electricity:	808.68	808.68
Natural Gas:	467.36	467.36
Water & Wastewater:	47.75	47.75
Solid Waste:	356.75	356.75
Agriculture:	0.00	0.00
Off-Road Equipment:	0.00	0.00
Refrigerants:	0.00	0.00
Sequestration:	N/A	0.00
Purchase of Offsets:	N/A	0.00
Total:	4,063.85	4,063.85

Baseline is currently: **OFF**
Baseline Project Name:
Go to Settings Tab to Turn On Baseline



Detailed Results

Unmitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				2,380.79	58.58%
Area Source:	1.88	0.00	0.00	2.53	0.06%
Electricity:	807.38	0.01	0.00	808.68	19.90%
Natural Gas:	466.16	0.04	0.00	467.36	11.50%
Water & Wastewater:	47.67	0.00	0.00	47.75	1.17%
Solid Waste:	2.61	16.86	N/A	356.75	8.78%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				4,063.85	100.00%

* Several adjustments were made to transportation emissions after they have been imported from URBEMIS. After importing from URBEMIS, CO2 emissions are converted to metric tons and then adjusted to account for the "Pavley" regulation. Then, CO2 is converted to CO2e by multiplying by 100/95 to account for the contribution of other GHGs (CH4, N2O, and HFCs [from leaking air conditioners]). Finally, CO2e is adjusted to account for th low carbon fuels rule.

Baseline	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				0.00	N/A
Area Source:	0.00	0.00	0.00	0.00	N/A
Electricity:	0.00	0.00	0.00	0.00	N/A
Natural Gas:	0.00	0.00	0.00	0.00	N/A
Water & Wastewater:	0.00	0.00	0.00	0.00	N/A
Solid Waste:	0.00	0.00	N/A	0.00	N/A
Agriculture:	0.00	0.00	0.00	0.00	N/A
Off-Road Equipment:	0.00	0.00	0.00	0.00	N/A
Refrigerants:	N/A	N/A	N/A	0.00	N/A
Sequestration:	N/A	N/A	N/A	N/A	N/A
Purchase of Offsets:	N/A	N/A	N/A	N/A	N/A
Total:				0.00	0.00%

Mitigated	CO2 (metric tpy)	CH4 (metric tpy)	N2O (metric tpy)	CO2e (metric tpy)	% of Total
Transportation*:				2,380.79	58.58%
Area Source:	1.88	0.00	0.00	2.53	0.06%
Electricity:	807.38	0.01	0.00	808.68	19.90%
Natural Gas:	466.16	0.04	0.00	467.36	11.50%
Water & Wastewater:	47.67	0.00	0.00	47.75	1.17%
Solid Waste:	2.61	16.86	N/A	356.75	8.78%
Agriculture:	0.00	0.00	0.00	0.00	0.00%
Off-Road Equipment:	0.00	0.00	0.00	0.00	0.00%
Refrigerants:	N/A	N/A	N/A	0.00	0.00%
Sequestration:	N/A	N/A	N/A	0.00	0.00%
Purchase of Offsets:	N/A	N/A	N/A	0.00	0.00%
Total:				4,063.85	100.00%

Mitigation Measures Selected:

Transportation: Go to the following tab: [Transpa_Detail Mit](#) for a list of the transportation mitigation measures selected (in URBEMIS)

Electricity: The following mitigation measure(s) have been selected to reduce electricity emissions.

Natural Gas: The following mitigation measure(s) have been selected to reduce natural gas emissions.

Water and Wastewater: The following mitigation measure(s) have been selected to reduce water and wastewater emissions.

Solid Waste: The following mitigation measure has been selected to reduce solid waste related GHG emissions.

Ag: No existing mitigation measures available.

Off-Road Equipment: No existing mitigation measures available.

Refrigerants: The following mitigation measure has ben selected to reduce refrigerant emissions:

Carbon Sequestration: Project does not include carbon sequestration through tree planting.

Emission Offsets/Credits: Project does not include purchase of emission offsets/credits.

Postprocess Electrical GHG emission Adjustment - Existing Uses

This worksheet adjusts the electrical GHG emissions calculated using the BGM model to account for PG&E-specific emission factors for projects in PG&E's service area. BGM uses a statewide factor

Project: Oakland BMSP Amendment

Electrical Emissions

BGM Calculated electrical Emissions = 962.13 MT of CO2 (not eCO2) (cell c8)

BGM Electrical CO2 Emission factor = 804.54 lbs CO2/MW-hr (cell c132)

PG&E CO2 Emission factors: Source: http://www.pgecorp.com/corp_responsibility/reports/2009/index.html/en10_climate.jsp

2008 641 lbs CO2/MW-hr

2007 636 lbs CO2/MW-hr

2006 456 lbs CO2/MW-hr

2005 489 lbs CO2/MW-hr

2004 566 lbs CO2/MW-hr

5 year rolling average = 557.6

PG&E-specific Adjusted Emission = 666.8204 MT of CO2 (not eCO2)

BGM CH4 Emissions = 0.01 MT of CO2 (not eCO2) (cell c9)

BGM N2O Emission = 0 MT of CO2 (not eCO2) (cell c10)

Adjusted eCO2 Emission = 667.0304 MT of eCO2

50% adj **333.5152 MT of eCO2**

Water and Wastewater treatment and conveyance

BGM Calculated water & wastewater Emission = 11.68 MT of CO2 (not eCO2) (cell c8)

Per cells h19, I19 and J19, indoor water electrical demand is 72 % of electrical demand

Per Table ES-1 water supply and conveyance is 39 percent of energy in Northern Calif. For which a statewide factor is appropriate
The remaining energy is for local treatment and distribution for which the PG&E factor is appropriate

Indoor use Treatment and distribution Emission = 5.13 MT of CO2 (not eCO2)

Non-adjusted emissions = 6.55 MT of CO2 (not eCO2)

BGM Electrical CO2 Emission factor = 804.54 lbs CO2/MW-hr (cell c46)

PG&E 5-year Ave Emission Factor = 557.6 lbs CO2/MW-hr

PG&E-specific Adjusted Emission = 3.56 MT of CO2 (not eCO2)

Retooled water & wastewater emissions = 10.11

BGM CH4 Emissions = 0 MT of CO2 (not eCO2) (cell c9)

BGM N2O Emission = 0 MT of CO2 (not eCO2) (cell c10)

Adjusted eCO2 Emission = 10.11 MT of eCO2

50% adj **5.052739 MT of eCO2**

Postprocess Electrical GHG emission Adjustment - Proposed Uses

This worksheet adjusts the electrical GHG emissions calculated using the BGM model to account for PG&E-specific emission factors for projects in PG&E's service area. BGM uses a statewide factor

Project: Oakland BMSP Amendment

Electrical Emissions

BGM Calculated electrical Emissions = 807.38 MT of CO2 (not eCO2) (cell c8)

BGM Electrical CO2 Emission factor = 804.54 lbs CO2/MW-hr (cell c132)

PG&E CO2 Emission factors: Source: http://www.pgecorp.com/corp_responsibility/reports/2009/index.html/en10_climate.jsp

2008	641 lbs CO2/MW-hr
2007	636 lbs CO2/MW-hr
2006	456 lbs CO2/MW-hr
2005	489 lbs CO2/MW-hr
2004	566 lbs CO2/MW-hr

5 year rolling average = 557.6

PG&E-specific Adjusted Emission = 559.5683 MT of CO2 (not eCO2)

BGM CH4 Emissions = 0.01 MT of CO2 (not eCO2) (cell c9)

BGM N2O Emission = 0 MT of CO2 (not eCO2) (cell c10)

Adjusted eCO2 Emission = 559.7783 MT of eCO2

Water and Wastewater treatment and conveyance

BGM Calculated water & wastewater Emission = 47.67 MT of CO2 (not eCO2) (cell c8)

Per cells h19, l19 and J19, indoor water electrical demand is 72 % of electrical demand

Per Table ES-1 water supply and conveyance is 39 percent of energy in Northern Calif. For which a statewide factor is appropriate
The remaining energy is for local treatment and distribution for which the PG&E factor is appropriate

Indoor use Treatment and distribution Emission = 20.94 MT of CO2 (not eCO2)
Non-adjusted emissions = 26.73 MT of CO2 (not eCO2)

BGM Electrical CO2 Emission factor = 804.54 lbs CO2/MW-hr (cell c46)
PG&E 5-year Ave Emission Factor = 557.6 lbs CO2/MW-hr

PG&E-specific Adjusted Emission = 14.51 MT of CO2 (not eCO2)

Retooled water & wastewater emissions = 41.24

BGM CH4 Emissions = 0 MT of CO2 (not eCO2) (cell c9)

BGM N2O Emission = 0 MT of CO2 (not eCO2) (cell c10)

Adjusted eCO2 Emission = 41.24 MT of eCO2

APPENDIX C-3

Traffic Noise

Traffic Noise Level Estimates

rev. 3/16/07

15m= 49 FEET

7.7688005

ROAD SEGMENT #1: Sacramento N of Alcatraz		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	1,144	97	1,110	2	23	1	11	30	48	30	48	30	48	62.8	56.6	60.7	65.5	30	62.4	60.9	0.0
Existing + Project	1,162	97	1,127	2	23	1	12	30	48	30	48	30	48	62.9	56.7	60.8	65.6	30	62.5	61.0	0.1
2015 No Project	1,220	97	1,183	2	24	1	12	30	48	30	48	30	48	63.1	56.9	61.0	65.8	30	62.7	61.2	0.3
2015 + Project	1,238	97	1,201	2	25	1	12	30	48	30	48	30	48	63.2	56.9	61.1	65.8	30	62.8	61.2	0.3
2035 No Project	1,570	97	1,523	2	31	1	16	30	48	30	48	30	48	64.2	58.0	62.1	66.9	30	63.8	62.3	1.4
2035 + Project	1,588	97	1,540	2	32	1	16	30	48	30	48	30	48	64.3	58.0	62.1	66.9	30	63.9	62.3	0.0
ROAD SEGMENT #2: Sacramento S of Alcatraz		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	939	97	911	2	19	1	9	30	48	30	48	30	48	62.0	55.7	59.9	64.6	30	61.6	60.0	0.0
Existing + Project	953	97	924	2	19	1	10	30	48	30	48	30	48	62.0	55.8	59.9	64.7	30	61.6	60.1	0.1
2015 No Project	1,000	97	970	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	0.3
2015 + Project	1,029	97	998	2	21	1	10	30	48	30	48	30	48	62.4	56.1	60.3	65.0	30	62.0	60.4	0.4
2035 No Project	1,320	97	1,280	2	26	1	13	30	48	30	48	30	48	63.5	57.2	61.3	66.1	30	63.0	61.5	1.5
2035 + Project	1,349	97	1,309	2	27	1	13	30	48	30	48	30	48	63.5	57.3	61.4	66.2	30	63.1	61.6	0.0
ROAD SEGMENT #3: Alcatraz E of Sacramento		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	912	97	885	2	18	1	9	30	48	30	48	30	48	61.8	55.6	59.7	64.5	30	61.4	59.9	0.0
Existing + Project	1,109	97	1,076	2	22	1	11	30	48	30	48	30	48	62.7	56.4	60.6	65.4	30	62.3	60.8	0.8
2015 No Project	1,050	97	1,019	2	21	1	11	30	48	30	48	30	48	62.5	56.2	60.3	65.1	30	62.1	60.5	0.6
2015 + Project	1,054	97	1,022	2	21	1	11	30	48	30	48	30	48	62.5	56.2	60.4	65.2	30	62.1	60.5	0.6
2035 No Project	1,250	97	1,213	2	25	1	13	30	48	30	48	30	48	63.2	57.0	61.1	65.9	30	62.8	61.3	1.4
2035 + Project	1,254	97	1,216	2	25	1	13	30	48	30	48	30	48	63.2	57.0	61.1	65.9	30	62.8	61.3	0.0
ROAD SEGMENT #4: Alcatraz W of Sacramento		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	707	97	686	2	14	1	7	30	48	30	48	30	48	60.7	54.5	58.6	63.4	30	60.3	58.8	0.0
Existing + Project	920	97	892	2	18	1	9	30	48	30	48	30	48	61.9	55.6	59.8	64.6	30	61.5	59.9	1.1
2015 No Project	850	97	825	2	17	1	9	30	48	30	48	30	48	61.5	55.3	59.4	64.2	30	61.1	59.6	0.8
2015 + Project	857	97	831	2	17	1	9	30	48	30	48	30	48	61.6	55.3	59.5	64.3	30	61.2	59.6	0.8
2035 No Project	1,060	97	1,028	2	21	1	11	30	48	30	48	30	48	62.5	56.3	60.4	65.2	30	62.1	60.6	1.8
2035 + Project	1,067	97	1,035	2	21	1	11	30	48	30	48	30	48	62.5	56.3	60.4	65.2	30	62.1	60.6	0.0
ROAD SEGMENT #5: Market N of 63rd		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	822	97	797	2	16	1	8	30	48	30	48	30	48	61.4	55.1	59.3	64.1	30	61.0	59.5	0.0
Existing + Project	830	97	805	2	17	1	8	30	48	30	48	30	48	61.4	55.2	59.3	64.1	30	61.0	59.5	0.0
2015 No Project	900	97	873	2	18	1	9	30	48	30	48	30	48	61.8	55.5	59.7	64.5	30	61.4	59.8	0.4
2015 + Project	908	97	881	2	18	1	9	30	48	30	48	30	48	61.8	55.6	59.7	64.5	30	61.4	59.9	0.4
2035 No Project	1,210	97	1,174	2	24	1	12	30	48	30	48	30	48	63.1	56.8	61.0	65.8	30	62.7	61.1	1.7
2035 + Project	1,218	97	1,181	2	24	1	12	30	48	30	48	30	48	63.1	56.9	61.0	65.8	30	62.7	61.2	0.0
ROAD SEGMENT #6: Market S of 63rd		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
			Auto		Medium Truck		Heavy Truck	Auto		MT		HT	Auto		MT						HT
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%						Auto
Existing	901	97	874	2	18	1	9	30	48	30	48	30	48	61.8	55.5	59.7	64.5	30	61.4	59.9	0.0
Existing + Project	909	97	882	2	18	1	9	30	48	30	48	30	48	61.8	55.6	59.7	64.5	30	61.4	59.9	0.0
2015 No Project	990	97	960	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	0.4
2015 + Project	998	97	968	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	0.4
2035 No Project	1,320	97	1,280	2	26	1	13	30	48	30	48	30	48	63.5	57.2	61.3	66.1	30	63.0	61.5	1.7
2035 + Project	1,328	97	1,288	2	27	1	13	30	48	30	48	30	48	63.5	57.2	61.4	66.2	30	63.1	61.5	0.0

ROAD SEGMENT #7: 63rd E of Market		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	26	97	25	2	1	1	0	30	48	30	48	30	48	46.4	40.1	44.3	49.1	30	46.0	44.5	0.0	
Existing + Project	26	97	25	2	1	1	0	30	48	30	48	30	48	46.4	40.1	44.3	49.1	30	46.0	44.5	0.0	
2015 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	3.6	
2015 + Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	3.6	
2035 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	3.6	
2035 + Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	0.0	
ROAD SEGMENT #8: 63rd W of Market		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	121	97	117	2	2	1	1	30	48	30	48	30	48	53.1	46.8	51.0	55.8	30	52.7	51.1	0.0	
Existing + Project	121	97	117	2	2	1	1	30	48	30	48	30	48	53.1	46.8	51.0	55.8	30	52.7	51.1	0.0	
2015 No Project	150	97	146	2	3	1	2	30	48	30	48	30	48	54.0	47.8	51.9	56.7	30	53.6	52.1	0.9	
2015 + Project	150	97	146	2	3	1	2	30	48	30	48	30	48	54.0	47.8	51.9	56.7	30	53.6	52.1	0.9	
2035 No Project	170	97	165	2	3	1	2	30	48	30	48	30	48	54.6	48.3	52.4	57.2	30	54.1	52.6	1.5	
2035 + Project	170	97	165	2	3	1	2	30	48	30	48	30	48	54.6	48.3	52.4	57.2	30	54.1	52.6	0.0	
ROAD SEGMENT #9: Christie N of Powell		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	927	97	899	2	19	1	9	30	48	30	48	30	48	61.9	55.7	59.8	64.6	30	61.5	60.0	0.0	
Existing + Project	929	97	901	2	19	1	9	30	48	30	48	30	48	61.9	55.7	59.8	64.6	30	61.5	60.0	0.0	
2015 No Project	1,000	97	970	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	0.3	
2015 + Project	1,003	97	973	2	20	1	10	30	48	30	48	30	48	62.3	56.0	60.1	64.9	30	61.9	60.3	0.3	
2035 No Project	1,170	97	1,135	2	23	1	12	30	48	30	48	30	48	62.9	56.7	60.8	65.6	30	62.5	61.0	1.0	
2035 + Project	1,273	97	1,235	2	25	1	13	30	48	30	48	30	48	63.3	57.0	61.2	66.0	30	62.9	61.4	0.0	
ROAD SEGMENT #10: Christie S of Powell		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	555	97	538	2	11	1	6	30	48	30	48	30	48	59.7	53.4	57.6	62.4	30	59.3	57.7	0.0	
Existing + Project	560	97	543	2	11	1	6	30	48	30	48	30	48	59.7	53.5	57.6	62.4	30	59.3	57.8	0.0	
2015 No Project	610	97	592	2	12	1	6	30	48	30	48	30	48	60.1	53.9	58.0	62.8	30	59.7	58.2	0.4	
2015 + Project	615	97	597	2	12	1	6	30	48	30	48	30	48	60.1	53.9	58.0	62.8	30	59.7	58.2	0.4	
2035 No Project	770	97	747	2	15	1	8	30	48	30	48	30	48	61.1	54.9	59.0	63.8	30	60.7	59.2	1.4	
2035 + Project	775	97	752	2	16	1	8	30	48	30	48	30	48	61.1	54.9	59.0	63.8	30	60.7	59.2	0.0	
ROAD SEGMENT #11: Powell E of Christie		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	1,669	97	1,619	2	33	1	17	30	48	30	48	30	48	64.5	58.2	62.4	67.1	30	64.1	62.5	0.0	
Existing + Project	1,720	97	1,668	2	34	1	17	30	48	30	48	30	48	64.6	58.4	62.5	67.3	30	64.2	62.7	0.1	
2015 No Project	1,740	97	1,688	2	35	1	17	30	48	30	48	30	48	64.7	58.4	62.5	67.3	30	64.2	62.7	0.2	
2015 + Project	1,792	97	1,738	2	36	1	18	30	48	30	48	30	48	64.8	58.5	62.7	67.5	30	64.4	62.8	0.3	
2035 No Project	1,940	97	1,882	2	39	1	19	30	48	30	48	30	48	65.1	58.9	63.0	67.8	30	64.7	63.2	0.7	
2035 + Project	2,092	97	2,029	2	42	1	21	30	48	30	48	30	48	65.5	59.2	63.3	68.1	30	65.0	63.5	0.0	
ROAD SEGMENT #12: Powell W of Christie		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto k/h	MT k/h	HT k/h									
				%	Auto	%	MT							%	HT							
Existing	2,473	97	2,399	2	49	1	25	30	48	30	48	30	48	66.2	59.9	64.1	68.9	30	65.8	64.2	0.0	
Existing + Project	2,517	97	2,441	2	50	1	25	30	48	30	48	30	48	66.3	60.0	64.1	68.9	30	65.9	64.3	0.1	
2015 No Project	2,610	97	2,532	2	52	1	26	30	48	30	48	30	48	66.4	60.2	64.3	69.1	30	66.0	64.5	0.2	
2015 + Project	2,654	97	2,574	2	53	1	27	30	48	30	48	30	48	66.5	60.2	64.4	69.2	30	66.1	64.5	0.3	
2035 No Project	3,140	97	3,046	2	63	1	31	30	48	30	48	30	48	67.2	61.0	65.1	69.9	30	66.8	65.3	1.0	
2035 + Project	3,184	97	3,088	2	64	1	32	30	48	30	48	30	48	67.3	61.0	65.2	70.0	30	66.9	65.3	0.0	

ROAD SEGMENT #13: Hollis N of Powell		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	627	97	608	2	13	1	6	30	48	30	48	30	48	60.2	54.0	58.1	62.9	30	59.8	58.3	0.0
Existing + Project	627	97	608	2	13	1	6	30	48	30	48	30	48	60.2	54.0	58.1	62.9	30	59.8	58.3	0.0
2015 No Project	610	97	592	2	12	1	6	30	48	30	48	30	48	60.1	53.9	58.0	62.8	30	59.7	58.2	-0.1
2015 + Project	710	97	689	2	14	1	7	30	48	30	48	30	48	60.8	54.5	58.6	63.4	30	60.4	58.8	0.5
2035 No Project	1,070	97	1,038	2	21	1	11	30	48	30	48	30	48	62.5	56.3	60.4	65.2	30	62.1	60.6	2.3
2035 + Project	1,070	97	1,038	2	21	1	11	30	48	30	48	30	48	62.5	56.3	60.4	65.2	30	62.1	60.6	0.0
ROAD SEGMENT #14: Hollis S of Powell		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	714	97	693	2	14	1	7	30	48	30	48	30	48	60.8	54.5	58.7	63.5	30	60.4	58.8	0.0
Existing + Project	714	97	693	2	14	1	7	30	48	30	48	30	48	60.8	54.5	58.7	63.5	30	60.4	58.8	0.0
2015 No Project	660	97	640	2	13	1	7	30	48	30	48	30	48	60.4	54.2	58.3	63.1	30	60.0	58.5	-0.3
2015 + Project	760	97	737	2	15	1	8	30	48	30	48	30	48	61.1	54.8	58.9	63.7	30	60.7	59.1	0.3
2035 No Project	1,020	97	989	2	20	1	10	35	56	35	56	35	56	64.3	57.1	60.8	66.4	30	63.4	61.8	3.0
2035 + Project	1,020	97	989	2	20	1	10	30	48	30	48	30	48	62.3	56.1	60.2	65.0	30	61.9	60.4	0.0
ROAD SEGMENT #15: Powell E of Hollis		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	761	97	738	2	15	1	8	30	48	30	48	30	48	61.1	54.8	58.9	63.7	30	60.7	59.1	0.0
Existing + Project	813	97	789	2	16	1	8	30	48	30	48	30	48	61.3	55.1	59.2	64.0	30	60.9	59.4	0.3
2015 No Project	820	97	795	2	16	1	8	30	48	30	48	30	48	61.4	55.1	59.3	64.1	30	61.0	59.4	0.3
2015 + Project	872	97	846	2	17	1	9	30	48	30	48	30	48	61.7	55.4	59.5	64.3	30	61.2	59.7	0.6
2035 No Project	1,170	97	1,135	2	23	1	12	30	48	30	48	30	48	62.9	56.7	60.8	65.6	30	62.5	61.0	1.9
2035 + Project	1,222	97	1,185	2	24	1	12	30	48	30	48	30	48	63.1	56.9	61.0	65.8	30	62.7	61.2	0.0
ROAD SEGMENT #16: Powell W of Hollis		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	1,330	97	1,290	2	27	1	13	30	48	30	48	30	48	63.5	57.2	61.4	66.2	30	63.1	61.5	0.0
Existing + Project	1,382	97	1,341	2	28	1	14	30	48	30	48	30	48	63.7	57.4	61.5	66.3	30	63.2	61.7	0.2
2015 No Project	1,410	97	1,368	2	28	1	14	30	48	30	48	30	48	63.7	57.5	61.6	66.4	30	63.3	61.8	0.3
2015 + Project	1,462	97	1,418	2	29	1	15	30	48	30	48	30	48	63.9	57.6	61.8	66.6	30	63.5	62.0	0.4
2035 No Project	1,740	97	1,688	2	35	1	17	30	48	30	48	30	48	64.7	58.4	62.5	67.3	30	64.2	62.7	1.2
2035 + Project	1,792	97	1,738	2	36	1	18	30	48	30	48	30	48	64.8	58.5	62.7	67.5	30	64.4	62.8	0.0
ROAD SEGMENT #17: San Pablo N of Stanford		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	1,279	97	1,241	2	26	1	13	30	48	30	48	30	48	63.3	57.1	61.2	66.0	30	62.9	61.4	0.5
Existing + Project	1,284	97	1,245	2	26	1	13	30	48	30	48	30	48	63.3	57.1	61.2	66.0	30	62.9	61.4	0.5
2015 No Project	1,400	97	1,358	2	28	1	14	30	48	30	48	30	48	63.7	57.5	61.6	66.4	30	63.3	61.8	0.9
2015 + Project	1,405	97	1,363	2	28	1	14	30	48	30	48	30	48	63.7	57.5	61.6	66.4	30	63.3	61.8	0.9
2035 No Project	1,940	97	1,882	2	39	1	19	30	48	30	48	30	48	65.1	58.9	63.0	67.8	30	64.7	63.2	2.3
2035 + Project	1,945	97	1,887	2	39	1	19	30	48	30	48	30	48	65.1	58.9	63.0	67.8	30	64.7	63.2	0.9
ROAD SEGMENT #18: San Pablo S of Stanford		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	1,466	97	1,422	2	29	1	15	30	48	30	48	30	48	63.9	57.7	61.8	66.6	30	63.5	62.0	1.9
Existing + Project	1,483	97	1,439	2	30	1	15	30	48	30	48	30	48	64.0	57.7	61.8	66.6	30	63.6	62.0	2.0
2015 No Project	1,600	97	1,552	2	32	1	16	30	48	30	48	30	48	64.3	58.0	62.2	67.0	30	63.9	62.3	2.3
2015 + Project	1,617	97	1,568	2	32	1	16	30	48	30	48	30	48	64.3	58.1	62.2	67.0	30	63.9	62.4	2.4
2035 No Project	2,120	97	2,056	2	42	1	21	30	48	30	48	30	48	65.5	59.3	63.4	68.2	30	65.1	63.6	3.5
2035 + Project	2,137	97	2,073	2	43	1	21	30	48	30	48	30	48	65.5	59.3	63.4	68.2	30	65.1	63.6	2.0
ROAD SEGMENT #19: Stanford E of San Pablo		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
			Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT								
				Auto	%	MT	%							HT							
Existing	658	97	638	2	13	1	7	30	48	30	48	30	48	60.4	54.2	58.3	63.1	30	60.0	58.5	-1.4
Existing + Project	732	97	710	2	15	1	7	30	48	30	48	30	48	60.9	54.6	58.8	63.6	30	60.5	58.9	-1.0
2015 No Project	720	97	698	2	14	1	7	30	48	30	48	30	48	60.8	54.6	58.7	63.5	30	60.4	58.9	-1.0
2015 + Project	794	97	770	2	16	1	8	30	48	30	48	30	48	61.2	55.0	59.1	63.9	30	60.8	59.3	-0.6

2035 No Project	970	97	941	2	19	1	10	30	48	30	48	30	48	62.1	55.9	60.0	64.8	30	61.7	60.2	0.3
2035 + Project	1,044	97	1,013	2	21	1	10	30	48	30	48	30	48	62.4	56.2	60.3	65.1	30	62.0	60.5	-0.8
																	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
																					</



ROAD SEGMENT #27: Stanford E of 60th		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario				
			Auto %	Medium Truck		Heavy Truck %	HT	Auto k/h	MT k/h	HT k/h	k/h	Auto	MT	HT									
				Auto	%																		
																				Auto	%		
Existing	454	97	440	2	9	1	5	30	48	30	48	30	48	58.8	52.6	56.7	61.5	30	58.4	56.9	-5.7		
Existing + Project	485	97	470	2	10	1	5	30	48	30	48	30	48	59.1	52.9	57.0	61.8	30	58.7	57.2	-5.4		
2015 No Project	480	97	466	2	10	1	5	30	48	30	48	30	48	59.1	52.8	56.9	61.7	30	58.7	57.1	-5.4		
2015 + Project	511	97	496	2	10	1	5	30	48	30	48	30	48	59.3	53.1	57.2	62.0	30	58.9	57.4	-5.1		
2035 No Project	570	97	553	2	11	1	6	30	48	30	48	30	48	59.8	53.6	57.7	62.5	30	59.4	57.9	-4.7		
2035 + Project	1,005	97	975	2	20	1	10	30	48	30	48	30	48	62.3	56.0	60.1	64.9	30	61.9	60.3	-3.2		
																			Receptor				
																			Distance from		Adjusted	Adjusted	Difference b/t
																			Roadway		Level	Level	existing and
																			Center (m.)		(dBA)	(dBA)	each scenario
																			3 dBA Atten		4.5 dBA Atten		
																			</				

Existing	862	97	836	2	17	1	9	30	48	30	48	30	48	61.6	55.4	59.5	64.3	30	61.2	59.7	-1.2
Existing + Project	893	97	866	2	18	1	9	30	48	30	48	30	48	61.8	55.5	59.6	64.4	30	61.4	59.8	-1.1
2015 No Project	960	97	931	2	19	1	10	30	48	30	48	30	48	62.1	55.8	60.0	64.7	30	61.7	60.1	-0.8
2015 + Project	991	97	961	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	-0.6
2035 No Project	1,190	97	1,154	2	24	1	12	30	48	30	48	30	48	63.0	56.8	60.9	65.7	30	62.6	61.1	0.2
2035 + Project	1,221	97	1,184	2	24	1	12	30	48	30	48	30	48	63.1	56.9	61.0	65.8	30	62.7	61.2	-1.1

ROAD SEGMENT #34: Market S of 57th	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
		Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT									
			%	Auto	%	MT							%	HT							
Existing	867	97	841	2	17	1	9	30	48	30	48	30	48	61.6	55.4	59.5	64.3	30	61.2	59.7	-0.3
Existing + Project	898	97	871	2	18	1	9	30	48	30	48	30	48	61.8	55.5	59.7	64.5	30	61.4	59.8	-0.2
2015 No Project	960	97	931	2	19	1	10	30	48	30	48	30	48	62.1	55.8	60.0	64.7	30	61.7	60.1	0.1
2015 + Project	991	97	961	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	0.2
2035 No Project	1,190	97	1,154	2	24	1	12	30	48	30	48	30	48	63.0	56.8	60.9	65.7	30	62.6	61.1	1.0
2035 + Project	1,221	97	1,184	2	24	1	12	30	48	30	48	30	48	63.1	56.9	61.0	65.8	30	62.7	61.2	-0.4

															Receptor							
															Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted	Adjusted	Difference b/t existing and each scenario			
																	Level	Level				
																	(dBA)	(dBA)				
																3 dBA Atten	4.5 dBA Atten					
TOTAL		VEHICLE TYPE %						VEHICLE SPEED						calveno factors								
ROAD SEGMENT #35: 57th E of Market		# VEHICLES	Auto	Medium Truck	Heavy Truck			Auto	MT	HT	k/h	Auto	MT	HT								
		%	Auto	%	MT	%	HT															
Existing		19	97	18	2	0	1	0	30	48	30	48	30	48	45.0	38.8	42.9	47.7	30	44.6	43.1	-16.8
Existing + Project		19	97	18	2	0	1	0	30	48	30	48	30	48	45.0	38.8	42.9	47.7	30	44.6	43.1	-16.8
2015 No Project		60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-11.8
2015 + Project		60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-11.8
2035 No Project		60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-11.8
2035 + Project		60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-13.2

ROAD SEGMENT #36: 57th W of Market	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED				calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario		
		Auto		Medium Truck		Heavy Truck		Auto		MT	HT	k/h	Auto	MT						HT	
		%	Auto	%	MT	%	HT	Auto	MT	HT	k/h	Auto	MT	HT							
Existing	8	97	8	2	0	1	0	30	48	30	48	30	48	41.3	35.0	39.2	44.0	30	40.9	39.3	-19.5
Existing + Project	8	97	8	2	0	1	0	30	48	30	48	30	48	41.3	35.0	39.2	44.0	30	40.9	39.3	-19.5
2015 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-10.7
2015 + Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-10.7
2035 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-10.7
2035 + Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	-10.7

ROAD SEGMENT #37: Lowell N of Adeline	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto		MT		HT		Auto	MT	HT					
		%	Auto	%	MT	%	HT	%	MT	%	HT										
		%	Auto	%	MT	%	HT	%	MT	%	HT										
Existing	94	97	91	2	2	1	1	30	48	30	48	30	48	52.0	45.7	49.9	54.7	30	51.6	50.0	-9.4
Existing + Project	122	97	118	2	2	1	1	30	48	30	48	30	48	53.1	46.9	51.0	55.8	30	52.7	51.2	-8.3
2015 No Project	130	97	126	2	3	1	1	30	48	30	48	30	48	53.4	47.1	51.3	56.1	30	53.0	51.4	-8.0
2015 + Project	158	97	153	2	3	1	2	30	48	30	48	30	48	54.2	48.0	52.1	56.9	30	53.8	52.3	-7.2
2035 No Project	150	97	146	2	3	1	2	30	48	30	48	30	48	54.0	47.8	51.9	56.7	30	53.6	52.1	-7.4
2035 + Project	178	97	173	2	4	1	2	30	48	30	48	30	48	54.8	48.5	52.6	57.4	30	54.3	52.8	-8.4

Existing	378	97	367	2	8	1	4	30	48	30	48	30	48	58.0	51.8	55.9	60.7	30	57.6	56.1	11.6
Existing + Project	393	97	381	2	8	1	4	30	48	30	48	30	48	58.2	51.9	56.1	60.9	30	57.8	56.2	11.8
2015 No Project	440	97	427	2	9	1	4	30	48	30	48	30	48	58.7	52.4	56.6	61.4	30	58.3	56.7	12.3
2015 + Project	455	97	441	2	9	1	5	30	48	30	48	30	48	58.8	52.6	56.7	61.5	30	58.4	56.9	12.4
2035 No Project	620	97	601	2	12	1	6	30	48	30	48	30	48	60.2	53.9	58.1	62.8	30	59.8	58.2	13.8
2035 + Project	645	97	626	2	13	1	6	30	48	30	48	30	48	60.3	54.1	58.2	63.0	30	59.9	58.4	10.3

ROAD SEGMENT #39: Adeline E of Lowell		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
			%	Auto	%	MT	%	HT														
Existing	378	97	367	2	8	1	4	30	48	30	48	30	48	58.0	51.8	55.9	60.7	30	57.6	56.1	11.6	
Existing + Project	393	97	381	2	8	1	4	30	48	30	48	30	48	58.2	51.9	56.1	60.9	30	57.8	56.2	11.8	
2015 No Project	440	97	427	2	9	1	4	30	48	30	48	30	48	58.7	52.4	56.6	61.4	30	58.3	56.7	12.3	
2015 + Project	455	97	441	2	9	1	5	30	48	30	48	30	48	58.8	52.6	56.7	61.5	30	58.4	56.9	12.4	
2035 No Project	620	97	601	2	12	1	6	30	48	30	48	30	48	60.2	53.9	58.1	62.8	30	59.8	58.2	13.8	
2035 + Project	645	97	626	2	13	1	6	30	48	30	48	30	48	60.3	54.1	58.2	63.0	30	59.9	58.4	10.3	

TOTAL	VEHICLE TYPE %	VEHICLE SPEED	calveno factors	Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario

ROAD SEGMENT #40: Adeline W of Lowell

ROAD SEGMENT #40: Adeline W of Lowell		# VEHICLES	Auto				Medium Truck				Heavy Truck				Auto k/h			MT k/h			HT k/h			Auto			MT			HT			roadway center)	Center (m.)	(dBA)		each scenario
			% Auto		% MT		% HT																									3 dBA Atten	4.5 dBA Atten				
			%		%		%																														
Existing		94	97	91	2	2	1	1	30	48	30	48	30	48	30	48	52.0	45.7	49.9	54.7	30	51.6	50.0	-1.1													
Existing + Project		94	97	91	2	2	1	1	30	48	30	48	30	48	30	48	52.0	45.7	49.9	54.7	30	51.6	50.0	-1.1													
2015 No Project		110	97	107	2	2	1	1	30	48	30	48	30	48	30	48	52.7	46.4	50.5	55.3	30	52.3	50.7	-0.4													
2015 + Project		110	97	107	2	2	1	1	30	48	30	48	30	48	30	48	52.7	46.4	50.5	55.3	30	52.3	50.7	-0.4													
2035 No Project		120	97	116	2	2	1	1	30	48	30	48	30	48	30	48	53.0	46.8	50.9	55.7	30	52.6	51.1	0.0													
2035 + Project		140	97	136	2	3	1	1	30	48	30	48	30	48	30	48	53.7	47.5	51.6	56.4	30	53.3	51.8	-0.8													

ROAD SEGMENT #41: Market N of 55th

ROAD SEGMENT #41: Market N of 55th		TOTAL # VEHICLES	VEHICLE TYPE %							VEHICLE SPEED									calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario						
			Auto			Medium Truck		Heavy Truck		Auto k/h			MT k/h			HT k/h			Auto								MT			HT		
			%	Auto	%	MT	%	HT				Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT	Auto						MT	HT	Auto	MT	HT	
Existing		961	97	932	2	19	1	10	30	48	30	48	30	48	30	48	62.1	55.8	60.0		64.7	30	61.7	60.1	0.2							
Existing + Project		996	97	966	2	20	1	10	30	48	30	48	30	48	30	48	62.2	56.0	60.1		64.9	30	61.8	60.3	0.3							
2015 No Project		1,040	97	1,009	2	21	1	10	30	48	30	48	30	48	30	48	62.4	56.2	60.3		65.1	30	62.0	60.5	0.5							
2015 + Project		1,075	97	1,043	2	22	1	11	30	48	30	48	30	48	30	48	62.6	56.3	60.4		65.2	30	62.2	60.6	0.6							
2035 No Project		1,330	97	1,290	2	27	1	13	30	48	30	48	30	48	30	48	63.5	57.2	61.4		66.2	30	63.1	61.5	1.6							
2035 + Project		1,365	97	1,324	2	27	1	14	30	48	30	48	30	48	30	48	63.6	57.3	61.5		66.3	30	63.2	61.7	0.3							

ROAD SEGMENT #42: Market S of 55th

ROAD SEGMENT #42: Market S of 55th	# VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario		
		Auto		Medium Truck		Heavy Truck	Auto k/h		MT k/h	HT k/h	Auto	MT	HT								
		%	Auto	%	MT	%	HT														
Existing	607	97	589	2	12	1	6	30	48	30	48	30	48	60.1	53.8	58.0	62.8	30	59.7	58.1	0.4
Existing + Project	607	97	589	2	12	1	6	30	48	30	48	30	48	60.1	53.8	58.0	62.8	30	59.7	58.1	0.4
2015 No Project	640	97	621	2	13	1	6	30	48	30	48	30	48	60.3	54.1	58.2	63.0	30	59.9	58.4	0.6
2015 + Project	640	97	621	2	13	1	6	30	48	30	48	30	48	60.3	54.1	58.2	63.0	30	59.9	58.4	0.6
2035 No Project	860	97	834	2	17	1	9	30	48	30	48	30	48	61.6	55.3	59.5	64.3	30	61.2	59.6	1.9
2035 + Project	860	97	834	2	17	1	9	30	48	30	48	30	48	61.6	55.3	59.5	64.3	30	61.2	59.6	0.5

ROAD SEGMENT #43: 55th E of Market

ROAD SEGMENT #43: 55th E of Market	# VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
Existing	672	97	652	2	13	1	7	30	48	30	48	30	48	60.5	54.3	58.4	63.2	30	60.1	58.6	-4.0
Existing + Project	707	97	686	2	14	1	7	30	48	30	48	30	48	60.7	54.5	58.6	63.4	30	60.3	58.8	-3.7
2015 No Project	700	97	679	2	14	1	7	30	48	30	48	30	48	60.7	54.4	58.6	63.4	30	60.3	58.8	-3.8
2015 + Project	735	97	713	2	15	1	7	30	48	30	48	30	48	60.9	54.7	58.8	63.6	30	60.5	59.0	-3.6
2035 No Project	860	97	834	2	17	1	9	30	48	30	48	30	48	61.6	55.3	59.5	64.3	30	61.2	59.6	-2.9
2035 + Project	895	97	868	2	18	1	9	30	48	30	48	30	48	61.8	55.5	59.6	64.4	30	61.4	59.8	-3.7

ROAD SEGMENT #44: 55th W of Market

ROAD SEGMENT #44: 55th W of Market	# VEHICLES	TOTAL						VEHICLE TYPE %						VEHICLE SPEED						calverno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT											
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT														
Existing	194	97	188	2	4	1	2	30	48	30	48	30	48	55.1	48.9	53.0	57.8	30	54.7	53.2	-11.1						
Existing + Project	194	97	188	2	4	1	2	30	48	30	48	30	48	55.1	48.9	53.0	57.8	30	54.7	53.2	-11.1						
2015 No Project	220	97	213	2	4	1	2	30	48	30	48	30	48	55.7	49.4	53.6	58.3	30	55.3	53.7	-10.5						
2015 + Project	220	97	213	2	4	1	2	30	48	30	48	30	48	55.7	49.4	53.6	58.3	30	55.3	53.7	-10.5						
2035 No Project	270	97	262	2	5	1	3	30	48	30	48	30	48	56.6	50.3	54.4	59.2	30	56.2	54.6	-9.6						
2035 + Project	270	97	262	2	5	1	3	30	48	30	48	30	48	56.6	50.3	54.4	59.2	30	56.2	54.6	-10.7						

ROAD SEGMENT #45: MLK N of 55th

ROAD SEGMENT #45: MLK N of 55th	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
		%	Auto	%	MT	%	HT														
Existing	2,822	97	2,737	2	56	1	28	30	48	30	48	30	48	66.8	60.5	64.6	69.4	30	66.3	64.8	6.5
Existing + Project	2,822	97	2,737	2	56	1	28	30	48	30	48	30	48	66.8	60.5	64.6	69.4	30	66.3	64.8	6.5
2015 No Project	2,930	97	2,842	2	59	1	29	30	48	30	48	30	48	66.9	60.7	64.8	69.6	30	66.5	65.0	6.7
2015 + Project	2,930	97	2,842	2	59	1	29	30	48	30	48	30	48	66.9	60.7	64.8	69.6	30	66.5	65.0	6.7
2035 No Project	3,320	97	3,220	2	66	1	33	30	48	30	48	30	48	67.5	61.2	65.3	70.1	30	67.1	65.5	7.2
2035 + Project	3,320	97	3,220	2	66	1	33	30	48	30	48	30	48	67.5	61.2	65.3	70.1	30	67.1	65.5	4.9

2035 + Project	2,493	97	2,418	2	50	1	25	30	48	30	48	30	48	66.2	60.0	64.1	68.9	30	65.8	64.3	3.1
ROAD SEGMENT #54: San Pablo S of Adeline		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	1,777	97	1,724	2	36	1	18	30	48	30	48	30	48	64.7	58.5	62.6	67.4	30	64.3	62.8	2.9
Existing + Project	1,811	97	1,757	2	36	1	18	30	48	30	48	30	48	64.8	58.6	62.7	67.5	30	64.4	62.9	3.0
2015 No Project	1,950	97	1,892	2	39	1	20	30	48	30	48	30	48	65.1	58.9	63.0	67.8	30	64.7	63.2	3.4
2015 + Project	1,984	97	1,924	2	40	1	20	30	48	30	48	30	48	65.2	59.0	63.1	67.9	30	64.8	63.3	3.4
2035 No Project	2,579	97	2,502	2	52	1	26	30	48	30	48	30	48	66.4	60.1	64.2	69.0	30	66.0	64.4	4.6
2035 + Project	2,604	97	2,526	2	52	1	26	30	48	30	48	30	48	66.4	60.2	64.3	69.1	30	66.0	64.5	2.9
ROAD SEGMENT #55: Adeline E of San Pablo		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	360	97	349	2	7	1	4	30	48	30	48	30	48	57.8	51.6	55.7	60.5	30	57.4	55.9	11.4
Existing + Project	381	97	370	2	8	1	4	30	48	30	48	30	48	58.1	51.8	55.9	60.7	30	57.7	56.1	11.7
2015 No Project	390	97	378	2	8	1	4	30	48	30	48	30	48	58.2	51.9	56.0	60.8	30	57.8	56.2	11.8
2015 + Project	411	97	399	2	8	1	4	30	48	30	48	30	48	58.4	52.1	56.3	61.1	30	58.0	56.4	12.0
2035 No Project	490	97	475	2	10	1	5	30	48	30	48	30	48	59.2	52.9	57.0	61.8	30	58.7	57.2	12.8
2035 + Project	511	97	496	2	10	1	5	30	48	30	48	30	48	59.3	53.1	57.2	62.0	30	58.9	57.4	9.3
ROAD SEGMENT #56: Adeline W of San Pablo		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	303	97	294	2	6	1	3	30	48	30	48	30	48	57.1	50.8	54.9	59.7	30	56.7	55.1	4.0
Existing + Project	303	97	294	2	6	1	3	30	48	30	48	30	48	57.1	50.8	54.9	59.7	30	56.7	55.1	4.0
2015 No Project	330	97	320	2	7	1	3	30	48	30	48	30	48	57.4	51.2	55.3	60.1	30	57.0	55.5	4.4
2015 + Project	330	97	320	2	7	1	3	30	48	30	48	30	48	57.4	51.2	55.3	60.1	30	57.0	55.5	4.4
2035 No Project	420	97	407	2	8	1	4	30	48	30	48	30	48	58.5	52.2	56.4	61.2	30	58.1	56.5	5.4
2035 + Project	420	97	407	2	8	1	4	30	48	30	48	30	48	58.5	52.2	56.4	61.2	30	58.1	56.5	3.9
ROAD SEGMENT #57: San Pablo N of 36th		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	1,688	97	1,637	2	34	1	17	30	48	30	48	30	48	64.5	58.3	62.4	67.2	30	64.1	62.6	2.6
Existing + Project	1,722	97	1,670	2	34	1	17	30	48	30	48	30	48	64.6	58.4	62.5	67.3	30	64.2	62.7	2.7
2015 No Project	1,840	97	1,785	2	37	1	18	30	48	30	48	30	48	64.9	58.6	62.8	67.6	30	64.5	63.0	3.0
2015 + Project	1,864	97	1,808	2	37	1	19	30	48	30	48	30	48	65.0	58.7	62.8	67.6	30	64.5	63.0	3.0
2035 No Project	2,450	97	2,377	2	49	1	25	30	48	30	48	30	48	66.1	59.9	64.0	68.8	30	65.7	64.2	4.2
2035 + Project	2,484	97	2,409	2	50	1	25	30	48	30	48	30	48	66.2	60.0	64.1	68.9	30	65.8	64.3	2.9
ROAD SEGMENT #58: San Pablo S of 36th		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	1,119	97	1,085	2	22	1	11	30	48	30	48	30	48	62.7	56.5	60.6	65.4	30	62.3	60.8	3.0
Existing + Project	1,150	97	1,116	2	23	1	12	30	48	30	48	30	48	62.9	56.6	60.7	65.5	30	62.4	60.9	3.2
2015 No Project	1,250	97	1,213	2	25	1	13	30	48	30	48	30	48	63.2	57.0	61.1	65.9	30	62.8	61.3	3.5
2015 + Project	1,281	97	1,243	2	26	1	13	30	48	30	48	30	48	63.3	57.1	61.2	66.0	30	62.9	61.4	3.6
2035 No Project	1,810	97	1,756	2	36	1	18	30	48	30	48	30	48	64.8	58.6	62.7	67.5	30	64.4	62.9	5.1
2035 + Project	1,841	97	1,786	2	37	1	18	30	48	30	48	30	48	64.9	58.6	62.8	67.6	30	64.5	63.0	3.8
ROAD SEGMENT #59: 36th E of San Pablo		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	930	97	902	2	19	1	9	30	48	30	48	30	48	61.9	55.7	59.8	64.6	30	61.5	60.0	-2.5
Existing + Project	933	97	905	2	19	1	9	30	48	30	48	30	48	61.9	55.7	59.8	64.6	30	61.5	60.0	-2.5
2015 No Project	960	97	931	2	19	1	10	30	48	30	48	30	48	62.1	55.8	60.0	64.7	30	61.7	60.1	-2.4
2015 + Project	963	97	934	2	19	1	10	30	48	30	48	30	48	62.1	55.8	60.0	64.8	30	61.7	60.1	-2.4
2035 No Project	1,070	97	1,038	2	21	1	11	30	48	30	48	30	48	62.5	56.3	60.4	65.2	30	62.1	60.6	-1.9
2035 + Project	1,073	97	1,041	2	21	1	11	30	48	30	48	30	48	62.6	56.3	60.4	65.2	30	62.1	60.6	-2.9
ROAD SEGMENT #60: 36th W of San Pablo		TOTAL # VEHICLES	VEHICLE TYPE %					VEHICLE SPEED					calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario	
		Auto	Medium Truck		Heavy Truck		Auto	k/h	MT	k/h	HT	k/h	Auto	MT	HT						
		%	Auto	%	MT	%	HT														
Existing	269	97	261	2	5	1	3	30	48	30	48	30	48	56.5	50.3	54.4	59.2	30	56.1	54.6	-9.6
Existing + Project	269	97	261	2	5	1	3	30	48	30	48	30	48	56.5	50.3	54.4	59.2	30	56.1	54.6	-9.6
2015 No Project	290	97	281	2	6	1	3	30	48	30	48	30	48	56.9	50.6	54.8	59.5	30	56.5	54.9	-9.3

2015 + Project	280	97	272	2	6	1	3	30	48	30	48	30	48	56.7	50.5	54.6	59.4	30	56.3	54.8	-9.5
2035 No Project	330	97	320	2	7	1	3	30	48	30	48	30	48	57.4	51.2	55.3	60.1	30	57.0	55.5	-8.7
2035 + Project	330	97	320	2	7	1	3	30	48	30	48	30	48	57.4	51.2	55.3	60.1	30	57.0	55.5	-9.8

ROAD SEGMENT #61: San Pablo N of 35th	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario			
		Auto		Medium Truck		Heavy Truck		Auto		MT		HT		Auto										
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT	%	Auto	%						MT	%	HT
Existing	1,128	97	1,094	2	23	1	11	30	48	30	48	30	48	62.8	56.5	60.7	65.4	30	62.4	60.8	2.6			
Existing + Project	1,159	97	1,124	2	23	1	12	30	48	30	48	30	48	62.9	56.6	60.8	65.6	30	62.5	60.9	2.7			
2015 No Project	1,260	97	1,222	2	25	1	13	30	48	30	48	30	48	63.3	57.0	61.1	65.9	30	62.8	61.3	3.0			
2015 + Project	1,291	97	1,252	2	26	1	13	30	48	30	48	30	48	63.4	57.1	61.2	66.0	30	63.0	61.4	3.1			
2035 No Project	1,810	97	1,756	2	36	1	18	30	48	30	48	30	48	64.8	58.6	62.7	67.5	30	64.4	62.9	4.6			
2035 + Project	1,841	97	1,786	2	37	1	18	30	48	30	48	30	48	64.9	58.6	62.8	67.6	30	64.5	63.0	2.4			

ROAD SEGMENT #62: San Pablo S of 35th	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
		Auto %	Medium Truck		Heavy Truck		Auto k/h	MT k/h	HT k/h	Auto	MT	HT									
			%	Auto	%	MT							%	HT							
Existing	997	97	967	2	20	1	10	30	48	30	48	30	48	62.2	56.0	60.1	64.9	30	61.8	60.3	1.4
Existing + Project	1,022	97	991	2	20	1	10	30	48	30	48	30	48	62.3	56.1	60.2	65.0	30	61.9	60.4	1.6
2015 No Project	1,120	97	1,086	2	22	1	11	30	48	30	48	30	48	62.7	56.5	60.6	65.4	30	62.3	60.8	2.0
2015 + Project	1,145	97	1,111	2	23	1	11	30	48	30	48	30	48	62.8	56.6	60.7	65.5	30	62.4	60.9	2.1
2035 No Project	1,620	97	1,571	2	32	1	16	30	48	30	48	30	48	64.3	58.1	62.2	67.0	30	63.9	62.4	3.6
2035 + Project	1,645	97	1,596	2	33	1	16	30	48	30	48	30	48	64.4	58.2	62.3	67.1	30	64.0	62.5	2.1

ROAD SEGMENT #63: 35th E of San Pablo	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario			
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto		MT						HT		
		%	Auto	%	MT	%	HT																	
Existing	403	97	391	2	8	1	4	30	48	30	48	30	48	58.3	52.1	56.2	61.0	30	57.9	56.4	-2.8			
Existing + Project	409	97	397	2	8	1	4	30	48	30	48	30	48	58.4	52.1	56.2	61.0	30	58.0	56.4	-2.7			
2015 No Project	420	97	407	2	8	1	4	30	48	30	48	30	48	58.5	52.2	56.4	61.2	30	58.1	56.5	-2.6			
2015 + Project	426	97	413	2	9	1	4	30	48	30	48	30	48	58.5	52.3	56.4	61.2	30	58.1	56.6	-2.5			
2035 No Project	500	97	485	2	10	1	5	30	48	30	48	30	48	59.2	53.0	57.1	61.9	30	58.8	57.3	-1.8			
2035 + Project	506	97	491	2	10	1	5	30	48	30	48	30	48	59.3	53.0	57.2	62.0	30	58.9	57.3	-3.8			

ROAD SEGMENT #64: 35th W of San Pablo	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario			
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto		MT						HT		
		%	Auto	%	MT	%	HT																	
Existing	184	97	178	2	4	1	2	30	48	30	48	30	48	54.9	48.6	52.8	57.6	30	54.5	53.0	-8.6			
Existing + Project	184	97	178	2	4	1	2	30	48	30	48	30	48	54.9	48.6	52.8	57.6	30	54.5	53.0	-8.6			
2015 No Project	200	97	194	2	4	1	2	30	48	30	48	30	48	55.3	49.0	53.1	57.9	30	54.9	53.3	-8.2			
2015 + Project	200	97	194	2	4	1	2	30	48	30	48	30	48	55.3	49.0	53.1	57.9	30	54.9	53.3	-8.2			
2035 No Project	230	97	223	2	5	1	2	30	48	30	48	30	48	55.9	49.6	53.7	58.5	30	55.5	53.9	-7.6			
2035 + Project	230	97	223	2	5	1	2	30	48	30	48	30	48	55.9	49.6	53.7	58.5	30	55.5	53.9	-8.9			

Additional segments

ROAD SEGMENT #2:	Lowell S of 63rd	TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
Existing		73	97	71	2	1	1	1	30	48	30	48	30	48	50.9	44.6	48.8	53.6	30	50.5	48.9	0.0
Existing + Project		94	97	91	2	2	1	1	30	48	30	48	30	48	52.0	45.7	49.9	54.7	30	51.6	50.0	1.1
2015 No Project		110	97	107	2	2	1	1	30	48	30	48	30	48	52.7	46.4	50.5	55.3	30	52.3	50.7	1.8
2015 + Project		131	97	127	2	3	1	1	30	48	30	48	30	48	53.4	47.2	51.3	56.1	30	53.0	51.5	2.5
2035 No Project		140	97	136	2	3	1	1	30	48	30	48	30	48	53.7	47.5	51.6	56.4	30	53.3	51.8	2.8
2035 + Project		161	97	156	2	3	1	2	30	48	30	48	30	48	54.3	48.1	52.2	57.0	30	53.9	52.4	0.0

ROAD SEGMENT #9: Adeline N of 57th		TOTAL # VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			Calculated dBA (15 meters from roadway center)	Receptor Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and each scenario
			Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
			%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
Existing	118	97	114	2	2	1	1	30	48	30	48	30	48	53.0	46.7	50.8	55.6	30	52.6	51.0	0.0	
Existing + Project	118	97	114	2	2	1	1	30	48	30	48	30	48	53.0	46.7	50.8	55.6	30	52.6	51.0	0.0	
2015 No Project	180	97	175	2	4	1	2	30	48	30	48	30	48	54.8	48.6	52.7	57.5	30	54.4	52.9	1.8	
2015 + Project	180	97	175	2	4	1	2	30	48	30	48	30	48	54.8	48.6	52.7	57.5	30	54.4	52.9	1.8	
2035 No Project	310	97	301	2	6	1	3	30	48	30	48	30	48	57.2	50.9	55.0	59.8	30	56.8	55.2	4.2	
2035 + Project	320	97	310	2	6	1	3	30	48	30	48	30	48	57.3	51.1	55.2	60.0	30	56.9	55.4	0.0	

TOTAL	VEHICLE TYPE %	VEHICLE SPEED	calveno factors	Calculated dBA (15 meters from roadway center)	Distance from Roadway Center (m.)	Adjusted Level (dBA) 3 dBA Atten	Adjusted Level (dBA) 4.5 dBA Atten	Difference b/t existing and

ROAD SEGMENT #10: Adeline S of 57th

ROAD SEGMENT #10: Adeline S of 57th		# VEHICLES	Auto				Medium Truck				Heavy Truck				Auto k/h			MT k/h			HT k/h			Auto			MT			HT			roadway center)	Center (m.)	(dBA)		(dBA)		each scenario
			%		Auto		%		MT		%		HT																						3 dBA Atten	4.5 dBA Atten			
		%																																					
Existing		112	97	109	2	2	1	1	30	48	30	48	30	48	52.7	46.5	50.6	55.4	30	52.3	50.8	0.0																	
Existing + Project		112	97	109	2	2	1	1	30	48	30	48	30	48	52.7	46.5	50.6	55.4	30	52.3	50.8	0.0																	
2015 No Project		170	97	165	2	3	1	2	30	48	30	48	30	48	54.6	48.3	52.4	57.2	30	54.1	52.6	1.8																	
2015 + Project		170	97	165	2	3	1	2	30	48	30	48	30	48	54.6	48.3	52.4	57.2	30	54.1	52.6	1.8																	
2035 No Project		300	97	291	2	6	1	3	30	48	30	48	30	48	57.0	50.8	54.9	59.7	30	56.6	55.1	4.3																	
2035 + Project		300	97	291	2	6	1	3	30	48	30	48	30	48	57.0	50.8	54.9	59.7	30	56.6	55.1	0.0																	

ROAD SEGMENT #11: 57th E of Adeline

ROAD SEGMENT #11: 57th E of Adeline	# VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
Existing	18	97	17	2	0	1	0	30	48	30	48	30	48	44.8	38.6	42.7	47.5	30	44.4	42.9	0.0
Existing + Project	18	97	17	2	0	1	0	30	48	30	48	30	48	44.8	38.6	42.7	47.5	30	44.4	42.9	0.0
2015 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	5.2
2015 + Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	5.2
2035 No Project	60	97	58	2	1	1	1	30	48	30	48	30	48	50.0	43.8	47.9	52.7	30	49.6	48.1	5.2
2035 + Project	70	97	68	2	1	1	1	30	48	30	48	30	48	50.7	44.4	48.6	53.4	30	50.3	48.8	0.0

ROAD SEGMENT #12: 57th W of Adeline

ROAD SEGMENT #12: 57th W of Adeline	# VEHICLES	VEHICLE TYPE %						VEHICLE SPEED						calveno factors			(15 meters from roadway center)	Roadway Center (m.)	Level (dBA) 3 dBA Atten	Level (dBA) 4.5 dBA Atten	existing and each scenario
		Auto		Medium Truck		Heavy Truck		Auto k/h		MT k/h		HT k/h		Auto	MT	HT					
		%	Auto	%	MT	%	HT	%	Auto	%	MT	%	HT								
Existing	6	97	6	2	0	1	0	30	48	30	48	30	48	40.0	33.8	37.9	42.7	30	39.6	38.1	0.0
Existing + Project	6	97	6	2	0	1	0	30	48	30	48	30	48	40.0	33.8	37.9	42.7	30	39.6	38.1	0.0
2015 No Project	50	97	49	2	1	1	1	30	48	30	48	30	48	49.2	43.0	47.1	51.9	30	48.8	47.3	9.2
2015 + Project	50	97	49	2	1	1	1	30	48	30	48	30	48	49.2	43.0	47.1	51.9	30	48.8	47.3	9.2
2035 No Project	50	97	49	2	1	1	1	30	48	30	48	30	48	49.2	43.0	47.1	51.9	30	48.8	47.3	9.2
2035 + Project	50	97	49	2	1	1	1	30	48	30	48	30	48	49.2	43.0	47.1	51.9	30	48.8	47.3	0.0

APPENDIX D

Biological Resources Supplemental Information



United States Department of the Interior
FISH AND WILDLIFE SERVICE

Sacramento Fish and Wildlife Office
2800 Cottage Way, Room W-2605
Sacramento, California 95825



April 8, 2011

Document Number: 110408111328

Bryan Olney
Environmental Science Associates
350 Frank Ogawa Plaza Ste. 300
Oakland, CA 94611

Subject: Species List for Proposed Amendments to the BMSP Redevelopment Plan

Dear: Mr. Olney

We are sending this official species list in response to your April 8, 2011 request for information about endangered and threatened species. The list covers the California counties and/or U.S. Geological Survey 7½ minute quad or quads you requested.

Our database was developed primarily to assist Federal agencies that are consulting with us. Therefore, our lists include all of the sensitive species that have been found in a certain area *and also ones that may be affected by projects in the area*. For example, a fish may be on the list for a quad if it lives somewhere downstream from that quad. Birds are included even if they only migrate through an area. In other words, we include all of the species we want people to consider when they do something that affects the environment.

Please read Important Information About Your Species List (below). It explains how we made the list and describes your responsibilities under the Endangered Species Act.

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 07, 2011.

Please contact us if your project may affect endangered or threatened species or if you have any questions about the attached list or your responsibilities under the Endangered Species Act. A list of Endangered Species Program contacts can be found at www.fws.gov/sacramento/es/branches.htm.

Endangered Species Division



U.S. Fish & Wildlife Service
Sacramento Fish & Wildlife Office
Federal Endangered and Threatened Species that Occur in
or may be Affected by Projects in the Counties and/or
U.S.G.S. 7 1/2 Minute Quads you requested

Document Number: 110408111328

Database Last Updated: April 29, 2010

Quad Lists

Listed Species

Invertebrates

- Branchinecta lynchi*
vernal pool fairy shrimp (T)
- Speyeria callippe callippe*
callippe silverspot butterfly (E)

Fish

- Acipenser medirostris*
green sturgeon (T) (NMFS)
- Eucyclogobius newberryi*
tidewater goby (E)
- Hypomesus transpacificus*
Critical habitat, delta smelt (X)
delta smelt (T)
- Oncorhynchus kisutch*
coho salmon - central CA coast (E) (NMFS)
- Oncorhynchus mykiss*
Central California Coastal steelhead (T) (NMFS)
Central Valley steelhead (T) (NMFS)
Critical habitat, Central California coastal steelhead (X) (NMFS)
- Oncorhynchus tshawytscha*
Central Valley spring-run chinook salmon (T) (NMFS)
Critical habitat, winter-run chinook salmon (X) (NMFS)
winter-run chinook salmon, Sacramento River (E) (NMFS)

Amphibians

- Ambystoma californiense*
California tiger salamander, central population (T)
- Rana draytonii*
California red-legged frog (T)
Critical habitat, California red-legged frog (X)

Reptiles

- Masticophis lateralis euryxanthus*
Alameda whipsnake [=striped racer] (T)
Critical habitat, Alameda whipsnake (X)

Birds

- Charadrius alexandrinus nivosus*
western snowy plover (T)
- Pelecanus occidentalis californicus*
California brown pelican (E)

Rallus longirostris obsoletus

California clapper rail (E)

Sternula antillarum (=Sterna, =albifrons) browni

California least tern (E)

Mammals

Reithrodontomys raviventris

salt marsh harvest mouse (E)

Plants

Arctostaphylos pallida

pallid manzanita (=Alameda or Oakland Hills manzanita) (T)

Clarkia franciscana

Presidio clarkia (E)

Holocarpha macradenia

Critical habitat, Santa Cruz tarplant (X)

Santa Cruz tarplant (T)

Suaeda californica

California sea blite (E)

Proposed Species

Amphibians

Rana draytonii

Critical habitat, California red-legged frog (PX)

Quads Containing Listed, Proposed or Candidate Species:

BRIONES VALLEY (465B)

OAKLAND EAST (465C)

RICHMOND (466A)

OAKLAND WEST (466D)

County Lists

No county species lists requested.

Key:

(E) *Endangered* - Listed as being in danger of extinction.

(T) *Threatened* - Listed as likely to become endangered within the foreseeable future.

(P) *Proposed* - Officially proposed in the Federal Register for listing as endangered or threatened.

(NMFS) Species under the Jurisdiction of the [National Oceanic & Atmospheric Administration Fisheries Service](http://www.nmfs.gov). Consult with them directly about these species.

Critical Habitat - Area essential to the conservation of a species.

(PX) *Proposed Critical Habitat* - The species is already listed. Critical habitat is being proposed for it.

(C) *Candidate* - Candidate to become a proposed species.

(V) Vacated by a court order. Not currently in effect. Being reviewed by the Service.

(X) *Critical Habitat* designated for this species

Important Information About Your Species List

How We Make Species Lists

We store information about endangered and threatened species lists by U.S. Geological Survey 7½ minute quads. The United States is divided into these quads, which are about the size of San Francisco.

The animals on your species list are ones that occur within, **or may be affected by** projects within, the quads covered by the list.

- Fish and other aquatic species appear on your list if they are in the same watershed as your quad or if water use in your quad might affect them.
- Amphibians will be on the list for a quad or county if pesticides applied in that area may be carried to their habitat by air currents.
- Birds are shown regardless of whether they are resident or migratory. Relevant birds on the county list should be considered regardless of whether they appear on a quad list.

Plants

Any plants on your list are ones that have actually been observed in the area covered by the list. Plants may exist in an area without ever having been detected there. You can find out what's in the surrounding quads through the California Native Plant Society's online [Inventory of Rare and Endangered Plants](#).

Surveying

Some of the species on your list may not be affected by your project. A trained biologist and/or botanist, familiar with the habitat requirements of the species on your list, should determine whether they or habitats suitable for them may be affected by your project. We recommend that your surveys include any proposed and candidate species on your list. See our [Protocol](#) and [Recovery Permits](#) pages.

For plant surveys, we recommend using the [Guidelines for Conducting and Reporting Botanical Inventories](#). The results of your surveys should be published in any environmental documents prepared for your project.

Your Responsibilities Under the Endangered Species Act

All animals identified as listed above are fully protected under the Endangered Species Act of 1973, as amended. Section 9 of the Act and its implementing regulations prohibit the take of a federally listed wildlife species. Take is defined by the Act as "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect" any such animal.

Take may include significant habitat modification or degradation where it actually kills or injures wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or shelter (50 CFR §17.3).

Take incidental to an otherwise lawful activity may be authorized by one of two procedures:

- If a Federal agency is involved with the permitting, funding, or carrying out of a project that may result in take, then that agency must engage in a formal [consultation](#) with the Service. During formal consultation, the Federal agency, the applicant and the Service work together to avoid or minimize the impact on listed species and their habitat. Such consultation would result in a biological opinion by the Service addressing the anticipated effect of the project on listed and proposed species. The opinion may authorize a limited level of incidental take.
- If no Federal agency is involved with the project, and federally listed species may be taken as part of the project, then you, the applicant, should apply for an incidental take permit. The Service may issue such a permit if you submit a satisfactory conservation plan for the species that would be affected by your project.

Should your survey determine that federally listed or proposed species occur in the area and are likely to be affected by the project, we recommend that you work with this office and the California Department of Fish and Game to develop a plan that minimizes the project's direct and indirect impacts to listed species and compensates for project-related loss of habitat. You should include the plan in any environmental documents you file.

Critical Habitat

When a species is listed as endangered or threatened, areas of habitat considered essential to its conservation may be designated as critical habitat. These areas may require special management considerations or protection. They provide needed space for growth and normal behavior; food, water, air, light, other nutritional or physiological requirements; cover or shelter; and sites for breeding, reproduction, rearing of offspring, germination or seed dispersal.

Although critical habitat may be designated on private or State lands, activities on these lands are not restricted unless there is Federal involvement in the activities or direct harm to listed wildlife.

If any species has proposed or designated critical habitat within a quad, there will be a separate line for this on the species list. Boundary descriptions of the critical habitat may be found in the Federal Register. The information is also reprinted in the Code of Federal Regulations (50 CFR 17.95). See our [Map Room](#) page.

Candidate Species

We recommend that you address impacts to candidate species. We put plants and animals on our candidate list when we have enough scientific information to eventually propose them for listing as threatened or endangered. By considering these species early in your planning process you may be able to avoid the problems that could develop if one of these candidates was listed before the end of your project.

Species of Concern

The Sacramento Fish & Wildlife Office no longer maintains a list of species of concern. However, various other agencies and organizations maintain lists of at-risk species. These lists provide essential information for land management planning and conservation efforts. [More info](#)

Wetlands

If your project will impact wetlands, riparian habitat, or other jurisdictional waters as defined by section 404 of the Clean Water Act and/or section 10 of the Rivers and Harbors Act, you will need to obtain a permit from the U.S. Army Corps of Engineers. Impacts to wetland habitats require site specific mitigation and monitoring. For questions regarding wetlands, please contact Mark Littlefield of this office at (916) 414-6520.

Updates

Our database is constantly updated as species are proposed, listed and delisted. If you address proposed and candidate species in your planning, this should not be a problem. However, we recommend that you get an updated list every 90 days. That would be July 07, 2011.

California Department of Fish and Game
Natural Diversity Database
QUADS: Richmond, Briones Valley, Oakland West, Oakland East

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
1 Accipiter cooperii Cooper's hawk	ABNKC12040			G5	S3	
2 Ambystoma californiense California tiger salamander	AAAAA01180	Threatened	Threatened	G2G3	S2S3	SC
3 Amsinckia lunaris bent-flowered fiddleneck	PDBOR01070			G2?	S2	1B.2
4 Antrozous pallidus pallid bat	AMACC10010			G5	S3	SC
5 Aquila chrysaetos golden eagle	ABNKC22010			G5	S3	
6 Archoplites interruptus Sacramento perch	AFCQB07010			G3	S1	SC
7 Arctostaphylos pallida pallid manzanita	PDERI04110	Threatened	Endangered	G1	S1	1B.1
8 Astragalus tener var. tener alkali milk-vetch	PDFAB0F8R1			G2T2	S2	1B.2
9 Athene cunicularia burrowing owl	ABNSB10010			G4	S2	SC
10 Atriplex joaquiniana San Joaquin spearscale	PDCHE041F3			G2	S2	1B.2
11 Branta hutchinsii leucopareia cackling (=Aleutian Canada) goose	ABNJB05035	Delisted		G5T4	S2	
12 California macrophylla round-leaved filaree	PDGER01070			G2	S2	1B.1
13 Calochortus pulchellus Mt. Diablo fairy-lantern	PMLIL0D160			G2	S2.1	1B.2
14 Calystegia purpurata ssp. saxicola coastal bluff morning-glory	PDCON040D2			G4T2	S2.2	1B.2
15 Carex comosa bristly sedge	PMCYP032Y0			G5	S2?	2.1
16 Chloropyron maritimum ssp. palustre Point Reyes bird's-beak	PDSCR0J0C3			G4?T2	S2.2	1B.2
17 Chorizanthe cuspidata var. cuspidata San Francisco Bay spineflower	PDPGN04081			G2T2	S2.2	1B.2
18 Chorizanthe robusta var. robusta robust spineflower	PDPGN040Q2	Endangered		G2T1	S1.1	1B.1
19 Cicindela hirticollis grvida sandy beach tiger beetle	IICOL02101			G5T2	S1	
20 Cicuta maculata var. bolanderi Bolander's water-hemlock	PDAP10M051			G5T3T4	S2	2.1
21 Circus cyaneus northern harrier	ABNKC11010			G5	S3	SC
22 Cirsium andrewsii Franciscan thistle	PDAST2E050			G2	S2.2	1B.2
23 Clarkia concinna ssp. automixa Santa Clara red ribbons	PDONA050A1			G5?T3	S3.3	4.3

California Department of Fish and Game
Natural Diversity Database
QUADS: Richmond, Briones Valley, Oakland West, Oakland East

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
24 <i>Clarkia franciscana</i> Presidio clarkia	PDONA050H0	Endangered	Endangered	G1	S1.1	1B.1
25 <i>Danaus plexippus</i> monarch butterfly	IILEPP2010			G5	S3	
26 <i>Dipodomys heermanni berkeleyensis</i> Berkeley kangaroo rat	AMAFD03061			G3G4T1	S1	
27 <i>Dirca occidentalis</i> western leatherwood	PDTHY03010			G2G3	S2S3	1B.2
28 <i>Egretta thula</i> snowy egret	ABNGA06030			G5	S4	
29 <i>Elanus leucurus</i> white-tailed kite	ABNKC06010			G5	S3	
30 <i>Emys marmorata</i> western pond turtle	ARAAD02030			G3G4	S3	SC
31 <i>Eriogonum luteolum</i> var. <i>caninum</i> Tiburon buckwheat	PDPGN083S1			G5T2	S2	1B.2
32 <i>Eucyclogobius newberryi</i> tidewater goby	AFCQN04010	Endangered		G3	S2S3	SC
33 <i>Euphydryas editha bayensis</i> Bay checkerspot butterfly	IILEPK4055	Threatened		G5T1	S1	
34 <i>Fritillaria liliacea</i> fragrant fritillary	PMLILOV0C0			G2	S2.2	1B.2
35 <i>Geothlypis trichas sinuosa</i> saltmarsh common yellowthroat	ABPBX1201A			G5T2	S2	SC
36 <i>Gilia capitata</i> ssp. <i>chamissonis</i> blue coast gilia	PDPLM040B3			G5T2	S2.1	1B.1
37 <i>Haliaeetus leucocephalus</i> bald eagle	ABNKC10010	Delisted	Endangered	G5	S2	
38 <i>Helianthella castanea</i> Diablo helianthella	PDAST4M020			G2	S2	1B.2
39 <i>Helminthoglypta nickliniana bridgesi</i> Bridges' coast range shoulderband	IMGASC2362			G2T1	S1	
40 <i>Hemizonia congesta</i> ssp. <i>congesta</i> seaside tarplant	PDAST4R065			G5T2T3	S2S3	1B.2
41 <i>Hoita strobilina</i> Loma Prieta hoita	PDFAB5Z030			G2	S2	1B.1
42 <i>Holocarpha macradenia</i> Santa Cruz tarplant	PDAST4X020	Threatened	Endangered	G1	S1.1	1B.1
43 <i>Horkelia cuneata</i> ssp. <i>sericea</i> Kellogg's horkelia	PDROS0W043			G4T1	S1.1	1B.1
44 <i>Hydroprogne caspia</i> Caspian tern	ABNNM08020			G5	S4	
45 <i>Lasionycteris noctivagans</i> silver-haired bat	AMACC02010			G5	S3S4	
46 <i>Lasiurus cinereus</i> hoary bat	AMACC05030			G5	S4?	

California Department of Fish and Game
Natural Diversity Database
QUADS: Richmond, Briones Valley, Oakland West, Oakland East

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
47 Laterallus jamaicensis coturniculus California black rail	ABNME03041		Threatened	G4T1	S1	
48 Layia carnosa beach layia	PDAST5N010	Endangered	Endangered	G2	S2.1	1B.1
49 Leptosiphon rosaceus rose leptosiphon	PDPLM09180			G1	S1.1	1B.1
50 Masticophis lateralis euryxanthus Alameda whipsnake	ARADB21031	Threatened	Threatened	G4T2	S2	
51 Meconella oregana Oregon meconella	PDPAP0G030			G2G3	S1.1	1B.1
52 Melospiza melodia maxillaris Suisun song sparrow	ABPBXA301K			G5T2	S2	SC
53 Melospiza melodia pusillula Alameda song sparrow	ABPBXA301S			G5T2?	S2?	SC
54 Melospiza melodia samuelis San Pablo song sparrow	ABPBXA301W			G5T2?	S2?	SC
55 Microcina leei Lee's micro-blind harvestman	ILARA47040			G1	S1	
56 Microtus californicus sanpabloensis San Pablo vole	AMAFF11034			G5T1T2	S1S2	SC
57 Monardella villosa ssp. globosa robust monardella	PDLAM180P7			G5T2	S2.2	1B.2
58 Monolopia gracilens woodland woollythreads	PDAST6G010			G2G3	S2S3	1B.2
59 Northern Coastal Salt Marsh	CTT52110CA			G3	S3.2	
60 Northern Maritime Chaparral	CTT37C10CA			G1	S1.2	
61 Nycticorax nycticorax black-crowned night heron	ABNGA11010			G5	S3	
62 Nyctinomops macrotis big free-tailed bat	AMACD04020			G5	S2	SC
63 Phalacrocorax auritus double-crested cormorant	ABNFD01020			G5	S3	
64 Plagiobothrys chorisianus var. chorisianus Choris' popcorn-flower	PDBOR0V061			G3T2Q	S2.2	1B.2
65 Plagiobothrys diffusus San Francisco popcorn-flower	PDBOR0V080		Endangered	G1Q	S1.1	1B.1
66 Rallus longirostris obsoletus California clapper rail	ABNME05016	Endangered	Endangered	G5T1	S1	
67 Rana boylei foothill yellow-legged frog	AAABH01050			G3	S2S3	SC
68 Rana draytonii California red-legged frog	AAABH01022	Threatened		G4T2T3	S2S3	SC
69 Reithrodontomys raviventris salt-marsh harvest mouse	AMAFF02040	Endangered	Endangered	G1G2	S1S2	
70 Sanicula maritima adobe sanicle	PDAPI1Z0D0		Rare	G2	S2.2	1B.1

California Department of Fish and Game
Natural Diversity Database
QUADS: Richmond, Briones Valley, Oakland West, Oakland East

Scientific Name/Common Name	Element Code	Federal Status	State Status	GRank	SRank	CDFG or CNPS
71 Scapanus latimanus parvus Alameda Island mole	AMABB02031			G5T1Q	S1	SC
72 Serpentine Bunchgrass	CTT42130CA			G2	S2.2	
73 Sorex vagrans halicoetes salt-marsh wandering shrew	AMABA01071			G5T1	S1	SC
74 Sternula antillarum browni California least tern	ABNNM08103	Endangered	Endangered	G4T2T3Q	S2S3	
75 Streptanthus albidus ssp. peramoenus most beautiful jewel-flower	PDBRA2G012			G2T2	S2.2	1B.2
76 Stuckenia filiformis slender-leaved pondweed	PMPOT03090			G5	S1S2	2.2
77 Suaeda californica California seablite	PDCHE0P020	Endangered		G1	S1.1	1B.1
78 Taxidea taxus American badger	AMAJF04010			G5	S4	SC
79 Trachusa gummifera A leaf-cutter bee	IIHYM80010			G1	S1	
80 Trifolium hydrophilum saline clover	PDFAB400R5			G2?	S2.2?	1B.2
81 Tryonia imitator mimic tryonia (=California brackishwater snail)	IMGASJ7040			G2G3	S2S3	
82 Valley Needlegrass Grassland	CTT42110CA			G3	S3.1	
83 Viburnum ellipticum oval-leaved viburnum	PDCPR07080			G5	S2.3	2.3
84 Xanthocephalus xanthocephalus yellow-headed blackbird	ABPBXB3010			G5	S3S4	SC

CNPS Inventory of Rare and Endangered Plants

Status: Plant Press Manager window with 35 items - Fri, Apr. 8, 2011, 13:21 b

- During each visit, we provide you with an empty "Plant Press" for collecting items of interest.
- Several report formats are available. Use the CSV and XML options to download raw data.

Reformat list as: Standard List - with Plant Press controls

DELETE unchecked items

open	save	scientific	common	family	CNPS
	☒	<u>Amsinckia</u> <u>lunaris</u>	bent-flowered fiddleneck	Boraginaceae	List 1B.2
	☒	<u>Arctostaphylos</u> <u>pallida</u>	pallid manzanita	Ericaceae	List 1B.1
	☒	<u>Astragalus</u> <u>tener</u> var. <u>tener</u>	alkali milk-vetch	Fabaceae	List 1B.2
	☒	<u>Atriplex</u> <u>joaquiniana</u>	San Joaquin spearscale	Chenopodiaceae	List 1B.2
	☒	<u>Balsamorhiza</u> <u>macrolepis</u> var. <u>macrolepis</u>	big-scale balsamroot	Asteraceae	List 1B.2
	☒	<u>California</u> <u>macrophylla</u>	round-leaved filaree	Geraniaceae	List 1B.1
	☒	<u>Calochortus</u> <u>pulchellus</u>	Mt. Diablo fairy- lantern	Liliaceae	List 1B.2
	☒	<u>Calystegia</u> <u>purpurata</u> ssp. <u>saxicola</u>	coastal bluff morning-glory	Convolvulaceae	List 1B.2
	☒	<u>Chloropyron</u> <u>maritimum</u> ssp. <u>palustre</u>	Point Reyes bird's-beak	Orobanchaceae	List 1B.2
	☒	<u>Chorizanthe</u> <u>cuspidata</u> var. <u>cuspidata</u>	San Francisco Bay spineflower	Polygonaceae	List 1B.2
	☒	<u>Chorizanthe</u> <u>robusta</u> var. <u>robusta</u>	robust spineflower	Polygonaceae	List 1B.1
	☒	<u>Cirsium</u> <u>andrewsii</u>	Franciscan thistle	Asteraceae	List 1B.2
	☒	<u>Clarkia</u> <u>franciscana</u>	Presidio clarkia	Onagraceae	List 1B.1
	☒	<u>Dirca</u> <u>occidentalis</u>	western leatherwood	Thymelaeaceae	List 1B.2
	☒	<u>Eriogonum</u> <u>luteolum</u> var. <u>caninum</u>	Tiburon buckwheat	Polygonaceae	List 1B.2
	☒	<u>Fritillaria</u> <u>liliacea</u>	fragrant fritillary	Liliaceae	List 1B.2
	☒	<u>Gilia</u> <u>capitata</u> ssp. <u>chamissonis</u> 	blue coast gilia	Polemoniaceae	List 1B.1
	☒	<u>Helianthella</u> <u>castanea</u>	Diablo helianthella	Asteraceae	List 1B.2
	☒	<u>Hoita</u> <u>strobilina</u>	Loma Prieta hoita	Fabaceae	List 1B.1
	☒	<u>Holocarpha</u> <u>macradenia</u>	Santa Cruz tarplant	Asteraceae	List 1B.1
	☒	<u>Horkelia</u> <u>cuneata</u> ssp. <u>sericea</u> 	Kellogg's horkelia	Rosaceae	List 1B.1

	☒	<u>Lathyrus jepsonii</u> var. <u>jepsonii</u> 	Delta tule pea	Fabaceae	List 1B.2
	☒	<u>Meconella oregana</u> 	Oregon meconella	Papaveraceae	List 1B.1
	☒	<u>Micropus amphibolus</u> 	Mt. Diablo cottonweed	Asteraceae	List 3.2
	☒	<u>Monardella antonina</u> ssp. <u>antonina</u>	San Antonio Hills monardella	Lamiaceae	List 3
	☒	<u>Monardella villosa</u> ssp. <u>globosa</u> 	robust monardella	Lamiaceae	List 1B.2
	☒	<u>Monolopia gracilens</u> 	woodland woolythreads	Asteraceae	List 1B.2
	☒	<u>Plagiobothrys chorisianus</u> var. <u>chorisianus</u> 	Choris' popcorn-flower	Boraginaceae	List 1B.2
	☒	<u>Plagiobothrys diffusus</u>	San Francisco popcorn-flower	Boraginaceae	List 1B.1
	☒	<u>Sanicula maritima</u> 	adobe sanicle	Apiaceae	List 1B.1
	☒	<u>Streptanthus albidus</u> ssp. <u>peramoenus</u> 	most beautiful jewel- flower	Brassicaceae	List 1B.2
	☒	<u>Stuckenia filiformis</u>	slender-leaved pondweed	Potamogetonaceae	List 2.2
	☒	<u>Suaeda californica</u> 	California seablite	Chenopodiaceae	List 1B.1
	☒	<u>Trifolium hydrophilum</u>	saline clover	Fabaceae	List 1B.2
	☒	<u>Viburnum ellipticum</u> 	oval-leaved viburnum	Adoxaceae	List 2.3

DELETE unchecked items

check all

check none

APPENDIX E

Findings Required for Demolition of Historic Properties

Category I

FINDINGS REQUIRED FOR THE DEMOLITION OF HISTORIC PROPERTIES

This handout contains the findings required to be met to approve a Regular Design Review application to demolish a historic structure in the City of Oakland. These findings are required by Section 17.136.075 of the Planning Code. All other regulations, including analysis required under the California Environmental Quality Act, apply.

The handout also describes the items required to be submitted with the design review application. The goal of the required submittals is to assist staff in evaluating whether a project meets the findings required to demolish a building. The submittals may consist of economic and financial analyses, informational reports, and/or “discussion points” required to be addressed within a design or historic analysis of a project. The submittals are not criteria for whether a demolition can or cannot occur; they are only the information required by the City to make a determination as to whether an application meets the required findings for demolition. Further, the required submittals are not meant to discourage either contemporary or historicist architecture in new construction. The Planning Director can, from time to time, make modifications to the required submittals if they are consistent with the intent of the proposed requirements.

All reports required for the demolition findings must be prepared by independent third party consultants or be peer reviewed. Reports will be paid for by the applicant and consultant shall be approved by, and report to, the City. All applicable discussion points shall be taken into account when making a finding. If a point is not applicable, the analysis shall state why. Any submittal may also include attributes that support the demolition proposal and/or the replacement project.

A complete application for demolition of historic property includes following:

- A completed application for Regular Design Review.
- A description of how a project meets the findings described in this form.
- The required submittals described in this form.
- A complete application for the replacement project, including plans designed by a licensed architect.

Different findings are required for the demolition of three categories of historic structures::

- **Category I** includes any Landmark; Heritage Property; property rated “A” or “B” by the Oakland Cultural Heritage Survey; or Preservation Study List Property. This category excludes any property that falls into Category II.
- **Category II** includes properties in an S-7 or S-20 zone or an Area of Primary Importance. Any building, including those that do not contribute to the historic quality of the district, fall into this category.
- **Category III** includes properties rated “C” by the Oakland Cultural Heritage Survey or contributors to an Area of Secondary Importance. This category excludes any property that falls into Category II.

Please call the Oakland Cultural Heritage Survey at (510)238-6879 to determine if a property falls into any of the three categories described above.



CITY OF OAKLAND DEMOLITION FINDINGS FOR CATEGORY I HISTORIC PROPERTIES

The following findings are required to be met to demolish a Category I Historic Structure. This category includes any Landmark; Heritage Property; property rated “A” or “B” by the Oakland Cultural Heritage Survey; or Preservation Study List Property. This category excludes any properties contained in Category II, such as buildings that contribute to the historic quality of an Area of Primary Importance, S-7 zone, or S-20 zone.

A proposal to demolish a Category I historic resource must meet Finding 1 or Finding 2 and also meet both Findings 3 and 4, below. Please indicate how the proposed demolition meets the required findings and include all the applicable required submittal materials for the corresponding findings.

Finding 1: The existing property has no reasonable use or cannot generate a reasonable economic return and the development replacing it will provide such use or generate such return.

Finding 1 submittal requirements:

1. *Building Use – Economic Viability.* The applicant shall submit a market analysis prepared by an architect, developer, real estate consultant, appraiser, or other real estate professional with extensive experience in both real estate and historic rehabilitation that demonstrates all of the following:
 - a. The current use does not generate a reasonable economic return (may include market report of like uses and building scale in the same or similar neighborhood);
 - b. That appropriate and reasonable alternate uses in the building could not generate a future reasonable economic return;
 - c. That alterations or additions to the existing building could not make the current or future use generate a reasonable economic return; and
 - d. Potential Federal Tax Credits, Mills Act Contracts, Façade Grants, Transfer of Development Rights or other funding sources are not feasible to bridge the gap identified above.
2. *Building Soundness.* The applicant shall submit a report from a licensed engineer or architect with extensive experience in rehabilitation as to the structural soundness of the property and its suitability for rehabilitation. The soundness report shall be based on the requirements contained in the Soundness Report Requirements, attached.
3. *Building Maintenance History.* The applicant shall submit a cost estimate report prepared by a qualified cost estimator with extensive experience in rehabilitation, analyzing any building neglect contributing to any deterioration;
 - a. Is the building free of a history of serious, continuing code violations?
 - b. Has the building been maintained and stabilized?

Long term deferred maintenance and/or a history of continuing code violations not addressed by the owner, or other proper person having legal custody of the structure or building shall constitute a violation and will not be considered as a part of the economic infeasibility analysis bottom line.

4. *Existing Building Appraised Value.* All appraisals obtained within the previous two years by the owner or applicant in connection with the purchase, financing, or ownership of the property;
 - a. Any listing of the property for sale or rent price asked, and offers received, if any, within the previous two years; and
 - b. Existing Building/Property Appraisal (current within the last six months):
 - i. Estimated market value of the property in its current condition under best practices management;
 - ii. After repair of construction deficiencies as defined in the Soundness Report Requirements, attached;
 - iii. After repair of construction deficiencies and maintenance as defined in the Soundness Report Requirements, attached;
 - iv. After any changes recommended by the Historic Preservation Staff/LPAB;
 - v. After completion of the proposed demolition or removal; and
 - vi. After completion of the replacement proposal.
5. *Public Benefits.* A public benefits analysis report shall be prepared and take into consideration the educational, cultural, social, equity, and economic benefits of the historic building and the proposed building. Some issues that shall be considered include, but are not limited to:
 - a. The benefits to the City's tourism industry;
 - b. The benefits to owners of other commercial and residential property owners and renters in the area;
 - c. The services provided to the community, including social services;
 - d. Housing and jobs opportunities;
 - e. Civic, community, and neighborhood identity;
 - f. Cultural heritage and the image of the City and local neighborhood; and
 - g. Educational opportunities and cultural benefits regarding architectural and local history.
6. *Optional Submittal: Sustainability - Life Cycle Assessment Criteria.* The applicant may wish to submit a Life Cycle Assessment Report to demonstrate the quality of the replacement proposal and of the existing building as described below. Demonstration that the durability and expected life of the new proposal's quality of construction, materials and craftsmanship, including the cost of demolition or deconstruction of the historic resource, exceeds the value of the embodied energy of the building's existing materials, durability of materials, quality of construction, level of craftsmanship, cost to repair construction deficiencies and maintenance.

Finding 2: The property constitutes a hazard and is economically infeasible to rehabilitate on its present site. For this finding, a hazard constitutes a threat to health and safety that is not imminent.

Finding 2 submittal requirements:

1. A declaration from the Building Official or the City Council that the structure to be demolished is a threat to the public health and safety although such threat is not immediate.
2. A report from a licensed engineer or architect with extensive experience in rehabilitation as to the structural soundness of the property and its suitability for rehabilitation. The soundness report shall be based on the requirements contained in the Soundness Report Requirements, attached.
3. A building maintenance history report.

Based on these reports, the other submittals contained in Finding 1 may be required.

Finding 3: The design quality of the replacement facility is equal/superior to that of the existing facility. Analysis prepared by a historic architect or professional with equivalent experience.

Finding 3 submittal requirements:

A report shall be submitted that addresses whether the proposal demonstrates equal or superior quality with respect to:

1. A clearly identifiable visual or design value. For instance, does the replacement proposal express its present character as strongly as the historic design expressed its past?
2. Durability, quality, and design value of surface materials. Durable and quality materials include, but are not limited to: stone, granite, marble, concrete, highest quality and detailed glass curtain wall, terra cotta or other materials appropriate to the design style of the building or context of the neighborhood. In terms of design value, are materials in the replacement building used to enhance the architectural design elements of the building instead of used solely for the sake of variety?
3. Significant enhancement of the visual interest of the surrounding area;
4. High quality detailing;
5. Composition. A well composed building integrates all aspects of the building (materials, façade patterns, proportions, openings, forms, massing, detailing, etc.) into its overall character and design.
6. Site setting, neighborhood, and streetscape contexts;
7. Incorporating “especially fine” construction details, methods, or structural materials. These include those that successfully address challenging structural problems, contribute significantly to the building’s overall design quality, exhibit fine craftsmanship, or are visible design elements;
8. The replacement building’s reflection of the time it was designed, not merely a caricature of the demolished building;
9. The replacement building’s contemporary interpretation of the demolished building’s elements in terms of the cultural, historic, economic, or technological trends of its time.

Finding 4: It is economically, functionally architecturally, or structurally infeasible to incorporate the historic building into the proposed development.

Finding 4 submittal requirements:

A report shall be submitted that addresses the following discussion points:

1. Could alternations or additions to the existing building make the current or a future use generate a reasonable economic return and/or architecturally/structurally accommodate the proposed uses?
2. Do preservation alternatives exist which can achieve at least the same level of non-preservation benefits?
3. Include discussion of potential economic benefits of a rehabilitated or reused cultural resource, including how building or district character might affect property values, attract commercial economic development, and increase City tax revenues.



CITY OF OAKLAND

SOUNDNESS REPORT REQUIREMENTS

Applicants proposing the demolition of any Category I or Category II resource that contributes to an Area of Primary Importance, S-7 zone, or S-20 zone require a report to determine the soundness of the historic building. This attachment explains what should be included in the soundness report.

Soundness reports are required to be produced by licensed design or construction professionals (architects, engineers, and contractors) or by certified specifiers, construction cost estimators or building inspectors. The author of the report must be a disinterested third party that is not involved in the development's ownership, design or construction. Professionals who prepare such reports must be familiar with the City's demolition regulations and knowledgeable about construction assemblies, processes and cost.

Authors of Soundness Reports should focus on the concept that "soundness" is an economic measure of a building, not an issue of structural compliance with the current Building Code. Further, they should distinguish costs to upgrade elements that were original construction deficiencies from those elements needing repair due to deferred maintenance, as explained below.

Without a determination that the structure is unsound, the recommendation of approval to demolish is more difficult to make. In this case, the applicant may be advised to consider a project that alters, rather than demolishes, the existing structure.

Definitions

Soundness is an economic measure of the feasibility of repairing construction deficiencies. It compares an estimate of construction-repair cost called the upgrade cost to an estimate called the replacement cost.

Hazard is defined the same as it is in the Demolition Findings, Category I and Category II, Finding 2. For this finding, a hazard constitutes a threat to health and safety that is not imminent.

Replacement cost is defined as the current cost to construct structures exactly the size of those proposed for demolition. The current costs are determined by the most recent City of Oakland Building Services Construction Valuation For Building Permits¹.

Unsound structure is a structure where the primary upgrade cost construction deficiencies exceeds 50 percent of its replacement cost or the primary *plus* secondary upgrade cost exceeds 75 percent.

Primary upgrade cost is an estimate of the cost to make the existing structure 'usable.' This is the cost to bring a construction deficient structure into compliance with the minimum standards of the Building Code in effect at the time of its construction, with certain retroactive life-safety exceptions.

¹ Market value based on the current costs of labor, materials, related fees, and any entrepreneurial profit or incentive.

Programmatic shortcomings of the existing structure have no bearing on the upgrade cost. Costs such as adding floor space in an addition, to increasing headroom in a basement or attic, or to installing interior upgrades, cannot be included, nor can certain “soft costs” and site improvements listed below. Bringing the structure into compliance with current seismic requirements of the Building Code is not an allowable expense, even though it may be prudent or desirable for the public good, or even if required by the Building Code for the scope of repair work. Routine, repetitive maintenance costs are also excluded. Contractor’s profit, overhead, and permit costs may be included, but Architects’ and Engineers’ design fees, and allowances for construction contingencies may not.

Secondary upgrade cost is an estimate of the cost of functional repairs attributable to lack of maintenance. For instance, a significant roof leak that went unrepaired for a sufficient length of time to cause mildewed gypsum board and rotted structural members is a secondary upgrade cost. Replacement of a building component because it is not pristine or modern does not qualify as a secondary upgrade cost unless the component does not meet required functional standards and/or is a hazard. For example, the replacement of rusted ductwork on a heating system that can maintain the temperature requirement does not qualify as a secondary upgrade cost nor is the replacement of a functional and safe knob and tubing wiring system. The cost to replace a pull-out fuse box that is not a hazard with a new circuit breaker panel cannot be included as an secondary upgrade cost, even if it is part of the proposed work.

Further examples items that cannot be included in the secondary upgrade cost calculation are:

- Replacement of roof flashing, step flashing, coping, gravel stops, and diverters. These are excluded from the calculation because these items can be replaced as part of the re-roofing process, and, in that sense, are maintenance items. Replacement of corroded galvanized sheet metal head flashing over doors and windows might be considered a cost allowed at the 75 percent level if it is clear that the corrosion resulted from lack of painting or other improper maintenance.
- Window replacements. The Building Code requires that windows, like all elements of structure, be maintained and repaired. Replacement of windows meeting the code requirements at the time of their installation cannot be included in 75 percent cost calculation. For instance, replacing single-glazed windows installed in 1972, before Title 24 energy requirements, with double-glazed, energy efficient windows would not be an allowed in the 75 percent cost calculation. Repair of leaky or aged windows may be included at the 75 percent threshold to the extent that it is demonstrable that the repair is necessitated by poor maintenance.
- Stair replacement or removal. Removal and replacement of existing stairs without legal headroom can be included as a primary upgrade cost only if the stairs are a means of egress required by the Building Code. If the stairs are not part of a required exit system, but provide access to a room or garage, their replacement to meet current headroom requirements or rise and run ratios cannot be included. Wooden exterior stairs have a finite life, and their periodic replacement is considered a maintenance issue. Only if it can be documented that improper construction led to the early loss of the stairs could their replacement be included in upgrade costs for soundness determination.

Examples of what are and are not considered primary and secondary upgrade costs

For general guidelines for what is considered a primary and secondary upgrade cost, see the description in the three lists below. Also note that, in general, the code requires that buildings be maintained in accordance with the codes in effect at the time of their original construction. Please note that some of the concepts addressed in these standards are not detailed, and can only be determined upon review of specific cases by competent professional persons.

Work that could be included in the 50 percent threshold (the primary cost):

- o Building Permit Application cost.
- o Correcting lack of flashing or proper weather protection if not originally installed.
- o Installing adequate weather protection and ventilation to prevent dampness in rooms if not originally constructed.
- o Provision of garbage and rubbish storage and removal facilities if not originally constructed.
- o Eliminating structural hazards in foundation due to structural inadequacies.
- o Eliminated structural hazards in flooring or floor supports, such as defective members, or flooring or supports of insufficient size to safely carry the imposed loads.
- o Correcting vertical walls or partitions which lean or are buckled due to defective materials or which are insufficient in size to carry loads.
- o Eliminating structural hazards in ceilings, roofs, or other horizontal members, such as sagging or splitting, due to defective materials or insufficient size.
- o Eliminating structural hazards in fireplaces and chimneys, such as listing, bulging or settlement due to defective materials or due to insufficient size or strength.
- o Upgrading electrical wiring which does not conform to the regulations in effect at the time of installation.
- o Upgrading plumbing materials and fixtures that were not installed in accordance with regulations in effect at the time of installation.
- o Providing exiting in accordance with the code in effect at the time of construction.
- o Correction of improper roof, surface or sub-surface drainage if not originally installed
- o Correction of structural pest infestation (termites, beetles, dry rot, etc.) to extent attributable to original construction deficiencies, (e.g., insufficient earth-wood separation).
- o Contractor's profit and overhead, not to exceed 18 percent of construction subtotal, if unit costs used for repair items do not include Profit and Overhead.

Work that could be included in the cost estimate for the the 75 percent threshold (the primary plus secondary upgrade costs):

- o Repair of fire-resistive construction and fire protection systems if required at the time of construction, including plaster and sheet rock where fire separation is required, and smoke detectors, fire sprinklers, and fire alarms when required.
- o Repairs as need to provide at least one properly operating water closet, lavatory, and bathtub or shower.
- o Repair of a sinks not operating properly.
- o Provision of kitchen appliances, when provided by owner, in good working condition, excluding minor damage.
- o Repair if needed of water heated to provide at least 8 gallons of hot water storage.

- o Both hot and cold running water to plumbing fixtures.
- o Repair to a sewage connection disposal system, if not working.
- o Repair heating facilities to permit heat to habitable rooms, if not working.
- o Repair ventilation equipment, such as bathroom fans, where operable windows are not provided, if not working.
- o Provision of operable windows in habitable rooms (certain exceptions may apply).
- o Repair of electrical wiring if not maintained in a safe condition.
- o Repair of plumbing materials and fixtures if not maintained in good condition.
- o Correcting vertical walls or partitions which lean or are buckled due to deterioration.
- o Eliminating structural hazards in ceilings, roofs, or other horizontal members due to deterioration.
- o Eliminating structural hazards in fireplaces and chimneys, such as listing, bulging or settlement due to deterioration.
- o Eliminating chronic, severe mold and mildew.
- o Repairing proper weather protection, including exterior coverings such as paint and roof coverings and windows and doors due to lack of maintenance.
- o Repairing deteriorated, crumbling or loose plaster, gypsum board and floor finishes due to faulty, poorly maintained weather protection.
- o Contractor's profit and overhead, not to exceed 18 percent of construction subtotal, if unit costs used for repair items do not include profit and overhead.

Work that is excluded from both the 50 percent and 75 percent thresholds (the primary and secondary upgrade costs):

- o Architects' fees, Engineers' fees and other design fees.
- o Construction contingency allowance.
- o Addition of floor space, or increasing headroom or other programmatic requirements that are not required standards as part of the original structure.
- o Adding electrical receptacles where not necessary;
- o Installation of a higher capacity electrical service, unless the existing is a hazard.
- o Finish upgrades, such as new cabinetry, countertops, tile, stonework and other interior finishes;
- o Site work, such as repairs to walkways, driveways, decks on grade, and retaining walls not part of the building foundation.
- o Landscape and irrigation work.
- o Removal of fire hazards, such as buildup of combustible waste and vegetation.
- o Removal of accumulation of weeds, vegetation, trash, junk, debris, garbage, stagnant water.
- o Elimination of insect, vermin or rodent infestation.
- o Other routine, repetitive maintenance costs.

Content of soundness report

The Soundness Report should begin with a thorough description of the building in question: its age, size (e.g., footprint area, height, number of stories, square footage), roof form, roofing material, construction type, foundation and floor system, exterior siding, interior wall finish, and a description of repairs, maintenance, and any remodeling or additions. Documentation supporting the previous should be included in an appendix, using copies of the building permit history of the building.

Next, the replacement cost should be calculated using the definitions described above. Both the 50 and the 75 percent threshold should be computed and noted.

The 50 percent upgrade cost (the primary cost) should be described next, with line item descriptions of each element qualifying for upgrade (those due to initial construction deficiencies), followed by the unit cost, the unit multiplier, and the total cost for that element. If the sum of these cost items does not exceed 50 percent of the replacement cost, then a 75 percent upgrade cost (secondary plus primary upgrade cost) can be detailed, including the previous upgrade items and adding in costs for repair of qualifying items deteriorated due to deferred maintenance, presented in a similar format.

Generalities and assertions unsupported by professional, detailed justification, or by photographic evidence or other documentation will undermine the essential credibility of the report. Replacement of many structural assemblies and mechanical systems is justified only if the existing elements are hazards. Careful and thorough demonstration of the hazardous condition is required, to justify including the replacement in the upgrade cost estimate.

Copies of any pest report, if such work is needed, and any other documentation supporting the conclusions of the soundness report, should be provided. Pest control work should be carefully analyzed to determine which portions of work and cost are applicable to the 50 percent (primary upgrade cost) threshold and which to the 75 percent (primary plus secondary upgrade cost) threshold.

Clear and well-labeled photographs of the façade, and close-ups that document elements needing upgrade work, are essential to support assertions that the elements in question qualify for inclusion in the upgrade cost.

A factual summary of the findings is a useful conclusion to the document.

How will the City decide whether to approve the demolition application?

The Soundness Report will be reviewed and considered in conjunction with all other required submittals by the Findings for Demolition of Local Register Historic Properties. All of these reports will be reviewed by the appropriate advisory group(s) and decision maker(s). A replacement project, if any, must also meet the Demolition Findings.

Because a finding that a building is unsound makes approval of the demolition more probable, and because some costs included in the soundness report represent a subjective professional judgment, there may be a temptation to inflate the upgrade cost estimate, by including costs of elements that do not require repair or by exaggerating the cost of repairs, or by suggesting seismic or other structural upgrades beyond the scope of the requirements. Resist this temptation. Presentation of soundness reports with inflated upgrade costs or low replacement costs may lead to denial of the related demolition permits, or require a peer review, paid for by the applicant.

If the Soundness Report is credible and demonstrates that the structure in question is sound/not sound, the report findings will be taken into consideration, along with other required submittals by the Findings

for Demolition of Local Register Historic Properties, for evaluation and determination of demolition approval, when reviewed by Landmarks Preservation Advisory Board and the Planning Commission.

Category II

FINDINGS REQUIRED FOR THE DEMOLITION OF HISTORIC PROPERTIES

This handout contains the findings required to be met to approve a Regular Design Review application to demolish a historic structure in the City of Oakland. These findings are required by Section 17.136.075 of the Planning Code. All other regulations, including analysis required under the California Environmental Quality Act, apply.

The handout also describes the items required to be submitted with the design review application. The goal of the required submittals is to assist staff in evaluating whether a project meets the findings required to demolish a building. The submittals may consist of economic and financial analyses, informational reports, and/or “discussion points” required to be addressed within a design or historic analysis of a project. The submittals are not criteria for whether a demolition can or cannot occur; they are only the information required by the City to make a determination as to whether an application meets the required findings for demolition. Further, the required submittals are not meant to discourage either contemporary or historicist architecture in new construction. The Planning Director can, from time to time, make modifications to the required submittals if they are consistent with the intent of the proposed requirements.

All reports required for the demolition findings must be prepared by independent third party consultants or be peer reviewed. Reports will be paid for by the applicant and consultant shall be approved by, and report to, the City. All applicable discussion points shall be taken into account when making a finding. If a point is not applicable, the analysis shall state why. Any submittal may also include attributes that support the demolition proposal and/or the replacement project.

A complete application for demolition of historic property includes following:

- A completed application for Regular Design Review.
- A description of how a project meets the findings described in this form.
- The required submittals described in this form.
- A complete application for the replacement project, including plans designed by a licensed architect.

Different findings are required for the demolition of three categories of historic structures:

- **Category I** includes any Landmark; Heritage Property; property rated “A” or “B” by the Oakland Cultural Heritage Survey; or Preservation Study List Property. This category excludes any property that falls into Category II.
- **Category II** includes properties in an S-7 or S-20 zone or an Area of Primary Importance. Any building, including those that do not contribute to the historic quality of the district, fall into this category.
- **Category III** includes properties rated “C” by the Oakland Cultural Heritage Survey or contributors to an Area of Secondary Importance. This category excludes any property that falls into Category II.

Please call the Oakland Cultural Heritage Survey at (510)238-6879 to determine if a property falls into any of the three categories described above.



CITY OF OAKLAND DEMOLITION FINDINGS FOR CATEGORY II HISTORIC PROPERTIES

The following findings are required to be met to demolish a Category II Historic Structure. This category includes any property in the S-7 or S-20 zone or in an historic neighborhood defined as an “Area of Primary Importance” by the Oakland Cultural Survey. The demolition of any building, including those that do not contribute to the historic district, fall into this category.

Finding 1 or Finding 2 plus Findings 4, 5 and 6, below, must be met to demolish a Category II Historic Resource that contributes to a historic district. Findings 3, 4, and 5 are required to be met to demolish a noncontributing property. Please indicate how the proposed demolition meets the required findings and include all the applicable submittal materials for the corresponding findings.

Finding 1 (contributing properties): The existing property has no reasonable use or cannot generate a reasonable economic return and that the development replacing it will provide such use or generate such return.

Finding 1 submittal requirements:

1. *Building Use – Economic Viability.* The applicant shall submit a market analysis prepared by an architect, developer, real estate consultant, appraiser, or other real estate professional with extensive experience in both real estate and historic rehabilitation that demonstrates all of the following:
 - a. The current use does not generate a reasonable economic return (may include market report of like uses and building scale in the same or similar neighborhood);
 - b. That appropriate and reasonable alternate uses in the building could not generate a future reasonable economic return;
 - c. That alterations or additions to the existing building could not make the current or future use generate a reasonable economic return; and
 - d. Potential Federal Tax Credits, Mills Act Contracts, Façade Grants, Transfer of Development Rights or other funding sources are not feasible to bridge the gap identified above.
2. *Building Soundness.* The applicant shall submit a report from a licensed engineer or architect with extensive experience in rehabilitation as to the structural soundness of the property and its suitability for rehabilitation. The soundness report shall be based on the requirements contained in the Soundness Report Requirements, attached.
3. *Building Maintenance History.* The applicant shall submit a building maintenance history. The report shall also answer the following questions:
 - a. What is the cost to repair any code violations?
 - b. Is the building free of a history of serious, continuing code violations?
 - c. Has the building been properly maintained and stabilized?

Long term deferred maintenance and/or a history of continuing code violations not addressed by the owner, or other proper person having legal custody of the structure or building shall constitute a

violation and will not be considered as a part of the bottom line of the economic viability report (see submittal requirement #1).

4. *Existing Building Appraised Value.* All appraisals obtained within the previous two years by the owner or applicant in connection with the purchase, financing, or ownership of the property;
 - a. Any listing of the property for sale or rent price asked, and offers received, if any, within the previous two years; and
 - b. Existing Building/Property Appraisal (current within the last six months):
 - i. Estimated market value of the property in its current condition under best practices management;
 - ii. After repair of construction deficiencies as defined in the Soundness Report Requirements, attached;
 - iii. After repair of construction deficiencies and maintenance as defined in the Soundness Report Requirements, attached;
 - iv. After any changes recommended by the Historic Preservation Staff/LPAB;
 - v. After completion of the proposed demolition or removal; and
 - vi. After completion of the replacement proposal.
5. *Public Benefits.* A public benefits analysis report shall be prepared and take into consideration the educational, cultural, social, equity, and economic benefits of the historic building and the proposed building. Some issues that shall be considered include, but are not limited to:
 - a. The benefits to the City's tourism industry;
 - b. The benefits to owners of other commercial and residential property owners and renters in the area;
 - c. The services provided to the community, including social services;
 - d. Housing and jobs opportunities;
 - e. Civic, community, and neighborhood identity;
 - f. Cultural heritage and the image of the City and local neighborhood; and
 - g. Educational opportunities and cultural benefits regarding architectural and local history.
6. *Optional Submittal: Sustainability - Life Cycle Assessment Criteria.* The applicant may wish to submit a Life Cycle Assessment Report to demonstrate the quality of the replacement proposal and of the existing building as described below. Demonstration that the durability and expected life of the new proposal's quality of construction, materials and craftsmanship, including the cost of demolition or deconstruction of the historic resource, exceeds the value of the embodied energy of the building's existing materials, durability of materials, quality of construction, level of craftsmanship, cost to repair construction deficiencies and maintenance.

Finding 2 (contributing properties): The property constitutes a hazard and is economically infeasible to rehabilitate on its present site. For this finding, a hazard constitutes a threat to health and safety that is not imminent.

Finding 2 submittal requirements:

1. A declaration from the Building Official or the City Council that the structure to be demolished is a threat to the public health and safety although such threat is not immediate.
2. A report from a licensed engineer or architect with extensive experience in rehabilitation as to the structural soundness of the property and its suitability for rehabilitation. The soundness report shall be based on the requirements contained in the Soundness Report Requirements, attached.
 - a. Is the building free of a history of serious, continuing code violations?

3. The applicant shall submit a building maintenance history. The report shall answer the following questions:
 - a. What is the cost to repair any code violations?
 - b. Is the building free of a history of serious, continuing code violations?
 - c. Has the building been properly maintained and stabilized?

Long term deferred maintenance and/or a history of continuing code violations not addressed by the owner, or other proper person having legal custody of the structure or building shall constitute a violation and will not be considered as a part of the bottom line of the economic viability report. Based on these reports, the other submittals contained in Finding 1 may be required.

Finding 3 (noncontributing properties): The existing facility is either: (a) seriously deteriorated or a hazard, or (b) the existing design is undistinguished and does not warrant retention. For this finding, a hazard constitutes a threat to health and safety that is not imminent.

Finding 3 submittal requirements:

Same as submittal findings as Finding 1, but demolition or removal is also permitted if either:

- For (a): A declaration from the Building Official or the City Council that the structure to be demolished is a threat to the public health and safety although such threat is not immediate or a public nuisance; or
- For (b): The Property is determined to be “of no particular interest” by the Oakland Cultural Heritage Survey. If the property is so rated due to alterations, reversal of the historic architectural integrity is not economically or physically feasible (as determined under Local Register Properties (ii), (iii) and (iv)).

Finding 4 (all properties): The design quality of the replacement facility is equal/superior to that of the existing facility.

Finding 4 submittal requirements:

A report shall be submitted that addresses whether the proposal demonstrates equal or superior quality with respect to:

1. A clearly identifiable visual or design value. For instance, does the replacement proposal express its present character as strongly as the historic design expressed its past?
2. Durability, quality, and design value of surface materials. Durable and quality materials include, but are not limited to: stone, granite, marble, concrete, highest quality and detailed glass curtain wall, terra cotta or other materials appropriate to the design style of the building or context of the neighborhood. In terms of design value, are materials in the replacement building used to enhance the architectural design elements of the building instead of used solely for the sake of variety?
3. Significant enhancement of the visual interest of the surrounding area;
4. High quality detailing;
5. Composition. A well composed building integrates all aspects of the building (materials, façade patterns, proportions, openings, forms, massing, detailing, etc.) into its overall character and design.
6. Site setting, neighborhood, and streetscape contexts;

7. Incorporating “especially fine” construction details, methods, or structural materials. These include those that successfully address challenging structural problems, contribute significantly to the building’s overall design quality, exhibit fine craftsmanship, or are visible design elements;
 8. The replacement building’s reflection of the time it was designed, not merely a caricature of the demolished building;
 9. The replacement building’s contemporary interpretation of the demolished building’s elements in terms of the cultural, historic, economic, or technological trends of its time.
-

Finding 5 (all properties): For all properties in a district: the design of the replacement project is compatible with the character of the preservation district, and there is no erosion of design quality at the replacement project site and in the surrounding area. This includes, but is not necessarily limited to, the following additional findings:

1. The replacement project is compatible with the district in terms of massing, siting, rhythm, composition, patterns of openings, quality of material, and intensity of detailing;
2. New street frontage with forms that reflect the widths and rhythm of the facades on the street and entrances that reflect the patterns on the street;
3. The replacement project provides high visual interest that either reflects the level and quality of visual interest of the district contributors or otherwise enhances the visual interest of the district;
4. If the design contrasts the new to the historic character, the replacement project enriches the historic character of the district;
5. Is consistent with the visual cohesiveness of the district. For the purpose of this item, visual cohesiveness is the architectural character, the sum of all visual aspects, features, and materials that defines the district. A new structure contributes to the visual cohesiveness of a district if it relates to the design characteristics of a historic district while also conveying its own time. New construction may do so by drawing upon some basic building features, such as the way in which a building is located on its site, the manner in which it relates to the street, its basic mass, form, direction or orientation (horizontal vs. vertical), recesses and projections, quality of materials, patterns of openings and level of detailing. When a combination of some these design variables are arranged in a new building to relate to those seen traditionally in the area, but integral to the design and character of the proposed new construction, visual cohesiveness results; and
6. The replacement project will not cause the district to lose its current historic status.

Finding 5 submittal requirements:

Analysis of the findings prepared by a historic architect or professional with equivalent experience. Other discussion points include the following:

1. The proposed design not only protects the integrity and aesthetic quality of the historic district but enhances and enlivens the historic fabric at the same time respecting and recognizing the district or due to circumstances discussed in the analysis, the project has been designed as a background project to the district (i.e., a simplified version of a period revival style).
 2. The new building’s contemporary interpretation of the demolished building’s elements in terms of the cultural, historic, economic, or technological trends of its time.
 3. If a replacement project conveys an authenticity of its own time, it is compatible with the authenticity of the existing historic district.
 4. The compatibility of the design of the replacement proposal with the district without being merely a compilation of façade features that are common to district or a caricature of the buildings in the district.
-

Finding 6 (contributing properties): It is economically, functionally architecturally, or structurally infeasible to incorporate the historic building into the proposed development.

Finding 6 submittal requirements:

A report shall be submitted that addresses the following discussion points:

1. Could alternations or additions to the existing building make the current or a future use generate a reasonable economic return and/or architecturally/structurally accommodate the proposed uses?
2. Do preservation alternatives exist which can achieve at least the same level of non-preservation benefits?
3. Include discussion of potential economic benefits of a rehabilitated or reused cultural resource, including how building or district character might affect property values, attract commercial economic development, and increase City tax revenues.



CITY OF OAKLAND

SOUNDNESS REPORT REQUIREMENTS

Applicants proposing the demolition of any Category I or Category II resource that contributes to an Area of Primary Importance, S-7 zone, or S-20 zone require a report to determine the soundness of the historic building. This attachment explains what should be included in the soundness report.

Soundness reports are required to be produced by licensed design or construction professionals (architects, engineers, and contractors) or by certified specifiers, construction cost estimators or building inspectors. The author of the report must be a disinterested third party that is not involved in the development's ownership, design or construction. Professionals who prepare such reports must be familiar with the City's demolition regulations and knowledgeable about construction assemblies, processes and cost.

Authors of Soundness Reports should focus on the concept that "soundness" is an economic measure of a building, not an issue of structural compliance with the current Building Code. Further, they should distinguish costs to upgrade elements that were original construction deficiencies from those elements needing repair due to deferred maintenance, as explained below.

Without a determination that the structure is unsound, the recommendation of approval to demolish is more difficult to make. In this case, the applicant may be advised to consider a project that alters, rather than demolishes, the existing structure.

Definitions

Soundness is an economic measure of the feasibility of repairing construction deficiencies. It compares an estimate of construction-repair cost called the upgrade cost to an estimate called the replacement cost.

Hazard is defined the same as it is in the Demolition Findings, Category I and Category II, Finding 2. For this finding, a hazard constitutes a threat to health and safety that is not imminent.

Replacement cost is defined as the current cost to construct structures exactly the size of those proposed for demolition. The current costs are determined by the most recent City of Oakland Building Services Construction Valuation For Building Permits¹.

Unsound structure is a structure where the primary upgrade cost construction deficiencies exceeds 50 percent of its replacement cost or the primary *plus* secondary upgrade cost exceeds 75 percent.

Primary upgrade cost is an estimate of the cost to make the existing structure 'usable.' This is the cost to bring a construction deficient structure into compliance with the minimum standards of the Building Code in effect at the time of its construction, with certain retroactive life-safety exceptions. Programmatic shortcomings of the existing structure have no bearing on the upgrade cost. Costs such as

¹ Market value based on the current costs of labor, materials, related fees, and any entrepreneurial profit or incentive.

adding floor space in an addition, to increasing headroom in a basement or attic, or to installing interior upgrades, cannot be included, nor can certain “soft costs” and site improvements listed below. Bringing the structure into compliance with current seismic requirements of the Building Code is not an allowable expense, even though it may be prudent or desirable for the public good, or even if required by the Building Code for the scope of repair work. Routine, repetitive maintenance costs are also excluded. Contractor’s profit, overhead, and permit costs may be included, but Architects’ and Engineers’ design fees, and allowances for construction contingencies may not.

Secondary upgrade cost is an estimate of the cost of functional repairs attributable to lack of maintenance. For instance, a significant roof leak that went unrepaired for a sufficient length of time to cause mildewed gypsum board and rotted structural members is a secondary upgrade cost. Replacement of a building component because it is not pristine or modern does not qualify as a secondary upgrade cost unless the component does not meet required functional standards and/or is a hazard. For example, the replacement of rusted ductwork on a heating system that can maintain the temperature requirement does not qualify as a secondary upgrade cost nor is the replacement of a functional and safe knob and tubing wiring system. The cost to replace a pull-out fuse box that is not a hazard with a new circuit breaker panel cannot be included as an secondary upgrade cost, even if it is part of the proposed work.

Further examples items that cannot be included in the secondary upgrade cost calculation are:

- Replacement of roof flashing, step flashing, coping, gravel stops, and diverters. These are excluded from the calculation because these items can be replaced as part of the re-roofing process, and, in that sense, are maintenance items. Replacement of corroded galvanized sheet metal head flashing over doors and windows might be considered a cost allowed at the 75 percent level if it is clear that the corrosion resulted from lack of painting or other improper maintenance.
- Window replacements. The Building Code requires that windows, like all elements of structure, be maintained and repaired. Replacement of windows meeting the code requirements at the time of their installation cannot be included in 75 percent cost calculation. For instance, replacing single-glazed windows installed in 1972, before Title 24 energy requirements, with double-glazed, energy efficient windows would not be an allowed in the 75 percent cost calculation. Repair of leaky or aged windows may be included at the 75 percent threshold to the extent that it is demonstrable that the repair is necessitated by poor maintenance.
- Stair replacement or removal. Removal and replacement of existing stairs without legal headroom can be included as a primary upgrade cost only if the stairs are a means of egress required by the Building Code. If the stairs are not part of a required exit system, but provide access to a room or garage, their replacement to meet current headroom requirements or rise and run ratios cannot be included. Wooden exterior stairs have a finite life, and their periodic replacement is considered a maintenance issue. Only if it can be documented that improper construction led to the early loss of the stairs could their replacement be included in upgrade costs for soundness determination.

Examples of what are and are not considered primary and secondary upgrade costs

For general guidelines for what is considered a primary and secondary upgrade cost, see the description in the three lists below. Also note that, in general, the code requires that buildings be maintained in accordance with the codes in effect at the time of their original construction. Please note that some of the concepts addressed in these standards are not detailed, and can only be determined upon review of specific cases by competent professional persons.

Work that could be included in the 50 percent threshold (the primary cost):

- o Building Permit Application cost.
- o Correcting lack of flashing or proper weather protection if not originally installed.
- o Installing adequate weather protection and ventilation to prevent dampness in rooms if not originally constructed.
- o Provision of garbage and rubbish storage and removal facilities if not originally constructed.
- o Eliminating structural hazards in foundation due to structural inadequacies.
- o Eliminated structural hazards in flooring or floor supports, such as defective members, or flooring or supports of insufficient size to safely carry the imposed loads.
- o Correcting vertical walls or partitions which lean or are buckled due to defective materials or which are insufficient in size to carry loads.
- o Eliminating structural hazards in ceilings, roofs, or other horizontal members, such as sagging or splitting, due to defective materials or insufficient size.
- o Eliminating structural hazards in fireplaces and chimneys, such as listing, bulging or settlement due to defective materials or due to insufficient size or strength.
- o Upgrading electrical wiring which does not conform to the regulations in effect at the time of installation.
- o Upgrading plumbing materials and fixtures that were not installed in accordance with regulations in effect at the time of installation.
- o Providing exiting in accordance with the code in effect at the time of construction.
- o Correction of improper roof, surface or sub-surface drainage if not originally installed
- o Correction of structural pest infestation (termites, beetles, dry rot, etc.) to extent attributable to original construction deficiencies, (e.g., insufficient earth-wood separation).
- o Contractor's profit and overhead, not to exceed 18 percent of construction subtotal, if unit costs used for repair items do not include Profit and Overhead.

Work that could be included in the cost estimate for the the 75 percent threshold (the primary plus secondary upgrade costs):

- o Repair of fire-resistive construction and fire protection systems if required at the time of construction, including plaster and sheet rock where fire separation is required, and smoke detectors, fire sprinklers, and fire alarms when required.
- o Repairs as need to provide at least one properly operating water closet, lavatory, and bathtub or shower.
- o Repair of a sinks not operating properly.
- o Provision of kitchen appliances, when provided by owner, in good working condition, excluding minor damage.
- o Repair if needed of water heated to provide at least 8 gallons of hot water storage.
- o Both hot and cold running water to plumbing fixtures.

- o Repair to a sewage connection disposal system, if not working.
- o Repair heating facilities to permit heat to habitable rooms, if not working.
- o Repair ventilation equipment, such as bathroom fans, where operable windows are not provided, if not working.
- o Provision of operable windows in habitable rooms (certain exceptions may apply).
- o Repair of electrical wiring if not maintained in a safe condition.
- o Repair of plumbing materials and fixtures if not maintained in good condition.
- o Correcting vertical walls or partitions which lean or are buckled due to deterioration.
- o Eliminating structural hazards in ceilings, roofs, or other horizontal members due to deterioration.
- o Eliminating structural hazards in fireplaces and chimneys, such as listing, bulging or settlement due to deterioration.
- o Eliminating chronic, severe mold and mildew.
- o Repairing proper weather protection, including exterior coverings such as paint and roof coverings and windows and doors due to lack of maintenance.
- o Repairing deteriorated, crumbling or loose plaster, gypsum board and floor finishes due to faulty, poorly maintained weather protection.
- o Contractor's profit and overhead, not to exceed 18 percent of construction subtotal, if unit costs used for repair items do not include profit and overhead.

Work that is excluded from both the 50 percent and 75 percent thresholds (the primary and secondary upgrade costs):

- o Architects' fees, Engineers' fees and other design fees.
- o Construction contingency allowance.
- o Addition of floor space, or increasing headroom or other programmatic requirements that are not required standards as part of the original structure.
- o Adding electrical receptacles where not necessary;
- o Installation of a higher capacity electrical service, unless the existing is a hazard.
- o Finish upgrades, such as new cabinetry, countertops, tile, stonework and other interior finishes;
- o Site work, such as repairs to walkways, driveways, decks on grade, and retaining walls not part of the building foundation.
- o Landscape and irrigation work.
- o Removal of fire hazards, such as buildup of combustible waste and vegetation.
- o Removal of accumulation of weeds, vegetation, trash, junk, debris, garbage, stagnant water.
- o Elimination of insect, vermin or rodent infestation.
- o Other routine, repetitive maintenance costs.

Content of soundness report

The Soundness Report should begin with a thorough description of the building in question: its age, size (e.g., footprint area, height, number of stories, square footage), roof form, roofing material, construction type, foundation and floor system, exterior siding, interior wall finish, and a description of repairs, maintenance, and any remodeling or additions. Documentation supporting the previous should be included in an appendix, using copies of the building permit history of the building.

Next, the replacement cost should be calculated using the definitions described above. Both the 50 and the 75 percent threshold should be computed and noted.

The 50 percent upgrade cost (the primary cost) should be described next, with line item descriptions of each element qualifying for upgrade (those due to initial construction deficiencies), followed by the unit cost, the unit multiplier, and the total cost for that element. If the sum of these cost items does not exceed 50 percent of the replacement cost, then a 75 percent upgrade cost (secondary plus primary upgrade cost) can be detailed, including the previous upgrade items and adding in costs for repair of qualifying items deteriorated due to deferred maintenance, presented in a similar format.

Generalities and assertions unsupported by professional, detailed justification, or by photographic evidence or other documentation will undermine the essential credibility of the report. Replacement of many structural assemblies and mechanical systems is justified only if the existing elements are hazards. Careful and thorough demonstration of the hazardous condition is required, to justify including the replacement in the upgrade cost estimate.

Copies of any pest report, if such work is needed, and any other documentation supporting the conclusions of the soundness report, should be provided. Pest control work should be carefully analyzed to determine which portions of work and cost are applicable to the 50 percent (primary upgrade cost) threshold and which to the 75 percent (primary plus secondary upgrade cost) threshold.

Clear and well-labeled photographs of the façade, and close-ups that document elements needing upgrade work, are essential to support assertions that the elements in question qualify for inclusion in the upgrade cost.

A factual summary of the findings is a useful conclusion to the document.

How will the City decide whether to approve the demolition application?

The Soundness Report will be reviewed and considered in conjunction with all other required submittals by the Findings for Demolition of Local Register Historic Properties. All of these reports will be reviewed by the appropriate advisory group(s) and decision maker(s). A replacement project, if any, must also meet the Demolition Findings.

Because a finding that a building is unsound makes approval of the demolition more probable, and because some costs included in the soundness report represent a subjective professional judgment, there may be a temptation to inflate the upgrade cost estimate, by including costs of elements that do not require repair or by exaggerating the cost of repairs, or by suggesting seismic or other structural upgrades beyond the scope of the requirements. Resist this temptation. Presentation of soundness reports with inflated upgrade costs or low replacement costs may lead to denial of the related demolition permits, or require a peer review, paid for by the applicant.

If the Soundness Report is credible and demonstrates that the structure in question is sound/not sound, the report findings will be taken into consideration, along with other required submittals by the Findings for Demolition of Local Register Historic Properties, for evaluation and determination of demolition approval, when reviewed by Landmarks Preservation Advisory Board and the Planning Commission.

Category III

FINDINGS REQUIRED FOR THE DEMOLITION OF HISTORIC PROPERTIES

This handout contains the findings required to be met to approve a Regular Design Review application to demolish a historic structure in the City of Oakland. These findings are required by Section 17.136.075 of the Planning Code. All other regulations, including analysis required under the California Environmental Quality Act, apply.

The handout also describes the items required to be submitted with the design review application. The goal of the required submittals is to assist staff in evaluating whether a project meets the findings required to demolish a building. The submittals may consist of economic and financial analyses, informational reports, and/or “discussion points” required to be addressed within a design or historic analysis of a project. The submittals are not criteria for whether a demolition can or cannot occur; they are only the information required by the City to make a determination as to whether an application meets the required findings for demolition. Further, the required submittals are not meant to discourage either contemporary or historicist architecture in new construction. The Planning Director can, from time to time, make modifications to the required submittals if they are consistent with the intent of the proposed requirements.

All reports required for the demolition findings must be prepared by independent third party consultants or be peer reviewed. Reports will be paid for by the applicant and consultant shall be approved by, and report to, the City. All applicable discussion points shall be taken into account when making a finding. If a point is not applicable, the analysis shall state why. Any submittal may also include attributes that support the demolition proposal and/or the replacement project.

A complete application for demolition of historic property includes following:

- A completed application for Regular Design Review.
- A description of how a project meets the findings described in this form.
- The required submittals described in this form.
- A complete application for the replacement project, including plans designed by a licensed architect.

Different findings are required for the demolition of three categories of historic structures::

- **Category I** includes any Landmark; Heritage Property; property rated “A” or “B” by the Oakland Cultural Heritage Survey; or Preservation Study List Property. This category excludes any property that falls into Category II.
- **Category II** includes properties in an S-7 or S-20 zone or an Area of Primary Importance. Any building, including those that do not contribute to the historic quality of the district, fall into this category.
- **Category III** includes properties rated “C” by the Oakland Cultural Heritage Survey or contributors to an Area of Secondary Importance. This category excludes any property that falls into Category II.

Please call the Oakland Cultural Heritage Survey at (510)238-6879 to determine if a property falls into any of the three categories described above.



CITY OF OAKLAND

DEMOLITION FINDINGS FOR

CATEGORY III HISTORIC PROPERTIES

The following findings are required to be met to demolish a Category III Historic Structure. This category includes properties rated “C” or that are contributors to an Area of Secondary Importance as defined by the Oakland Cultural Heritage Survey. This category excludes any properties contained in Category II, such as buildings that contribute to an Area of Primary Importance, S-7 zone, or S-20 zone.

A proposal to demolish a Category III historic resource must meet one of the three of the findings described below. Please indicate how the proposed demolition meets the required finding(s) and include all the applicable corresponding submittal materials.

The submittals and discussion points for Category III are for guidance to the applicant and staff. These submittal requirements may be modified on a case-by-case basis by the Planning Director depending on the content of a particular proposal.

Finding 1: The design quality of the proposed replacement project is at least equal to that of the original structure and the proposed replacement project is compatible with the character of the neighborhood.

Finding 1 submittal requirements:

Analysis of 'equal quality' and compatibility prepared by historic architect, or professional with equivalent experience. This analysis should include:

1. A discussion of design quality in terms of: visual or design value; quality of surface materials; quality of detailing; composition; construction detail; and architectural integrity.
 2. For proposals in an ASI, the analysis should compare the integrity of the ASI with the proposal to the integrity of the ASI with the structure proposed for demolition. This analysis should include a discussion of consistency with street frontage patterns, fenestration patterns, contribution to the visual quality of the district, and cohesiveness of the district.
 3. A discussion of the historic significance of structure proposed for demolition.
 4. A discussion of whether incorporation of the historic structure into the proposal will result in a project that has a design quality that is least equal or better than the original structure.
-

Finding 2: The public benefits of the proposed replacement project outweigh the benefit of retaining the original structure.

Finding 2 submittal requirements:

The analysis should include a discussion of the benefits of the replacement structure and the existing historic structure, prepared by appropriate qualified consultants such as an economist, realtor with experience in evaluating both new and historic structures. The analysis should include a discussion of the following topics, as applicable:

1. Civic, community, and neighborhood identity;

2. The economy, including the City's tourism industry and the local commercial district. This includes the number of post construction jobs provided.
 3. The services provided to the community, including social services;
 4. Fulfilling the intent of (1) the Land Use and Transportation Element of the General Plan for the area and (2) other General Plan policies, as applicable.
 5. Housing opportunities;
 6. Cultural heritage and the image of the City and local neighborhood; and
 7. Educational opportunities and cultural resources regarding architectural and local history.
-

Finding 3: The existing design is undistinguished and does not warrant retention and the proposed design is compatible with the character of the neighborhood.

Finding 3 submittal requirements:

1. The submittal shall include an analysis, to be reviewed by the Oakland Cultural Heritage Survey, to determine if the building is "of no particular interest" as defined by the Historic Preservation Element survey evaluation methods and criteria. If the applicant submits a claim that the structure proposed for demolition is of "no particular interest", then the applicant may provide material such as photos, written analysis or expert opinion that provides evidence that the building should be so rated.
2. Analysis of 'compatibility with the neighborhood' prepared by historic architect (see discussion point 2. for Finding 1, above).

APPENDIX F

Transportation and Circulation Supplemental Information

Transportation and Circulation Technical Appendix

Proposed Amendments to the BMSP Redevelopment Plan

May 2011

WC11-2811

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E-6	LOS Calculation Worksheets – 2015 Conditions
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E-8	Traffic Congestion Management Program (CMP) Tables
E-9	Queuing Calculation Worksheets

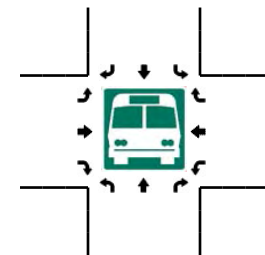
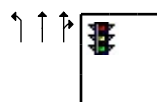
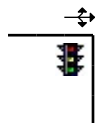
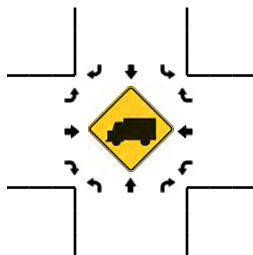
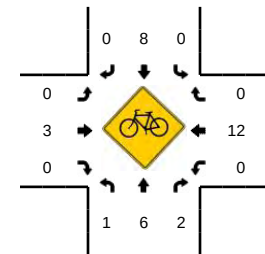
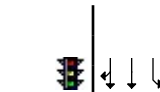
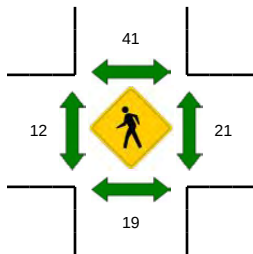
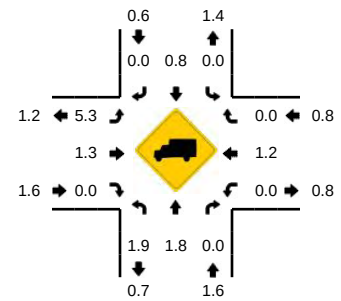
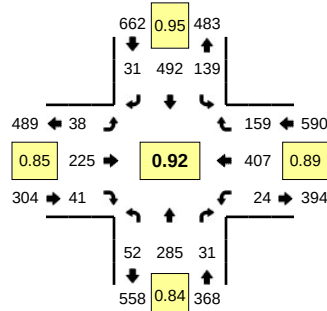
Appendix E-1

Intersection Count Data Sheets

LOCATION: Market St -- Alcatraz Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602324
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:10 AM -- 8:25 AM



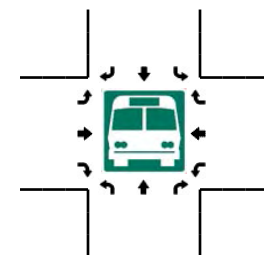
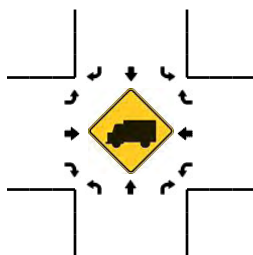
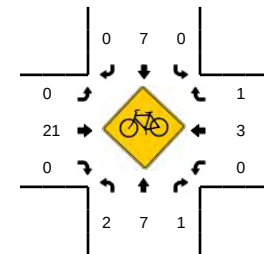
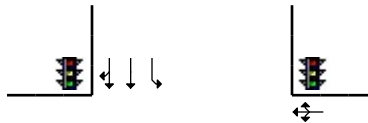
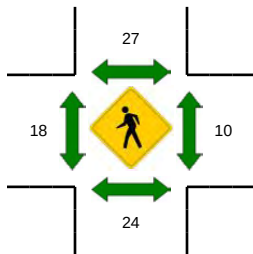
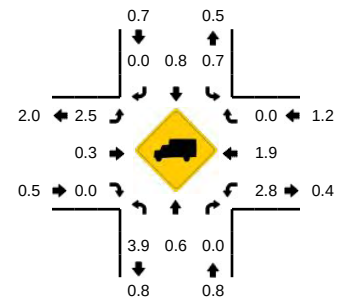
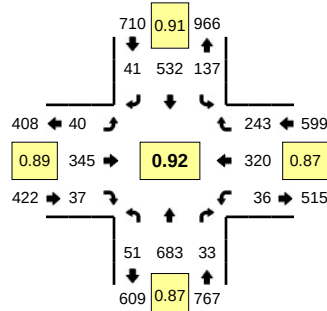
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Alcatraz Ave (Eastbound)				Alcatraz Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	5	0	0	4	21	0	0	0	8	0	0	1	16	4	0	59	
7:05 AM	0	9	0	0	4	12	1	0	1	8	4	0	0	14	6	0	59	
7:10 AM	0	6	0	0	6	18	4	0	3	9	0	0	3	15	2	0	66	
7:15 AM	2	5	1	0	3	18	1	1	1	15	0	0	2	19	2	0	70	
7:20 AM	3	7	0	0	14	26	0	1	2	6	0	0	2	13	8	0	82	
7:25 AM	0	8	2	0	9	9	2	0	1	9	2	0	0	19	11	0	72	
7:30 AM	2	19	2	0	3	23	3	0	1	10	1	0	1	16	4	0	85	
7:35 AM	2	21	3	0	7	34	3	0	5	12	2	0	3	18	13	0	123	
7:40 AM	4	14	1	0	8	48	6	0	5	15	3	0	0	31	22	0	157	
7:45 AM	0	25	3	0	8	29	11	1	6	14	2	0	0	23	17	0	139	
7:50 AM	4	14	2	0	11	35	6	0	6	19	5	0	1	34	9	0	146	
7:55 AM	3	23	2	0	8	45	3	0	5	15	5	0	1	22	8	0	140	1198
8:00 AM	4	22	2	0	18	46	2	0	4	22	5	0	1	29	13	0	168	1307
8:05 AM	6	15	4	0	12	37	4	0	6	14	4	0	0	26	9	0	137	1385
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8:40 AM	1	19	4	0	13	43	4	0	3	10	1	0	2	37	9	0	146	1868
8:45 AM	4	26	1	0	11	32	1	0	2	18	2	0	2	39	23	0	161	1890
8:50 AM	2	20	3	0	11	41	2	0	1	28	7	0	1	35	9	0	160	1904
8:55 AM	2	33	1	1	12	46	0	0	2	22	2	0	0	25	14	0	160	1924
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	68	320	48	0	120	520	28	4	48	256	40	0	36	448	148	0	2084	
Heavy Trucks	0	4	0	0	0	8	0	0	0	0	0	0	0	8	0	0	20	
Pedestrians		32				48				12				24			116	
Bicycles	0	1	1		0	3	0		0	2	0		0	4	0		11	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- Alcatraz Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602325
DATE: 4/13/2011

Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:10 PM -- 5:25 PM



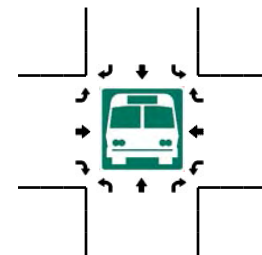
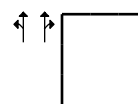
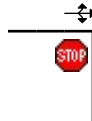
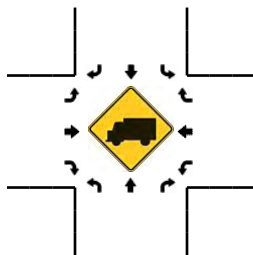
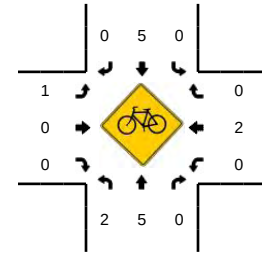
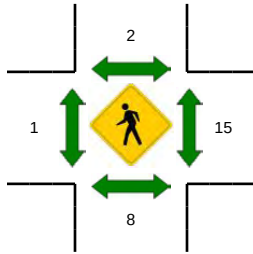
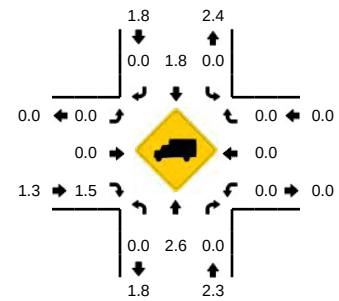
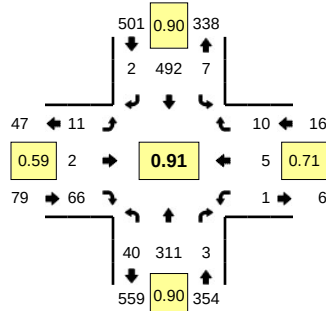
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Alcatraz Ave (Eastbound)				Alcatraz Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	8	40	3	0	13	22	2	0	1	13	2	0	2	24	17	0	147	
4:05 PM	1	32	0	0	15	36	4	0	4	30	3	0	3	25	18	0	171	
4:10 PM	5	30	2	0	13	28	1	0	7	30	1	0	3	23	10	0	153	
4:15 PM	5	36	2	1	14	38	2	1	4	20	3	0	2	29	20	0	177	
4:20 PM	2	38	2	0	14	41	8	0	1	17	2	0	1	19	13	0	158	
4:25 PM	6	42	4	0	10	31	1	0	4	13	4	0	5	27	21	0	168	
4:30 PM	2	32	1	0	4	17	5	0	4	26	5	0	2	25	25	0	148	
4:35 PM	3	63	3	0	14	46	3	0	5	25	1	0	3	20	22	0	208	
4:40 PM	2	55	4	0	12	44	1	1	4	34	2	0	1	26	18	0	204	
4:45 PM	3	50	1	0	12	39	6	0	7	26	4	0	2	22	16	0	188	
4:50 PM	5	38	4	0	13	23	1	0	2	30	2	0	5	21	19	0	163	
4:55 PM	4	41	5	1	13	48	4	0	3	25	1	0	4	25	15	0	189	2074
5:00 PM	1	53	6	0	13	46	2	0	2	26	4	0	2	27	18	0	200	2127
5:05 PM	4	62	3	0	10	45	7	0	7	25	4	0	2	31	27	0	227	2183
5:10 PM	5	60	1	0	7	36	3	0	4	36	2	0	5	28	24	0	211	2241
5:15 PM	4	61	2	0	18	52	3	0	2	25	5	0	6	30	20	0	228	2292
5:20 PM	10	75	1	1	13	53	6	0	3	36	2	0	1	19	23	0	243	2377
5:25 PM	3	54	1	1	10	32	4	0	4	21	1	0	2	22	19	0	174	2383
5:30 PM	4	44	3	0	12	34	2	0	3	32	1	0	3	27	28	0	193	2428
5:35 PM	3	66	1	0	11	51	4	0	2	34	4	0	3	33	19	0	231	2451
5:40 PM	4	56	4	0	12	56	3	0	4	25	7	0	3	25	17	0	216	2463
5:45 PM	3	58	3	0	9	48	0	0	1	40	3	0	0	27	17	0	209	2484
5:50 PM	2	53	3	1	9	31	3	0	5	20	3	0	5	26	16	0	177	2498
5:55 PM	2	33	2	0	22	39	2	0	2	25	5	0	1	14	16	0	163	2472
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	76	784	16	4	152	564	48	0	36	388	36	0	48	308	268	0	2728	
Heavy Trucks	8	4	0		4	4	0		0	0	0		0	4	0		24	
Pedestrians		32				20				28				12			92	
Bicycles	0	0	0		0	3	0		0	5	0		0	1	0		9	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St/Lowell St -- 63rd St
CITY/STATE: Oakland, CA

QC JOB #: 10602301
DATE: 4/14/2011

Peak-Hour: 7:40 AM -- 8:40 AM
Peak 15-Min: 7:55 AM -- 8:10 AM



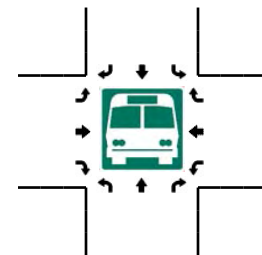
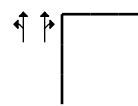
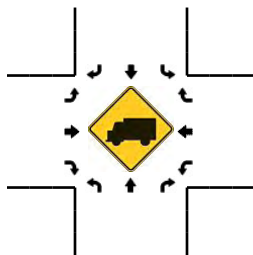
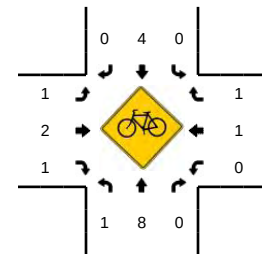
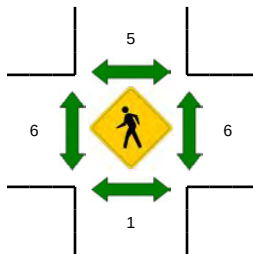
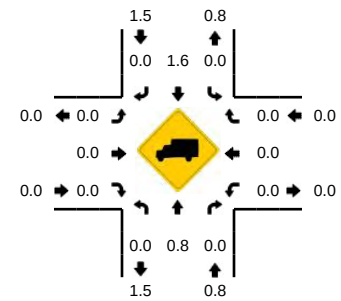
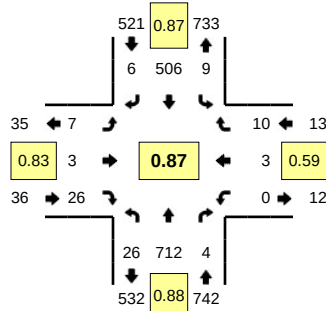
5-Min Count Period Beginning At	Market St/Lowell St (Northbound)				Market St/Lowell St (Southbound)				63rd St (Eastbound)				63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	0	0	0	19	0	0	0	0	0	0	0	2	0	0	24	
7:05 AM	1	8	0	0	0	12	0	0	0	0	0	0	0	0	0	0	21	
7:10 AM	0	4	0	0	0	18	0	0	0	0	1	0	0	0	0	0	23	
7:15 AM	1	6	0	0	0	18	0	0	0	0	3	0	1	0	1	0	30	
7:20 AM	0	10	1	0	0	23	2	1	0	0	3	0	0	0	0	0	40	
7:25 AM	2	11	0	0	0	10	1	0	0	0	0	0	1	0	0	0	25	
7:30 AM	1	19	1	0	0	19	0	0	0	1	4	0	0	1	2	0	48	
7:35 AM	4	22	0	1	0	34	0	0	2	0	6	0	0	0	0	0	69	
7:40 AM	6	13	0	0	0	46	0	2	1	0	4	0	0	1	1	0	74	
7:45 AM	7	28	0	0	0	25	0	0	1	1	10	0	0	0	1	0	73	
7:50 AM	3	18	1	0	0	40	0	0	1	0	3	0	0	1	0	0	67	
7:55 AM	6	23	0	0	0	47	0	0	1	0	12	0	0	0	0	0	89	583
8:00 AM	5	24	0	0	0	44	0	0	1	0	6	0	0	0	1	0	81	640
8:05 AM	3	29	0	0	0	38	0	1	3	1	13	0	0	3	1	0	92	711
8:10 AM	3	26	1	0	0	48	0	1	2	0	5	0	0	0	1	0	87	775
8:15 AM	1	27	0	0	0	44	1	0	0	0	3	0	0	0	1	0	77	822
8:20 AM	1	34	1	0	0	45	0	0	0	0	4	0	1	0	1	0	87	869
8:25 AM	2	32	0	0	1	36	0	1	0	0	3	0	0	0	0	0	75	919
8:30 AM	3	27	0	0	0	36	1	1	1	0	2	0	0	0	2	0	73	944
8:35 AM	0	30	0	0	0	43	0	0	0	0	1	0	0	0	1	0	75	950
8:40 AM	1	17	0	0	1	36	0	1	1	0	2	0	0	1	0	0	60	936
8:45 AM	0	26	0	0	1	27	0	0	0	0	0	0	1	0	0	0	55	918
8:50 AM	2	29	1	0	0	46	0	0	0	0	1	0	1	1	1	0	82	933
8:55 AM	2	31	0	0	1	44	0	1	1	0	2	0	0	0	0	0	82	926
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	56	304	0	0	0	516	0	4	20	4	124	0	0	12	8	0	1048	
Heavy Trucks	0	8	0	0	0	12	0	0	0	0	0	0	0	0	0	0	20	
Pedestrians		24				0				0				24			48	
Bicycles	0	0	0		0	1	0		0	0	0		0	2	0		3	
Railroad																		
Stopped Buses																		

Comments: 5 Legs

LOCATION: Market St/Lowell St -- 63rd St
CITY/STATE: Oakland, CA

QC JOB #: 10602302
DATE: 4/13/2011

Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:10 PM -- 5:25 PM



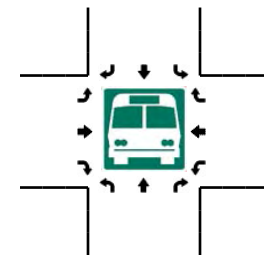
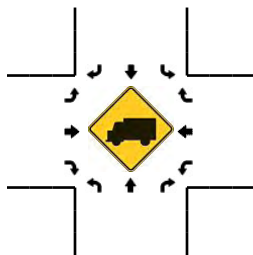
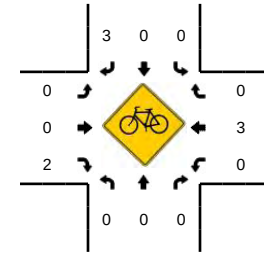
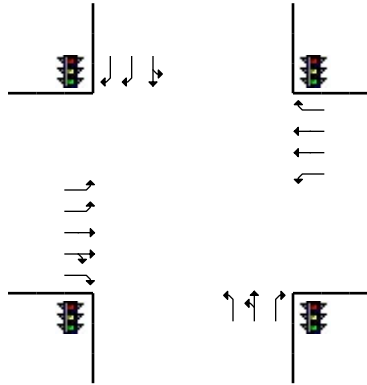
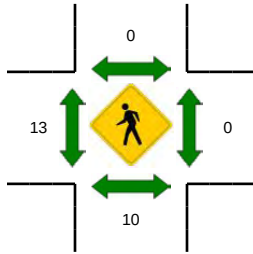
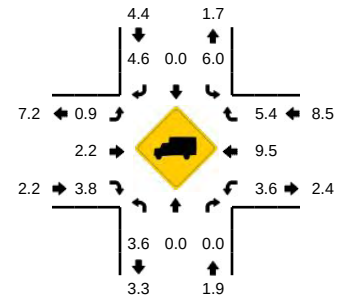
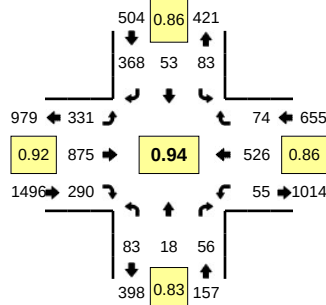
5-Min Count Period Beginning At	Market St/Lowell St (Northbound)				Market St/Lowell St (Southbound)				63rd St (Eastbound)				63rd St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	46	0	0	0	25	0	0	1	0	0	0	0	0	1	0	75	
4:05 PM	3	34	0	0	0	24	1	0	1	0	3	0	0	0	1	0	67	
4:10 PM	0	39	0	0	0	28	0	0	1	0	1	0	0	0	0	0	69	
4:15 PM	2	36	1	0	1	40	1	1	1	0	1	0	1	0	1	0	86	
4:20 PM	5	36	0	0	2	33	0	0	0	0	3	0	2	1	1	0	83	
4:25 PM	1	47	0	0	2	30	1	1	1	1	8	0	0	0	1	0	93	
4:30 PM	1	36	0	0	0	27	0	0	0	1	2	0	0	1	1	0	69	
4:35 PM	5	69	1	0	1	44	2	3	0	0	3	0	0	1	1	0	130	
4:40 PM	0	52	0	0	0	41	0	0	0	0	4	0	0	2	2	0	101	
4:45 PM	1	47	1	0	0	33	0	0	1	1	5	0	0	0	0	0	89	
4:50 PM	3	51	0	0	0	19	0	2	0	1	4	0	0	1	0	0	81	
4:55 PM	0	43	0	0	1	39	1	0	0	0	2	0	0	0	1	0	87	1030
5:00 PM	2	60	0	0	0	44	1	0	0	0	3	0	0	0	0	0	110	1065
5:05 PM	2	58	2	0	0	42	0	1	0	0	2	0	0	0	1	0	108	1106
5:10 PM	1	66	2	0	0	41	0	0	2	1	2	0	0	0	1	0	116	1153
5:15 PM	2	61	0	0	1	57	1	1	0	1	3	0	0	0	0	0	127	1194
5:20 PM	2	76	0	0	0	48	0	0	2	0	3	0	0	1	4	0	136	1247
5:25 PM	1	55	0	0	0	26	0	1	0	0	2	0	0	1	0	0	86	1240
5:30 PM	2	59	0	0	2	30	0	0	1	0	1	0	0	0	2	0	97	1268
5:35 PM	2	63	0	0	1	50	0	0	1	0	3	0	0	0	0	0	120	1258
5:40 PM	6	60	0	0	0	56	1	0	0	0	2	0	0	0	1	0	126	1283
5:45 PM	4	53	0	0	0	34	0	1	1	1	2	0	0	0	0	0	96	1290
5:50 PM	2	58	0	0	0	39	2	0	0	0	1	0	0	1	0	0	103	1312
5:55 PM	0	39	1	0	1	34	0	0	0	0	3	0	0	0	1	0	79	1304
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	20	812	8	0	4	584	4	4	16	8	32	0	0	4	20	0	1516	
Heavy Trucks	0	8	0	0	0	4	0	0	0	0	0	0	0	0	0	0	12	
Pedestrians	0	0	0	0	0	4	0	0	0	20	0	0	0	0	0	0	24	
Bicycles	0	2	0	0	0	3	0	0	1	1	0	0	0	0	0	0	7	
Railroad																		
Stopped Buses																		

Comments: 5 Legs

LOCATION: Christie Ave -- Powell St
CITY/STATE: Emeryville, CA

QC JOB #: 10602315
DATE: 4/14/2011

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM



5-Min Count Period Beginning At	Christie Ave (Northbound)				Christie Ave (Southbound)				Powell St (Eastbound)				Powell St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	0	1	0	6	3	18	0	23	51	22	0	1	17	2	0	147	
7:05 AM	8	1	1	0	3	0	22	0	19	60	10	0	2	31	3	0	160	
7:10 AM	2	0	4	0	4	5	17	0	20	48	19	0	2	20	0	0	141	
7:15 AM	9	0	2	0	3	2	18	0	13	49	21	0	1	22	6	0	146	
7:20 AM	5	1	2	0	6	1	26	0	25	67	19	0	1	34	2	0	189	
7:25 AM	8	0	1	0	5	0	20	0	22	59	22	0	5	30	0	0	172	
7:30 AM	6	0	3	0	3	0	23	0	20	43	26	0	2	39	0	0	165	
7:35 AM	7	0	0	0	6	4	40	0	25	67	28	0	1	28	4	0	210	
7:40 AM	5	3	5	0	1	3	17	0	28	62	13	0	1	30	4	0	172	
7:45 AM	2	0	5	0	6	3	35	0	27	76	31	0	2	40	4	0	231	
7:50 AM	9	2	2	0	9	5	28	0	32	70	26	0	6	41	6	0	236	
7:55 AM	9	5	1	0	6	8	40	0	36	77	26	0	4	35	9	0	256	2225
8:00 AM	9	1	8	0	9	4	38	0	30	81	23	0	4	41	5	0	253	2331
8:05 AM	11	1	3	0	5	5	29	0	25	67	26	0	2	48	3	0	225	2396
8:10 AM	8	0	5	0	9	4	22	0	33	57	29	0	7	36	3	0	213	2468
8:15 AM	6	1	3	0	11	0	33	0	19	71	18	0	4	29	3	0	198	2520
8:20 AM	4	0	6	0	3	3	32	0	16	62	31	0	6	54	3	0	220	2551
8:25 AM	5	2	10	0	4	4	18	0	22	82	21	1	3	44	7	0	223	2602
8:30 AM	5	2	3	0	6	9	33	0	27	71	19	0	3	53	5	0	236	2673
8:35 AM	9	2	7	0	7	2	31	0	27	85	14	0	4	48	5	0	241	2704
8:40 AM	7	2	2	0	10	4	25	0	37	73	22	1	3	52	9	0	247	2779
8:45 AM	8	0	1	0	8	5	39	0	26	57	25	0	8	47	14	0	238	2786
8:50 AM	2	2	7	0	5	5	28	0	31	92	36	0	7	39	8	0	262	2812
8:55 AM	8	2	1	0	4	7	30	0	38	72	30	0	4	32	9	0	237	2793
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	68	16	40	0	92	56	368	0	376	888	332	4	72	552	124	0	2988	
Heavy Trucks	0	0	0	0	0	0	12	0	4	8	12	0	4	60	4	0	104	
Pedestrians	0	0	0	0	0	0	0	0	0	16	0	0	0	0	0	0	24	
Bicycles	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	
Railroad																		
Stopped Buses																		

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-012 POWELL-CHRISTIE
Site Code : 00000000
Start Date : 5/6/2010
Page No : 1

Groups Printed- Unshifted

	CHRISTIE AVE Southbound					POWELL ST Westbound					CHRISTIE AVE Northbound					POWELL ST Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
16:00	29	29	165	0	223	48	210	24	0	282	41	7	24	1	72	74	153	142	10	369	11	946	957
16:15	20	28	128	0	176	56	149	33	0	238	33	6	19	0	58	68	127	193	13	388	13	860	873
16:30	42	36	152	0	230	55	184	20	2	259	42	9	20	2	71	86	140	168	6	394	10	954	964
16:45	28	33	142	0	203	49	191	22	0	262	49	8	33	0	90	77	128	168	9	373	9	928	937
Total	119	126	587	0	832	208	734	99	2	1041	165	30	96	3	291	305	548	671	38	1524	43	3688	3731
17:00	34	48	185	0	267	42	200	17	0	259	43	13	23	8	79	74	148	158	8	380	16	985	1001
17:15	27	46	161	0	234	53	197	31	0	281	30	11	26	2	67	78	170	189	8	437	10	1019	1029
17:30	27	42	162	0	231	62	207	20	0	289	40	7	25	3	72	72	190	188	12	450	15	1042	1057
17:45	27	57	156	0	240	43	189	24	0	256	52	11	28	2	91	79	153	150	18	382	20	969	989
Total	115	193	664	0	972	200	793	92	0	1085	165	42	102	15	309	303	661	685	46	1649	61	4015	4076
Grand Total	234	319	1251	0	1804	408	1527	191	2	2126	330	72	198	18	600	608	1209	1356	84	3173	104	7703	7807
Apprch %	13	17.7	69.3			19.2	71.8	9			55	12	33			19.2	38.1	42.7					
Total %	3	4.1	16.2		23.4	5.3	19.8	2.5		27.6	4.3	0.9	2.6		7.8	7.9	15.7	17.6		41.2	1.3	98.7	

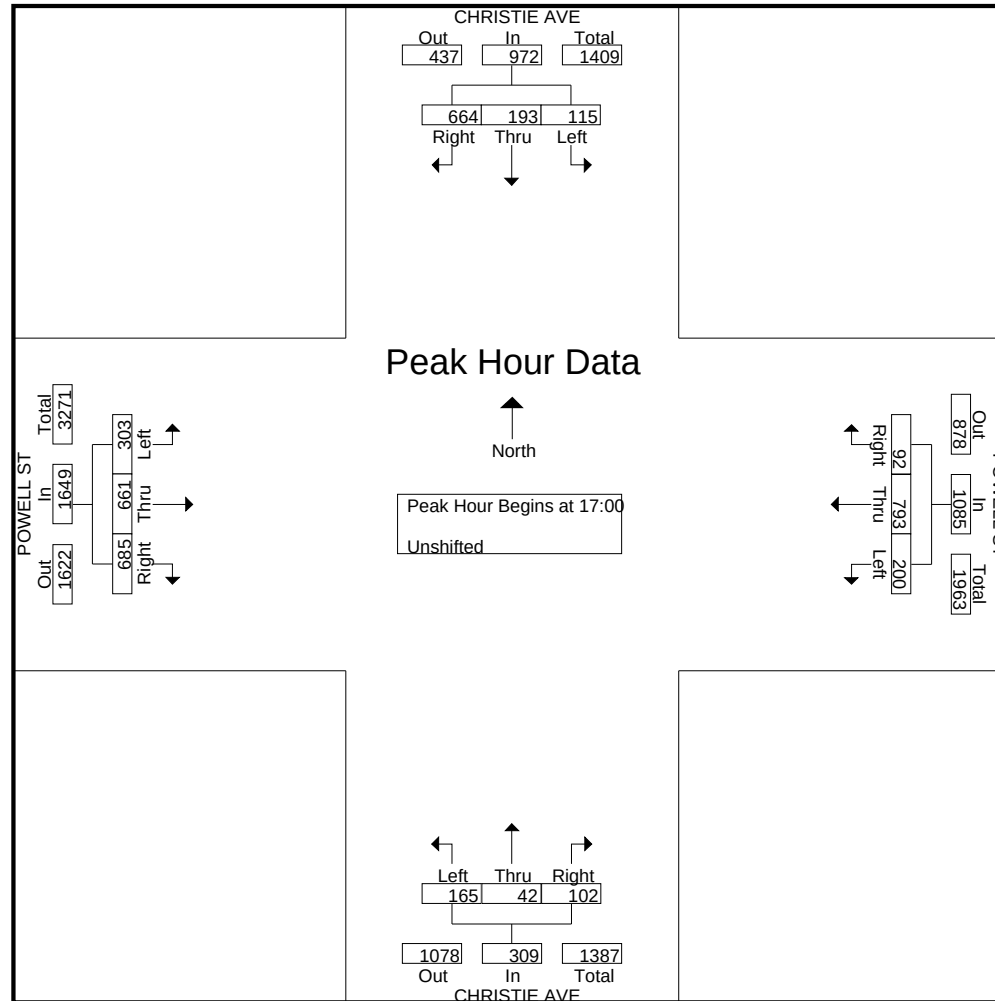
	CHRISTIE AVE Southbound				POWELL ST Westbound				CHRISTIE AVE Northbound				POWELL ST Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	34	48	185	267	42	200	17	259	43	13	23	79	74	148	158	380	985
17:15	27	46	161	234	53	197	31	281	30	11	26	67	78	170	189	437	1019
17:30	27	42	162	231	62	207	20	289	40	7	25	72	72	190	188	450	1042
17:45	27	57	156	240	43	189	24	256	52	11	28	91	79	153	150	382	969
Total Volume	115	193	664	972	200	793	92	1085	165	42	102	309	303	661	685	1649	4015
% App. Total	11.8	19.9	68.3		18.4	73.1	8.5		53.4	13.6	33		18.4	40.1	41.5		
PHF	.846	.846	.897	.910	.806	.958	.742	.939	.793	.808	.911	.849	.959	.870	.906	.916	.963

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

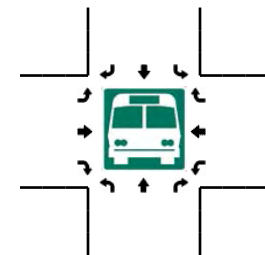
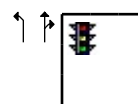
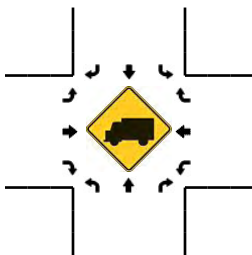
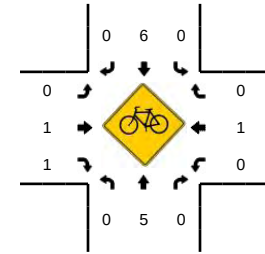
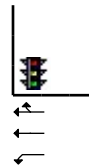
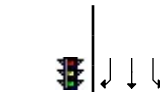
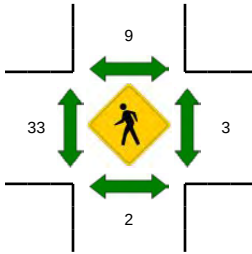
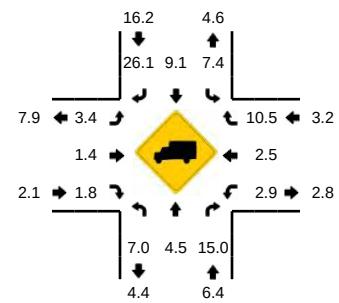
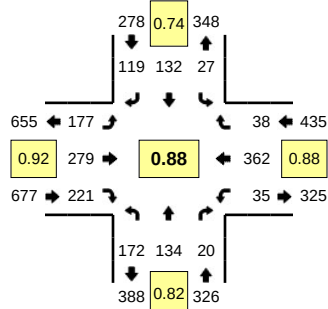
File Name : 10-7189-012 POWELL-CHRISTIE
Site Code : 00000000
Start Date : 5/6/2010
Page No : 2



LOCATION: Hollis St -- Powell St
CITY/STATE: Emeryville, CA

QC JOB #: 10602316
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



5-Min Count Period Beginning At	Hollis St (Northbound)				Hollis St (Southbound)				Powell St (Eastbound)				Powell St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	4	1	0	0	6	4	0	11	12	18	0	3	13	2	0	78	
7:05 AM	5	5	1	0	0	7	6	0	9	7	16	0	0	20	1	0	77	
7:10 AM	8	6	1	0	1	6	5	1	10	12	13	0	2	13	0	0	78	
7:15 AM	5	2	0	0	1	10	8	0	11	12	10	0	2	18	1	0	80	
7:20 AM	8	9	1	0	5	3	13	0	9	14	17	0	0	20	0	0	99	
7:25 AM	6	9	0	0	0	5	4	0	10	10	17	0	2	18	1	0	82	
7:30 AM	8	6	4	0	2	2	7	0	12	10	16	0	1	27	2	0	97	
7:35 AM	4	7	0	0	0	9	11	0	11	14	11	0	1	23	5	0	96	
7:40 AM	7	7	0	0	2	5	7	0	12	13	20	0	3	19	2	0	97	
7:45 AM	16	12	3	0	1	11	8	0	10	22	18	0	2	34	2	0	139	
7:50 AM	7	7	3	0	1	9	8	0	18	17	17	0	5	43	2	0	137	
7:55 AM	12	6	1	0	4	13	9	0	21	20	13	0	1	30	2	0	132	1192
8:00 AM	16	9	0	0	0	7	10	0	11	31	16	1	0	25	2	0	128	1242
8:05 AM	8	12	1	0	1	7	9	0	23	17	24	0	4	24	2	0	132	1297
8:10 AM	15	11	2	0	2	16	12	0	11	10	13	0	3	26	4	0	125	1344
8:15 AM	9	7	1	0	0	5	4	0	9	28	25	1	4	24	3	0	120	1384
8:20 AM	13	7	4	0	2	10	8	0	16	18	11	0	2	35	1	0	127	1412
8:25 AM	13	5	1	0	0	8	10	0	21	28	15	0	2	26	2	0	131	1461
8:30 AM	23	16	1	0	0	9	12	0	8	19	21	0	3	37	1	0	150	1514
8:35 AM	11	10	0	0	6	14	14	1	22	32	18	0	3	30	3	0	164	1582
8:40 AM	16	19	4	0	3	11	11	0	13	21	17	0	1	30	7	0	153	1638
8:45 AM	15	11	1	0	5	17	13	0	15	25	14	0	5	42	4	0	167	1666
8:50 AM	18	12	1	0	3	15	9	0	16	23	25	0	3	27	4	0	156	1685
8:55 AM	15	15	4	0	4	13	7	0	10	27	22	0	5	36	5	0	163	1716
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	192	152	24	0	48	180	116	0	164	300	244	0	52	420	52	0	1944	
Heavy Trucks	12	8	0		4	12	24		0	4	4		0	4	0		72	
Pedestrians		0				8				20				0			28	
Bicycles	0	2	0		0	2	0		0	1	0		0	1	0		6	
Railroad																		
Stopped Buses																		

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-023 HOLLIS-POWELL
Site Code : 00000000
Start Date : 5/6/2010
Page No : 1

Groups Printed- Unshifted

	HOLLIS ST Southbound					POWELL ST Westbound					HOLLIS ST Northbound					POWELL ST Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
16:00	11	50	57	5	118	6	100	9	2	115	72	52	7	0	131	28	103	39	1	170	8	534	542
16:15	13	45	60	5	118	9	113	6	1	128	54	49	7	0	110	28	122	20	0	170	6	526	532
16:30	16	52	57	1	125	11	119	16	5	146	63	51	7	0	121	23	107	35	0	165	6	557	563
16:45	27	59	65	4	151	7	104	8	0	119	78	52	12	2	142	23	117	43	8	183	14	595	609
Total	67	206	239	15	512	33	436	39	8	508	267	204	33	2	504	102	449	137	9	688	34	2212	2246
17:00	13	80	74	3	167	10	108	7	3	125	90	81	6	1	177	44	133	44	0	221	7	690	697
17:15	26	78	55	1	159	12	110	8	1	130	75	77	8	2	160	18	130	32	1	180	5	629	634
17:30	29	46	50	2	125	12	97	6	4	115	75	74	11	1	160	25	163	33	4	221	11	621	632
17:45	19	45	48	1	112	13	105	14	2	132	83	72	11	1	166	36	155	28	1	219	5	629	634
Total	87	249	227	7	563	47	420	35	10	502	323	304	36	5	663	123	581	137	6	841	28	2569	2597
Grand Total	154	455	466	22	1075	80	856	74	18	1010	590	508	69	7	1167	225	1030	274	15	1529	62	4781	4843
Apprch %	14.3	42.3	43.3			7.9	84.8	7.3			50.6	43.5	5.9			14.7	67.4	17.9					
Total %	3.2	9.5	9.7		22.5	1.7	17.9	1.5		21.1	12.3	10.6	1.4		24.4	4.7	21.5	5.7		32	1.3	98.7	

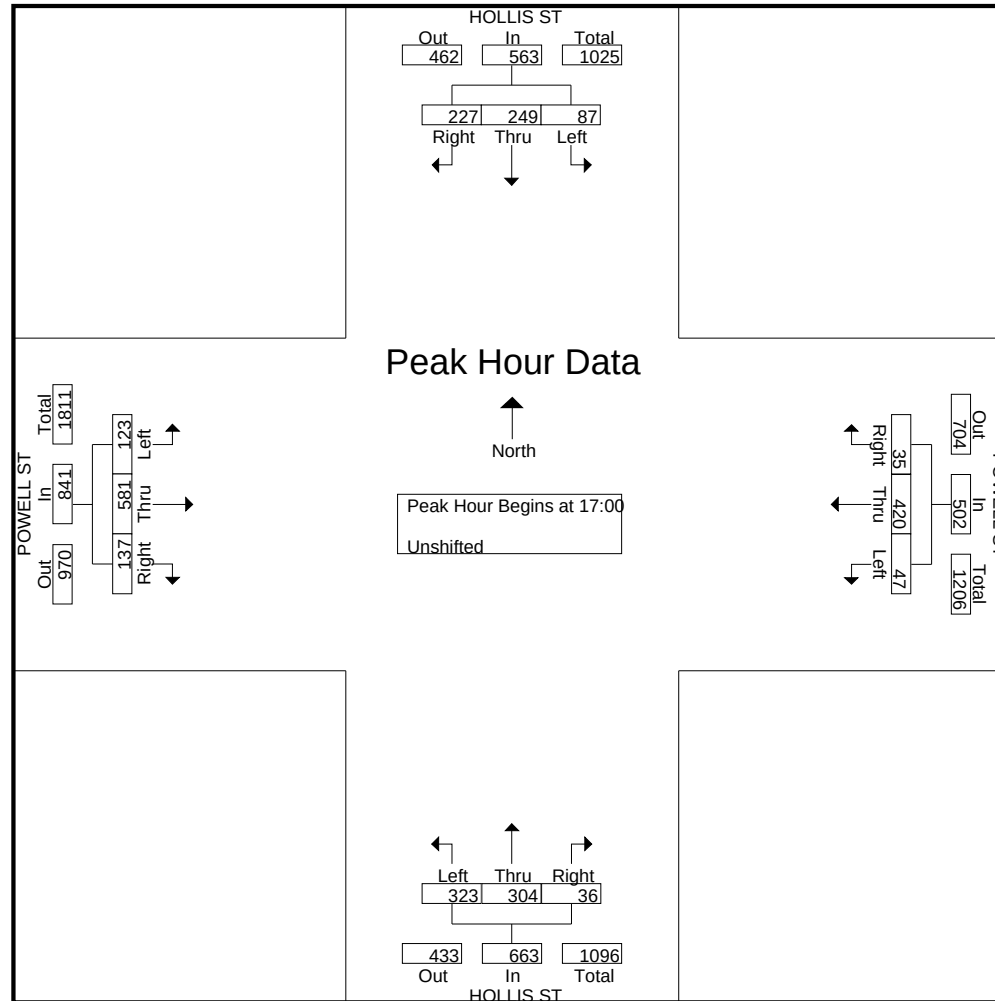
	HOLLIS ST Southbound				POWELL ST Westbound				HOLLIS ST Northbound				POWELL ST Eastbound				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	13	80	74	167	10	108	7	125	90	81	6	177	44	133	44	221	690
17:15	26	78	55	159	12	110	8	130	75	77	8	160	18	130	32	180	629
17:30	29	46	50	125	12	97	6	115	75	74	11	160	25	163	33	221	621
17:45	19	45	48	112	13	105	14	132	83	72	11	166	36	155	28	219	629
Total Volume	87	249	227	563	47	420	35	502	323	304	36	663	123	581	137	841	2569
% App. Total	15.5	44.2	40.3		9.4	83.7	7		48.7	45.9	5.4		14.6	69.1	16.3		
PHF	.750	.778	.767	.843	.904	.955	.625	.951	.897	.938	.818	.936	.699	.891	.778	.951	.931

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

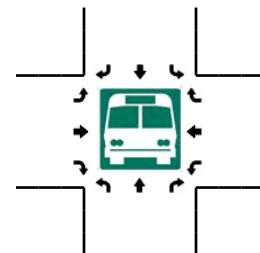
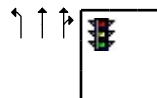
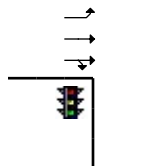
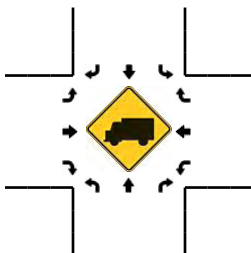
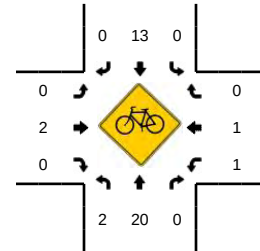
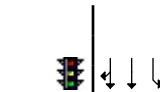
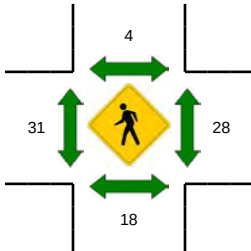
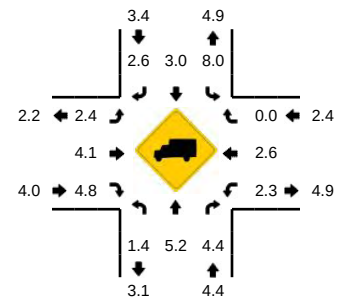
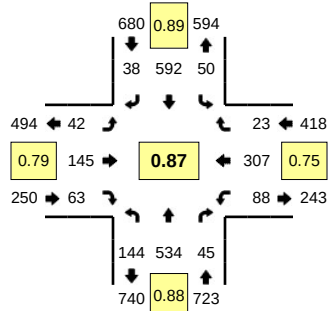
File Name : 10-7189-023 HOLLIS-POWELL
Site Code : 00000000
Start Date : 5/6/2010
Page No : 2



LOCATION: San Pablo Ave -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602317
DATE: 4/14/2011

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:40 AM -- 8:55 AM



5-Min Count Period Beginning At	San Pablo Ave (Northbound)				San Pablo Ave (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	18	1	0	2	25	2	0	4	2	2	0	1	12	1	1	77	
7:05 AM	10	20	2	0	5	26	4	0	2	8	1	0	2	10	1	0	91	
7:10 AM	0	24	3	0	1	25	7	0	0	6	3	0	2	10	1	0	82	
7:15 AM	5	13	1	0	2	31	5	0	0	8	0	0	1	5	1	0	72	
7:20 AM	7	34	1	0	1	17	3	0	2	4	7	0	5	15	4	0	100	
7:25 AM	1	23	3	0	1	24	3	0	1	6	4	0	3	10	0	0	79	
7:30 AM	6	36	5	0	8	35	5	0	2	3	2	0	2	18	1	0	123	
7:35 AM	8	27	3	0	0	26	4	0	3	9	2	0	3	19	2	0	106	
7:40 AM	8	32	4	0	4	30	4	0	0	10	4	0	3	21	1	0	121	
7:45 AM	6	33	4	0	2	44	6	0	3	13	2	0	4	34	0	0	151	
7:50 AM	9	44	8	0	1	40	8	0	2	7	4	0	4	22	1	0	150	
7:55 AM	12	45	3	0	5	39	5	0	5	12	1	0	7	20	5	1	160	1312
8:00 AM	10	43	3	0	4	43	1	0	2	13	4	0	6	25	2	1	157	1392
8:05 AM	7	42	3	0	1	63	2	0	4	3	3	0	4	19	3	0	154	1455
8:10 AM	12	48	4	0	5	63	7	0	1	9	4	1	7	12	1	0	174	1547
8:15 AM	12	37	2	0	2	47	1	0	3	14	11	0	8	30	2	0	169	1644
8:20 AM	8	33	8	0	1	50	1	0	0	13	7	0	4	27	1	0	153	1697
8:25 AM	14	57	2	0	2	42	4	0	2	6	6	2	8	26	1	1	173	1791
8:30 AM	14	45	3	0	5	57	1	0	4	15	5	0	5	14	0	0	168	1836
8:35 AM	12	34	4	0	8	44	3	0	4	13	5	0	9	28	1	0	165	1895
8:40 AM	9	54	7	0	4	55	5	0	4	23	7	1	10	28	6	0	213	1987
8:45 AM	16	53	2	0	8	47	4	0	3	14	3	1	5	27	0	0	183	2019
8:50 AM	18	43	4	0	5	42	4	0	5	10	7	0	12	51	1	0	202	2071
8:55 AM	2	29	5	0	3	36	9	0	3	15	6	0	6	21	2	1	138	2049
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	172	600	52	0	68	576	52	0	48	188	68	8	108	424	28	0	2392	
Heavy Trucks	4	28	0		8	24	0		4	8	0		0	4	0		80	
Pedestrians		32				0				52				36			120	
Bicycles	0	7	0		0	2	0		0	1	0		0	1	0		11	
Railroad																		
Stopped Buses																		

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-024 SAN PABLO-STANFORD
Site Code : 00000000
Start Date : 5/6/2010
Page No : 1

Groups Printed- Unshifted

	SAN PABLO AVE Southbound					STANFORD ST Westbound					SAN PABLO AVE Northbound					STANFORD ST Eastbound							
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:00	14	184	31	1	229	21	61	6	24	88	23	183	19	3	225	16	76	28	2	120	30	662	692
16:15	23	176	26	2	225	25	72	5	13	102	28	183	17	4	228	21	82	25	5	128	24	683	707
16:30	28	177	18	2	223	25	81	10	10	116	31	176	19	8	226	27	88	31	2	146	22	711	733
16:45	21	204	20	1	245	23	70	8	9	101	27	177	30	4	234	17	93	47	3	157	17	737	754
Total	86	741	95	6	922	94	284	29	56	407	109	719	85	19	913	81	339	131	12	551	93	2793	2886
17:00	23	194	23	4	240	20	62	8	8	90	22	198	28	5	248	34	127	25	0	186	17	764	781
17:15	30	189	14	8	233	23	90	11	10	124	19	200	20	1	239	19	130	36	5	185	24	781	805
17:30	20	201	17	2	238	25	57	8	5	90	28	211	24	3	263	32	140	28	4	200	14	791	805
17:45	15	191	14	2	220	25	72	5	14	102	40	179	24	4	243	32	127	29	4	188	24	753	777
Total	88	775	68	16	931	93	281	32	37	406	109	788	96	13	993	117	524	118	13	759	79	3089	3168
Grand Total	174	1516	163	22	1853	187	565	61	93	813	218	1507	181	32	1906	198	863	249	25	1310	172	5882	6054
Apprch %	9.4	81.8	8.8			23	69.5	7.5			11.4	79.1	9.5			15.1	65.9	19					
Total %	3	25.8	2.8		31.5	3.2	9.6	1		13.8	3.7	25.6	3.1		32.4	3.4	14.7	4.2		22.3	2.8	97.2	

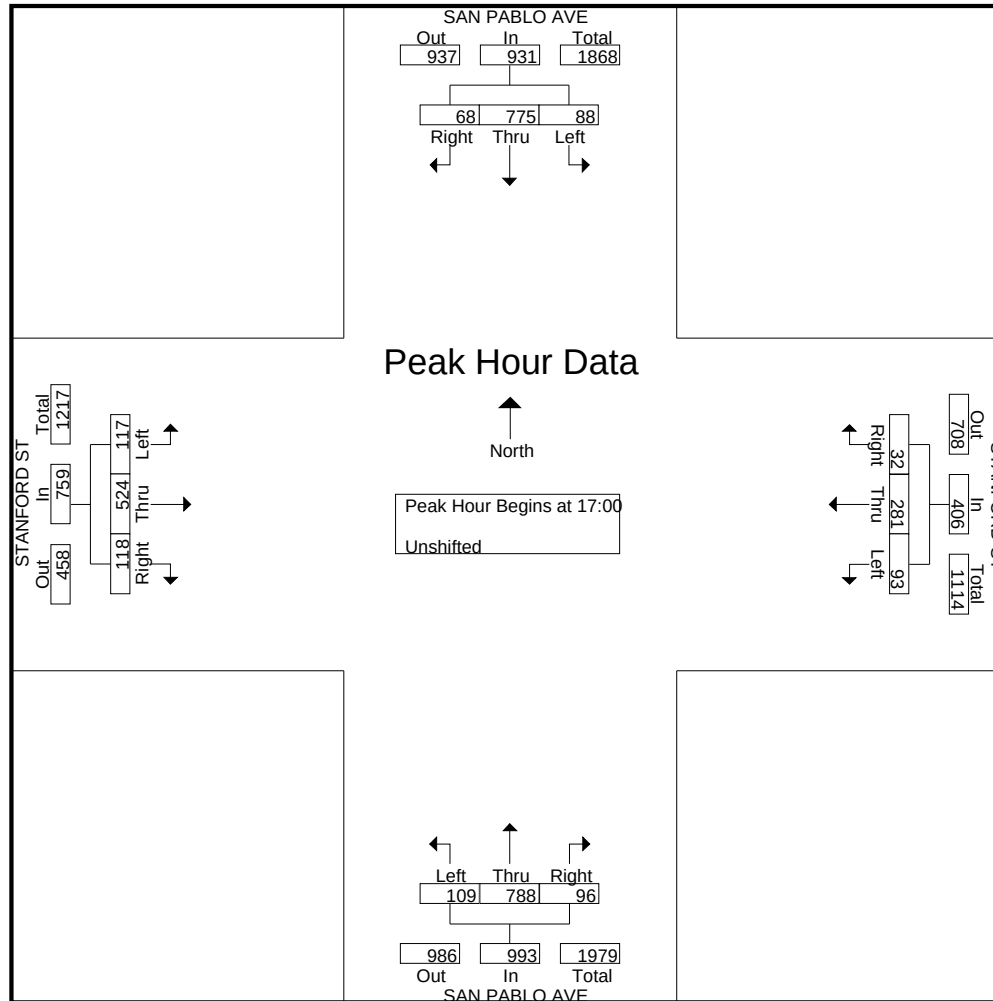
	SAN PABLO AVE Southbound				STANFORD ST Westbound				SAN PABLO AVE Northbound				STANFORD ST Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	23	194	23	240	20	62	8	90	22	198	28	248	34	127	25	186	764
17:15	30	189	14	233	23	90	11	124	19	200	20	239	19	130	36	185	781
17:30	20	201	17	238	25	57	8	90	28	211	24	263	32	140	28	200	791
17:45	15	191	14	220	25	72	5	102	40	179	24	243	32	127	29	188	753
Total Volume	88	775	68	931	93	281	32	406	109	788	96	993	117	524	118	759	3089
% App. Total	9.5	83.2	7.3		22.9	69.2	7.9		11	79.4	9.7		15.4	69	15.5		
PHF	.733	.964	.739	.970	.930	.781	.727	.819	.681	.934	.857	.944	.860	.936	.819	.949	.976

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

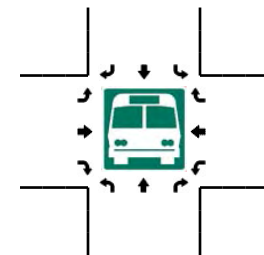
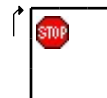
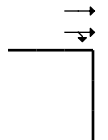
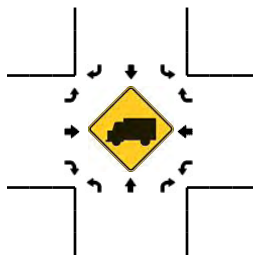
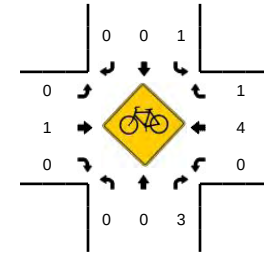
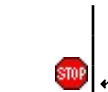
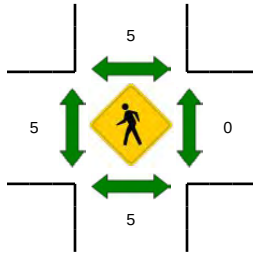
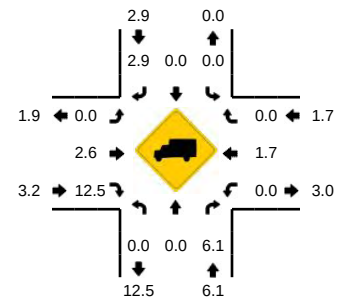
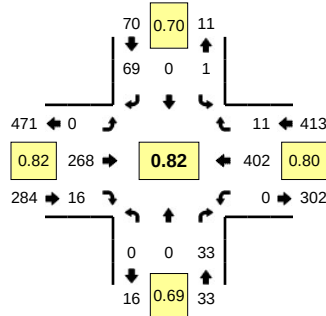
File Name : 10-7189-024 SAN PABLO-STANFORD
Site Code : 00000000
Start Date : 5/6/2010
Page No : 2



LOCATION: Lowell St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602303
DATE: 4/14/2011

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:35 AM -- 8:50 AM

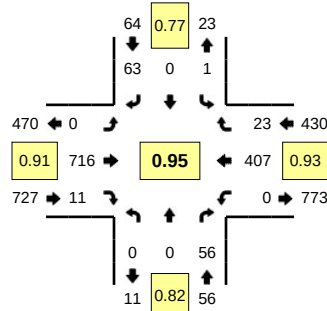


5-Min Count Period Beginning At	Lowell St (Northbound)				Lowell St (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	2	0	0	0	2	0	0	9	0	0	0	14	0	0	27	
7:05 AM	0	0	1	0	0	0	3	0	0	18	0	0	0	9	1	0	32	
7:10 AM	0	0	0	0	0	0	5	0	0	20	0	0	0	8	0	0	33	
7:15 AM	0	0	1	0	0	0	3	0	0	10	0	0	0	8	0	0	22	
7:20 AM	0	0	1	0	0	0	2	0	0	9	0	0	0	27	1	0	40	
7:25 AM	0	0	4	0	0	0	2	0	0	10	1	0	0	20	2	0	39	
7:30 AM	0	0	2	0	0	0	5	0	0	19	0	0	0	20	1	0	47	
7:35 AM	0	0	5	0	0	0	4	0	0	16	1	0	0	17	2	0	45	
7:40 AM	0	0	3	0	0	0	4	0	0	21	0	0	0	25	0	0	53	
7:45 AM	0	0	2	0	0	0	5	0	0	21	1	0	0	43	0	0	72	
7:50 AM	0	0	2	0	0	0	4	0	0	20	0	0	0	27	2	0	55	
7:55 AM	0	0	3	0	0	0	6	0	0	30	2	0	0	25	3	0	69	534
8:00 AM	0	0	0	0	0	0	2	0	0	23	0	0	0	30	0	0	55	562
8:05 AM	0	0	2	0	0	0	7	0	0	15	1	0	0	24	1	0	50	580
8:10 AM	0	0	2	0	0	0	5	0	0	20	0	0	0	33	4	0	64	611
8:15 AM	0	0	3	0	0	0	6	0	0	23	3	0	0	21	0	0	56	645
8:20 AM	0	0	2	0	0	0	2	0	0	19	3	0	0	44	0	0	70	675
8:25 AM	0	0	5	0	0	0	6	0	0	13	2	0	0	33	0	0	59	695
8:30 AM	0	0	3	0	0	0	6	0	0	23	2	0	0	28	1	0	63	711
8:35 AM	0	0	4	0	0	0	5	0	0	26	1	0	0	35	1	0	72	738
8:40 AM	0	0	3	0	0	0	8	0	0	31	2	0	0	34	0	0	78	763
8:45 AM	0	0	4	0	1	0	11	0	0	28	0	0	0	48	1	0	93	784
8:50 AM	0	0	2	0	0	0	5	0	0	17	0	0	0	47	0	0	71	800
8:55 AM	0	0	2	0	0	0	6	0	0	30	1	0	0	30	0	0	69	800
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	44	0	4	0	96	0	0	340	12	0	0	468	8	0	972	
Heavy Trucks	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0	0	16	
Pedestrians		8				12				4				0			24	
Bicycles	0	0	1		1	0	0		0	0	0		0	2	0		4	
Railroad																		
Stopped Buses																		

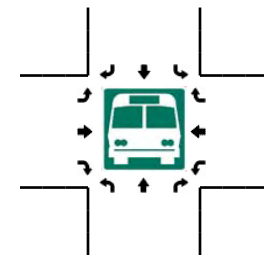
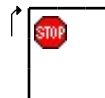
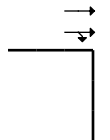
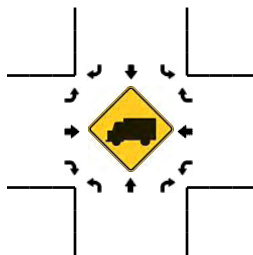
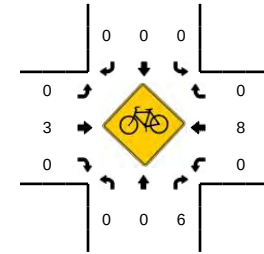
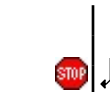
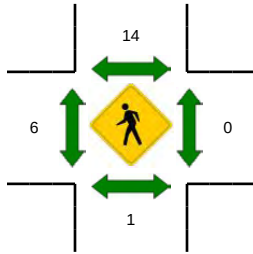
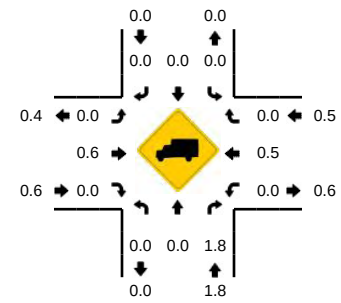
Comments: At intersection 5, we need to count all turning movements associated with Lowell's SB leg, Lowell's NB leg, and 60th Street's SB leg, including all

LOCATION: Lowell St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602304
DATE: 4/13/2011



Peak-Hour: 4:55 PM -- 5:55 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

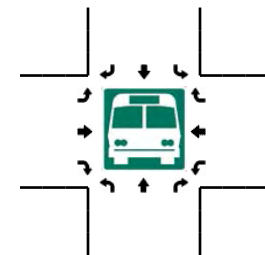
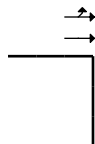
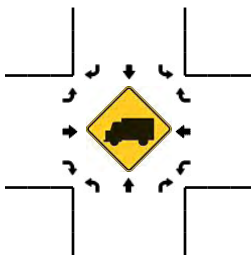
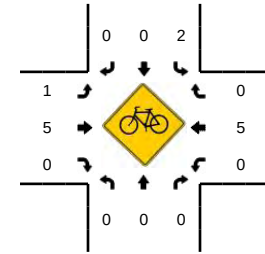
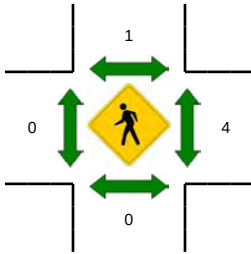
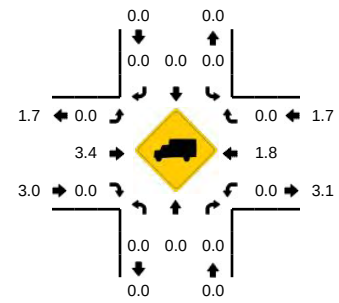
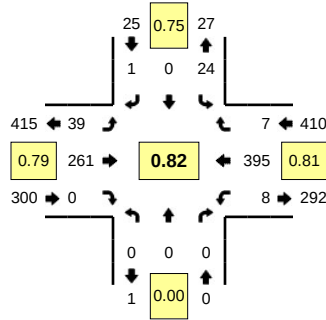
[illegible]

Comments: At intersection 5, we need to count all turning movements associated with Lowell's SB leg, Lowell's NB leg, and 60th Street's SB leg, including all

LOCATION: 60th St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602322
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:35 AM -- 8:50 AM



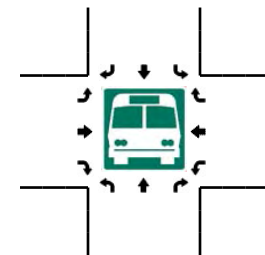
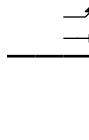
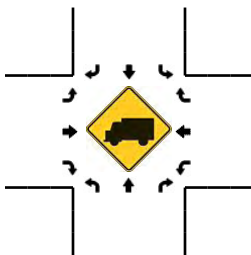
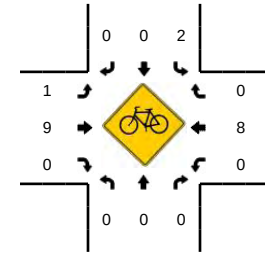
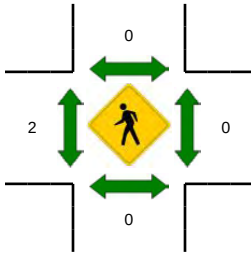
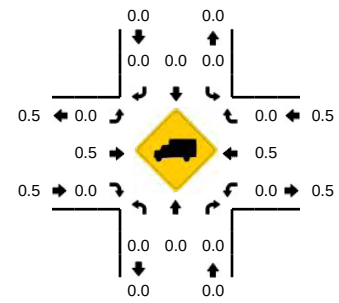
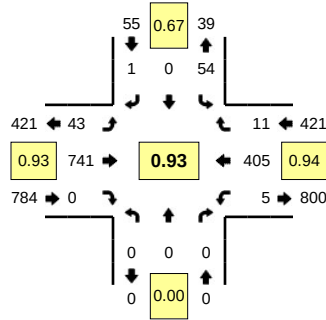
5-Min Count Period Beginning At	60th St (Northbound)				60th St (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	2	0	0	1	9	0	1	0	13	1	0	27	513
7:05 AM	0	0	0	0	6	1	0	0	1	17	1	0	0	10	0	0	36	
7:10 AM	0	0	0	0	0	0	0	0	2	19	0	0	0	8	1	0	30	
7:15 AM	0	0	0	0	0	0	0	0	0	10	0	1	0	7	0	1	19	
7:20 AM	0	0	0	0	4	0	0	0	0	9	0	1	0	27	0	0	41	
7:25 AM	0	0	0	0	4	0	0	0	1	13	0	0	0	22	0	0	40	
7:30 AM	0	0	0	0	0	0	0	0	2	18	0	1	0	20	1	0	42	
7:35 AM	0	0	0	0	3	0	0	0	0	19	0	2	0	17	2	0	43	
7:40 AM	0	0	0	0	2	0	0	0	0	23	0	1	0	24	1	0	51	
7:45 AM	0	0	0	0	1	0	0	0	4	18	0	1	0	42	1	0	67	
7:50 AM	0	0	0	0	3	0	0	0	0	21	0	1	0	28	2	0	55	661
7:55 AM	0	0	0	0	1	0	0	0	2	31	0	0	0	28	0	0	62	
8:00 AM	0	0	0	0	2	0	0	0	1	22	0	0	0	30	0	0	55	
8:05 AM	0	0	0	0	3	0	0	0	1	15	0	1	1	24	0	1	46	
8:10 AM	0	0	0	0	0	0	0	0	1	19	0	2	0	35	1	0	58	
8:15 AM	0	0	0	0	2	0	0	0	0	24	0	2	0	19	0	1	48	
8:20 AM	0	0	0	0	3	0	0	0	1	18	0	2	0	42	1	1	68	
8:25 AM	0	0	0	0	4	0	0	0	1	13	0	4	0	29	0	0	51	
8:30 AM	0	0	0	0	1	0	0	0	3	23	0	0	0	29	1	0	57	
8:35 AM	0	0	0	0	1	0	0	0	2	25	0	3	0	33	3	2	69	724
8:40 AM	0	0	0	0	5	0	0	0	1	30	0	2	0	32	1	1	72	
8:45 AM	0	0	0	0	2	0	0	0	5	27	0	1	0	48	0	0	83	
8:50 AM	0	0	0	0	0	0	1	0	1	17	0	1	0	45	0	0	65	734
8:55 AM	0	0	0	0	1	0	0	0	3	28	0	1	0	29	0	1	63	735
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	0	0	0	32	0	0	0	32	328	0	24	0	452	16	12	896	
Heavy Trucks	0	0	0	0	0	0	0	0	0	8	0	0	0	8	0	0	16	
Pedestrians	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	4	
Bicycles	0	0	0	0	1	0	0	0	0	1	0	0	0	2	0	0	4	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: 60th St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602323
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:00 PM -- 5:15 PM



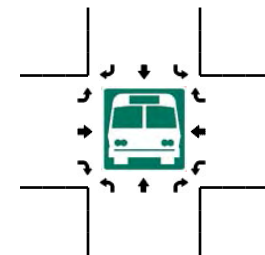
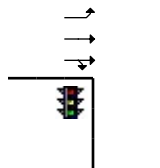
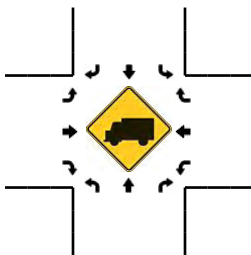
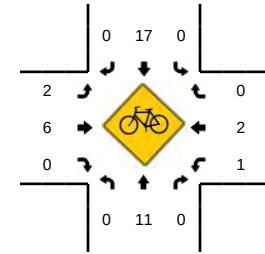
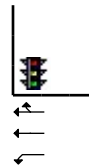
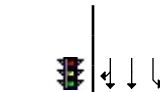
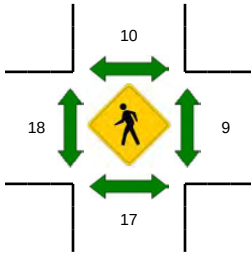
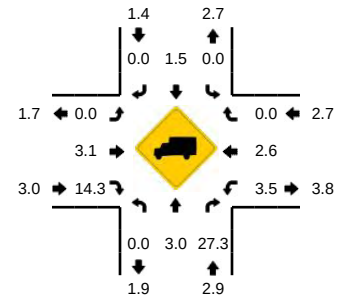
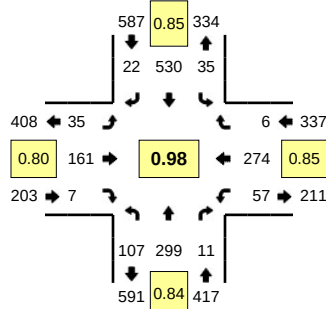
5-Min Count Period Beginning At	60th St (Northbound)				60th St (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	4	0	0	0	1	27	0	1	0	41	0	0	74	1006
4:05 PM	0	0	0	0	2	0	0	0	0	49	0	2	0	32	0	0	85	
4:10 PM	0	0	0	0	1	0	0	0	3	33	0	0	0	31	0	0	68	
4:15 PM	0	0	0	0	2	0	0	0	2	50	0	3	0	42	0	0	99	
4:20 PM	0	0	0	0	1	0	1	0	1	45	0	1	0	19	2	0	70	
4:25 PM	0	0	0	0	0	0	0	0	1	31	0	3	0	33	1	0	69	
4:30 PM	0	0	0	0	2	0	0	0	2	40	0	0	0	32	2	1	79	
4:35 PM	0	0	0	0	4	0	0	0	1	38	0	4	0	39	1	0	87	
4:40 PM	0	0	0	0	6	0	0	0	4	53	0	5	0	29	2	0	99	
4:45 PM	0	0	0	0	6	0	0	0	6	39	0	0	0	30	1	0	82	
4:50 PM	0	0	0	0	7	0	1	0	2	53	0	0	0	33	0	0	96	1043
4:55 PM	0	0	0	0	6	0	0	0	2	40	0	3	0	47	0	0	98	
5:00 PM	0	0	0	0	11	0	0	0	2	66	0	1	0	30	1	0	111	
5:05 PM	0	0	0	0	5	0	0	0	5	64	0	0	0	38	1	0	113	
5:10 PM	0	0	0	0	4	0	0	0	2	69	0	1	0	38	1	1	116	
5:15 PM	0	0	0	0	9	0	0	0	0	49	0	1	0	33	1	1	94	
5:20 PM	0	0	0	0	2	0	0	0	3	72	0	3	0	39	1	0	120	
5:25 PM	0	0	0	0	2	0	0	0	4	48	0	1	0	37	0	0	92	
5:30 PM	0	0	0	0	4	0	0	0	3	59	0	0	0	27	1	0	94	
5:35 PM	0	0	0	0	3	0	1	0	2	66	0	0	0	25	0	1	98	
5:40 PM	0	0	0	0	3	0	0	0	0	78	0	2	0	30	2	0	115	1229
5:45 PM	0	0	0	0	4	0	0	0	0	60	0	3	0	28	1	0	96	
5:50 PM	0	0	0	0	3	0	0	0	3	60	0	2	0	40	0	1	109	
5:55 PM	0	0	0	0	4	0	0	0	4	50	0	1	0	40	2	1	102	
Peak 15-Min Flowrates	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Total	
All Vehicles	0	0	0	0	80	0	0	0	36	796	0	8	0	424	12	4	1360	
Heavy Trucks	0	0	0	0	0	0	0	0	0	4	0	0	0	8	0	0	12	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	0	0	0	1	0	0	0	1	0	0	0	0	1	0	0	3	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602305
DATE: 4/14/2011

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 7:55 AM -- 8:10 AM



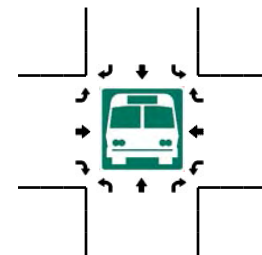
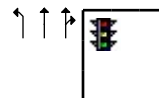
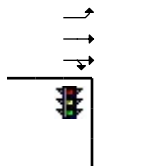
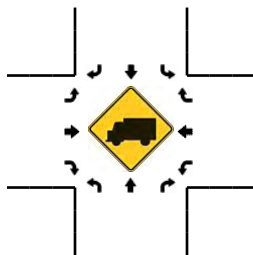
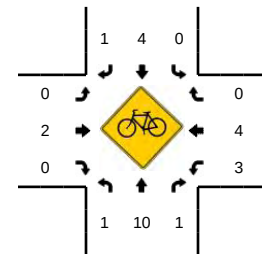
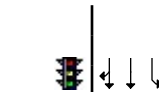
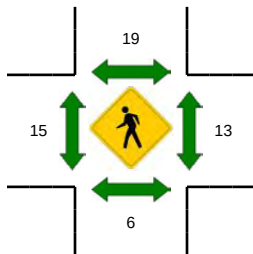
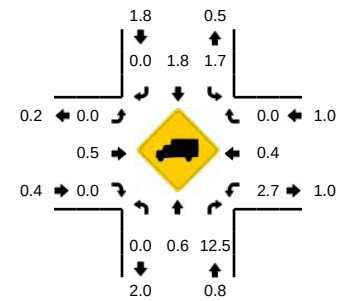
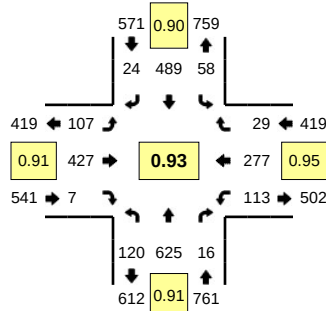
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	7	6	0	0	0	19	0	1	0	4	1	0	0	7	0	0	45	
7:05 AM	2	3	2	0	1	18	1	0	1	7	1	0	0	6	3	0	45	
7:10 AM	3	5	1	0	1	20	0	0	1	12	0	0	2	8	1	0	54	
7:15 AM	4	2	1	0	2	18	1	0	2	6	0	0	2	7	2	0	47	
7:20 AM	8	14	0	0	0	25	1	0	0	7	0	0	1	14	1	0	71	
7:25 AM	4	14	1	0	1	19	0	0	1	8	0	0	4	23	0	0	75	
7:30 AM	5	17	1	0	3	20	0	0	1	11	0	0	1	13	0	1	73	
7:35 AM	7	24	1	1	1	35	1	0	2	14	0	0	3	11	0	0	100	
7:40 AM	9	17	0	0	8	39	0	0	2	11	0	2	3	20	1	0	112	
7:45 AM	11	27	1	0	6	42	3	0	2	10	0	0	1	24	4	0	131	
7:50 AM	14	27	2	0	2	44	2	0	4	15	0	0	2	14	0	0	126	
7:55 AM	6	23	0	0	5	56	0	0	5	11	1	0	2	20	1	0	130	1009
8:00 AM	8	20	0	1	7	41	2	0	4	13	2	0	4	22	0	0	124	1088
8:05 AM	6	26	1	0	1	67	0	0	3	9	1	1	5	20	0	1	141	1184
8:10 AM	8	23	0	0	3	53	2	0	1	13	0	1	2	21	1	0	128	1258
8:15 AM	3	26	0	0	3	45	0	0	2	13	1	0	7	16	0	0	116	1327
8:20 AM	20	27	0	0	1	42	3	0	3	13	0	2	7	20	0	1	139	1395
8:25 AM	5	29	1	0	4	40	3	0	1	9	1	0	11	22	0	1	127	1447
8:30 AM	8	37	2	0	3	36	2	0	1	14	0	0	2	19	0	0	124	1498
8:35 AM	11	21	1	0	0	43	2	0	1	11	0	1	3	28	0	0	122	1520
8:40 AM	5	17	3	0	6	28	3	0	4	24	1	0	4	25	1	0	121	1529
8:45 AM	12	17	2	0	2	30	5	0	4	19	0	1	2	37	0	0	131	1529
8:50 AM	14	33	1	0	0	49	0	0	0	12	0	0	4	24	3	1	141	1544
8:55 AM	14	26	3	0	1	41	0	0	2	13	1	0	7	19	2	0	129	1543
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	80	276	4	4	52	656	8	0	48	132	16	4	44	248	4	4	1580	
Heavy Trucks	0	12	4		0	12	0		0	4	4		4	20	0		60	
Pedestrians		20				12				4				12			48	
Bicycles	0	0	0		0	3	0		0	0	0		1	1	0		5	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- Stanford Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602306
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:10 PM -- 5:25 PM



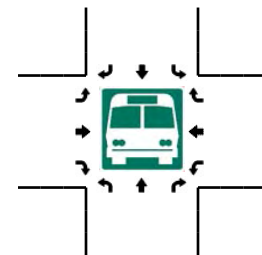
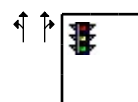
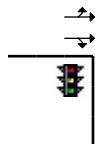
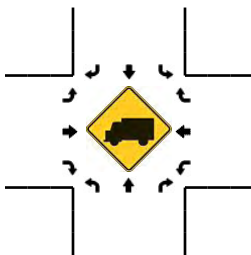
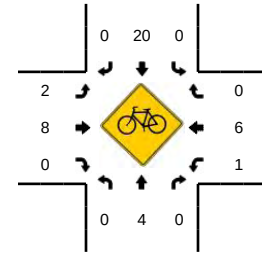
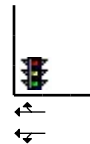
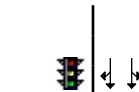
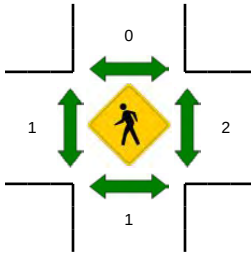
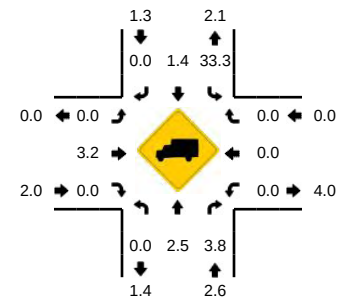
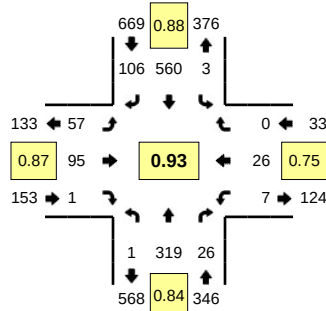
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Stanford Ave (Eastbound)				Stanford Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	6	46	1	0	2	31	3	0	3	16	1	0	7	26	2	0	144	1817
4:05 PM	11	33	0	0	2	28	2	0	5	24	2	1	1	17	2	1	129	
4:10 PM	6	20	12	0	4	28	2	0	8	16	0	0	5	25	2	0	128	
4:15 PM	16	34	0	0	3	30	1	0	9	36	0	0	3	26	0	0	158	
4:20 PM	3	36	1	0	2	36	1	0	3	29	1	0	3	18	1	0	134	
4:25 PM	11	39	1	0	3	29	2	1	3	18	2	0	7	18	0	1	135	
4:30 PM	12	38	0	1	2	36	1	0	4	21	0	0	7	23	3	0	148	
4:35 PM	10	55	0	2	4	48	1	1	8	24	0	1	1	26	5	0	186	
4:40 PM	5	45	1	0	1	46	0	0	7	23	1	0	8	24	2	0	163	
4:45 PM	6	42	2	1	5	39	0	1	5	19	0	1	7	27	2	1	158	
4:50 PM	6	54	1	0	8	29	2	0	5	25	0	0	5	21	1	1	158	1817
4:55 PM	15	45	2	0	3	35	6	0	3	32	0	1	10	24	0	0	176	
5:00 PM	8	42	1	0	1	38	2	0	13	34	0	0	9	20	1	0	169	1842
5:05 PM	9	53	3	0	7	34	3	0	10	32	1	1	13	28	3	0	197	1910
5:10 PM	10	63	2	0	7	37	2	0	7	32	0	0	9	26	2	0	197	1979
5:15 PM	11	56	1	0	8	50	5	0	7	37	0	0	6	20	1	0	202	2023
5:20 PM	12	56	0	1	6	38	2	1	8	46	0	1	12	31	1	1	216	2105
5:25 PM	10	54	1	0	3	35	0	0	10	25	0	0	8	24	2	0	172	2142
5:30 PM	10	46	0	1	3	39	1	0	8	33	0	0	11	19	2	0	173	2167
5:35 PM	7	51	2	2	7	41	1	0	13	32	1	0	10	17	4	0	188	2169
5:40 PM	6	63	2	1	4	53	3	0	12	35	0	0	12	16	3	0	210	2216
5:45 PM	3	59	2	0	4	42	3	0	5	32	3	0	5	23	3	0	184	2242
5:50 PM	11	38	0	0	4	41	1	0	9	53	0	0	10	30	5	0	202	2286
5:55 PM	18	44	2	0	3	41	1	0	2	36	2	1	6	23	2	1	182	2292
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	132	700	12	4	84	500	36	4	88	460	0	4	108	308	16	4	2460	
Heavy Trucks	0	8	4		0	8	0		0	0	0		4	0	0		24	
Pedestrians		12				24				36				16			88	
Bicycles	0	3	0		0	1	0		0	0	0		1	0	0		5	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- Adeline St/57th St
CITY/STATE: Oakland, CA

QC JOB #: 10602307
DATE: 4/14/2011

Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:15 AM -- 8:30 AM



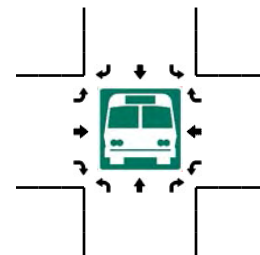
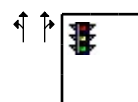
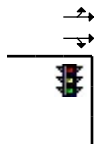
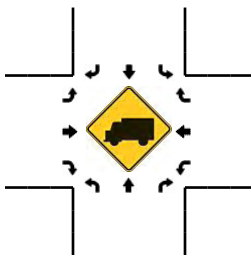
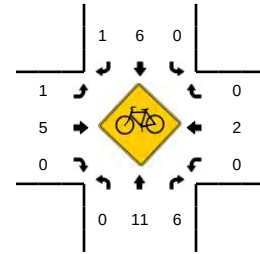
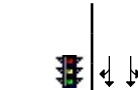
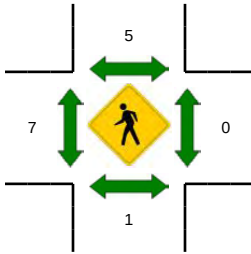
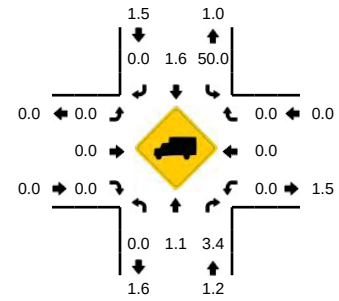
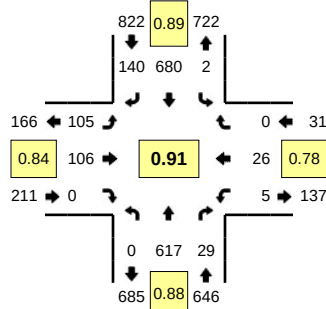
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Adeline St/57th St (Eastbound)				Adeline St/57th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	8	2	0	0	25	2	0	1	2	0	0	1	2	0	0	43	
7:05 AM	0	5	0	0	0	22	2	0	1	1	0	0	2	0	0	0	33	
7:10 AM	0	4	2	0	0	22	5	1	1	1	0	0	0	0	0	0	36	
7:15 AM	0	5	1	0	0	20	2	0	0	4	0	0	0	1	0	0	33	
7:20 AM	0	16	0	0	0	29	4	0	4	5	0	0	0	0	0	0	58	
7:25 AM	0	17	2	0	0	22	3	0	0	5	0	0	2	0	0	0	51	
7:30 AM	0	17	0	0	0	17	3	0	2	9	0	0	0	4	0	0	52	
7:35 AM	0	23	1	0	0	31	9	0	7	6	0	0	0	0	0	0	77	
7:40 AM	0	30	0	0	0	32	5	0	0	4	0	0	0	1	0	0	72	
7:45 AM	0	23	1	0	1	44	8	0	5	15	0	0	0	0	0	0	97	
7:50 AM	1	45	1	0	2	53	5	0	3	7	0	0	1	0	0	0	118	
7:55 AM	0	21	2	0	0	52	8	0	6	8	0	0	1	2	0	0	100	770
8:00 AM	0	19	1	0	0	49	5	0	6	4	0	0	2	2	0	0	88	815
8:05 AM	0	28	2	0	0	57	6	0	4	7	1	0	0	6	0	0	111	893
8:10 AM	0	16	0	0	0	48	12	0	9	8	0	0	1	2	0	0	96	953
8:15 AM	0	25	5	0	0	51	16	0	4	3	0	0	0	0	0	0	104	1024
8:20 AM	0	34	2	0	0	43	11	0	6	10	0	0	0	4	0	0	110	1076
8:25 AM	0	34	4	0	0	48	9	0	2	5	0	0	2	4	0	0	108	1133
8:30 AM	0	25	0	0	0	29	8	0	7	10	0	0	0	3	0	0	82	1163
8:35 AM	0	22	6	0	0	39	13	0	3	10	0	0	0	2	0	0	95	1181
8:40 AM	0	27	2	0	0	47	5	0	2	8	0	0	0	1	0	0	92	1201
8:45 AM	0	24	3	0	0	36	5	0	3	7	0	0	2	2	0	0	82	1186
8:50 AM	0	30	6	0	0	35	11	0	5	6	0	0	1	2	0	0	96	1164
8:55 AM	0	32	3	0	0	48	6	0	6	9	0	0	0	1	0	0	105	1169
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	372	44	0	0	568	144	0	48	72	0	0	8	32	0	0	1288	
Heavy Trucks	0	8	4	0	0	12	0	0	0	0	0	0	0	0	0	0	24	
Pedestrians	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Bicycles	0	1	0	0	0	3	0	0	0	0	0	0	1	0	0	0	5	
Railroad																		
Stopped Buses																		

Comments: 6 Leg Intersection

LOCATION: Market St -- Adeline St/57th St
CITY/STATE: Oakland, CA

QC JOB #: 10602308
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM



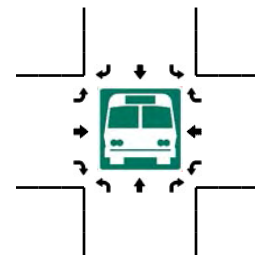
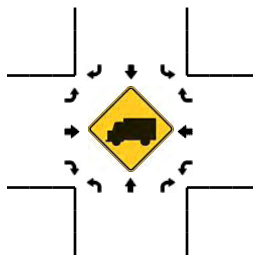
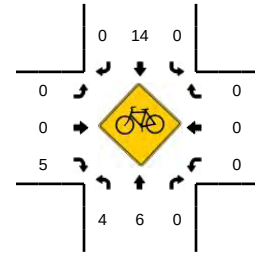
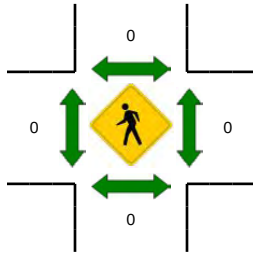
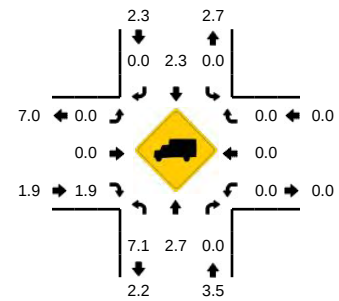
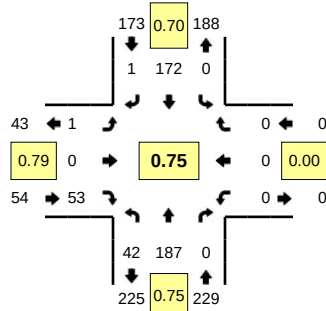
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				Adeline St/57th St (Eastbound)				Adeline St/57th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	31	1	0	0	30	7	0	6	4	1	0	1	3	0	0	84	1340
4:05 PM	0	39	1	0	0	41	12	0	4	9	1	0	1	0	0	0	108	
4:10 PM	1	35	2	0	0	36	6	0	4	9	0	0	0	0	0	0	93	
4:15 PM	0	35	3	0	0	38	10	0	10	9	0	0	1	0	0	0	106	
4:20 PM	0	33	4	0	0	23	4	0	7	9	0	0	2	1	0	0	83	
4:25 PM	0	39	3	0	0	49	15	0	6	6	0	0	0	2	0	0	120	
4:30 PM	0	37	1	0	0	30	8	0	5	10	0	0	1	2	1	0	95	
4:35 PM	0	57	2	0	2	57	8	0	12	15	0	0	0	0	0	0	153	
4:40 PM	0	44	4	0	0	50	10	0	8	14	0	0	0	2	0	0	132	
4:45 PM	1	42	0	0	0	55	13	0	8	10	0	0	0	3	0	0	132	
4:50 PM	0	42	0	0	0	50	5	0	10	10	0	0	0	2	0	0	119	
4:55 PM	0	48	1	0	1	44	8	0	6	6	0	0	0	1	0	0	115	
5:00 PM	0	41	1	0	0	44	13	0	4	5	0	0	0	1	0	0	109	1365
5:05 PM	0	59	2	0	0	68	17	0	12	6	0	0	0	2	0	0	166	1423
5:10 PM	0	52	0	0	0	60	13	0	12	7	0	0	1	5	0	0	150	1480
5:15 PM	0	62	1	0	0	66	6	0	4	11	0	0	0	2	0	0	152	1526
5:20 PM	0	68	1	0	1	55	12	0	13	10	0	0	0	2	0	0	162	1605
5:25 PM	0	30	1	0	0	40	6	0	12	10	0	0	1	1	0	0	101	1586
5:30 PM	0	52	4	0	0	55	10	0	8	11	0	0	0	2	0	0	142	1633
5:35 PM	0	53	3	0	1	62	7	0	9	9	0	0	0	2	0	0	146	1626
5:40 PM	0	55	6	0	0	64	17	0	10	6	0	0	1	3	0	0	162	1656
5:45 PM	0	55	1	0	0	61	14	0	5	11	0	0	1	2	0	0	150	1674
5:50 PM	0	44	5	0	0	53	12	0	3	6	0	0	1	1	0	0	125	1680
5:55 PM	0	46	4	0	0	52	13	0	13	14	0	0	0	3	0	0	145	1710
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	692	12	0	0	776	144	0	112	96	0	0	4	36	0	0	1872	
Heavy Trucks	0	12	0	0	0	16	0	0	0	0	0	0	0	0	0	0	28	
Pedestrians	0	0	0	0	0	4	0	0	0	8	0	0	0	0	0	0	12	
Bicycles	0	6	0	0	0	2	0	0	1	2	0	0	0	1	0	0	12	
Railroad																		
Stopped Buses																		

Comments: 6 Leg Intersection

LOCATION: Adeline St -- Lowell St
CITY/STATE: Oakland, CA

QC JOB #: 10602309
DATE: 4/14/2011

Peak-Hour: 7:50 AM -- 8:50 AM
Peak 15-Min: 8:10 AM -- 8:25 AM



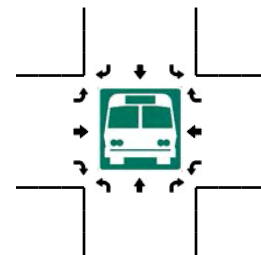
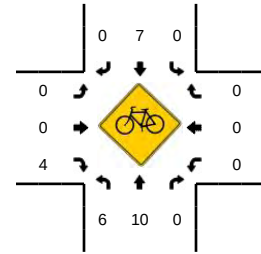
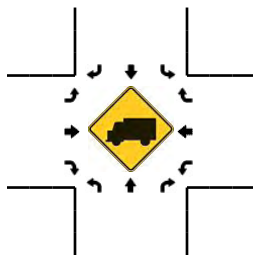
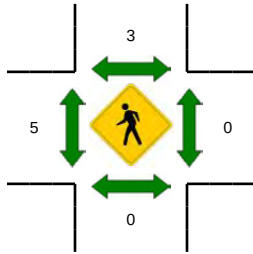
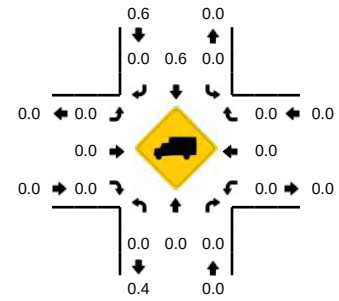
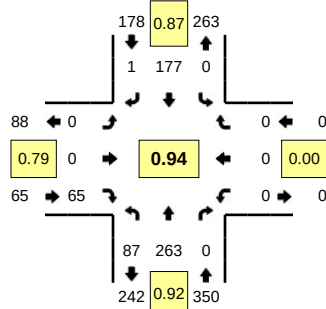
5-Min Count Period Beginning At	Adeline St (Northbound)				Adeline St (Southbound)				Lowell St (Eastbound)				Lowell St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	4	0	0	0	4	0	0	0	0	2	0	0	0	0	0	10	
7:05 AM	1	4	0	0	0	7	0	0	0	0	6	0	0	0	0	0	18	
7:10 AM	2	5	0	0	0	5	0	0	0	0	1	0	0	0	0	0	13	
7:15 AM	0	4	0	0	0	5	0	0	0	0	3	0	0	0	0	0	12	
7:20 AM	2	9	0	0	0	5	0	0	0	0	4	0	0	0	0	0	20	
7:25 AM	1	5	0	0	0	8	0	0	0	0	2	0	0	0	0	0	16	
7:30 AM	1	9	0	0	0	7	1	0	0	0	4	0	0	0	0	0	22	
7:35 AM	0	12	0	0	0	12	1	0	1	0	3	0	0	0	0	0	29	
7:40 AM	3	9	0	0	0	7	0	0	1	0	3	0	0	0	0	0	23	
7:45 AM	2	12	0	0	0	12	1	0	0	0	4	0	0	0	0	0	31	
7:50 AM	1	17	0	0	0	9	1	0	0	0	3	0	0	0	0	0	31	
7:55 AM	3	10	0	0	0	12	0	0	0	0	4	0	0	0	0	0	29	254
8:00 AM	2	16	0	0	0	10	0	0	0	0	5	0	0	0	0	0	33	277
8:05 AM	3	12	0	0	0	15	0	0	0	0	3	0	0	0	0	0	33	292
8:10 AM	2	23	0	0	0	14	0	0	0	0	6	0	0	0	0	0	45	324
8:15 AM	2	13	0	0	0	22	0	0	0	0	4	0	0	0	0	0	41	353
8:20 AM	12	24	0	0	0	25	0	0	0	0	5	0	0	0	0	0	66	399
8:25 AM	2	10	0	0	0	17	0	0	1	0	7	0	0	0	0	0	37	420
8:30 AM	6	20	0	0	0	11	0	0	0	0	3	0	0	0	0	0	40	438
8:35 AM	2	15	0	0	0	19	0	0	0	0	5	0	0	0	0	0	41	450
8:40 AM	4	14	0	0	0	8	0	0	0	0	2	0	0	0	0	0	28	455
8:45 AM	3	13	0	0	0	10	0	0	0	0	6	0	0	0	0	0	32	456
8:50 AM	2	13	0	0	0	15	0	0	0	0	1	0	0	0	0	0	31	456
8:55 AM	2	10	0	0	0	9	0	0	0	0	5	0	0	0	0	0	26	453
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	64	240	0	0	0	244	0	0	0	0	60	0	0	0	0	0	608	
Heavy Trucks	4	8	0	0	0	8	0	0	0	0	0	0	0	0	0	0	20	
Pedestrians		0				0				0				0			0	
Bicycles	1	3	0		0	3	0		0	0	1		0	0	0		8	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Adeline St -- Lowell St
CITY/STATE: Oakland, CA

QC JOB #: 10602310
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:10 PM -- 5:25 PM



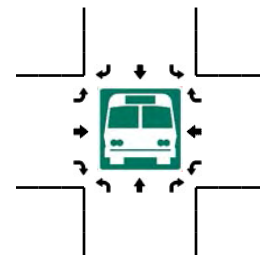
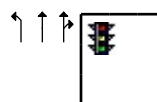
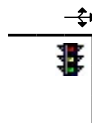
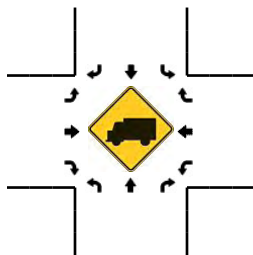
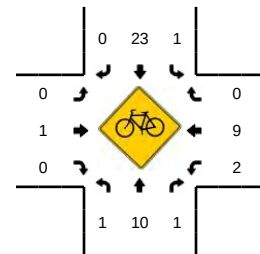
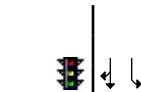
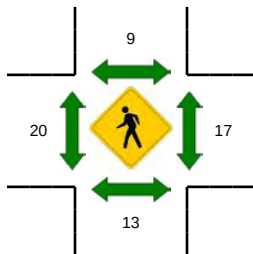
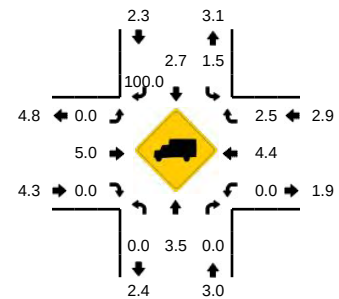
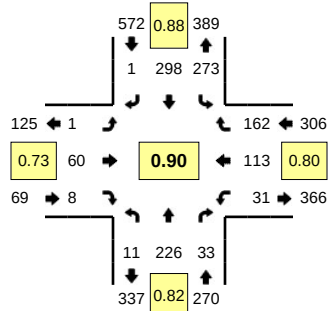
5-Min Count Period Beginning At	Adeline St (Northbound)				Adeline St (Southbound)				Lowell St (Eastbound)				Lowell St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	12	0	0	0	17	0	0	0	0	1	0	0	0	0	0	32	478
4:05 PM	4	17	0	0	0	11	0	0	0	0	5	0	0	0	0	0	37	
4:10 PM	5	20	0	0	0	8	0	0	0	0	1	0	0	0	0	0	34	
4:15 PM	3	21	0	0	0	14	1	0	0	0	2	0	0	0	0	0	41	
4:20 PM	4	19	0	0	0	10	0	0	0	0	0	0	0	0	0	0	33	
4:25 PM	1	21	0	0	0	15	0	0	0	0	5	0	0	0	0	0	42	
4:30 PM	1	23	0	0	0	18	2	0	0	0	5	0	0	0	0	0	49	
4:35 PM	3	28	0	0	0	7	0	0	0	0	4	0	0	0	0	0	42	
4:40 PM	2	23	0	0	0	17	0	0	0	0	5	0	0	0	0	0	47	
4:45 PM	8	19	0	0	0	19	0	0	0	0	5	0	0	0	0	0	51	
4:50 PM	2	15	0	0	0	9	0	0	0	0	7	0	0	0	0	0	33	530
4:55 PM	4	14	0	0	0	15	1	0	0	0	3	0	0	0	0	0	37	
5:00 PM	13	19	0	0	0	15	0	0	0	0	7	0	0	0	0	0	54	
5:05 PM	8	19	0	0	0	13	0	0	0	0	4	0	0	0	0	0	44	
5:10 PM	6	30	0	0	0	18	0	0	0	0	3	0	0	0	0	0	57	
5:15 PM	3	23	0	0	0	17	0	0	0	0	9	0	0	0	0	0	52	
5:20 PM	11	22	0	0	0	7	0	0	0	0	9	0	0	0	0	0	49	
5:25 PM	7	21	0	0	0	13	0	0	0	0	4	0	0	0	0	0	45	
5:30 PM	8	25	0	0	0	12	0	0	0	0	5	0	0	0	0	0	50	
5:35 PM	4	22	0	0	0	10	1	0	0	0	0	0	0	0	0	0	37	
5:40 PM	10	19	0	0	0	21	0	0	0	0	4	0	0	0	0	0	54	563
5:45 PM	5	24	0	0	0	14	0	0	0	0	10	0	0	0	0	0	53	
5:50 PM	8	15	0	0	0	14	0	0	0	0	7	0	0	0	0	0	44	
5:55 PM	4	24	0	0	0	23	0	0	0	0	3	0	0	0	0	0	54	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	80	300	0	0	0	168	0	0	0	0	84	0	0	0	0	0	632	
Heavy Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Pedestrians		0				8				16				0			24	
Bicycles	2	2	0		0	1	0		0	0	1		0	0	0		6	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- 55th St
CITY/STATE: Oakland, CA

QC JOB #: 10602311
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM



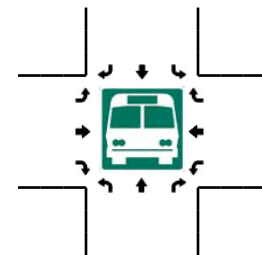
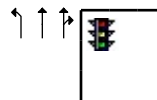
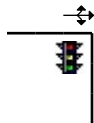
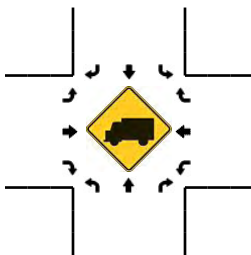
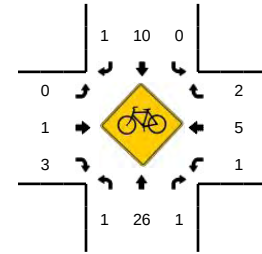
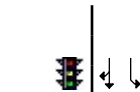
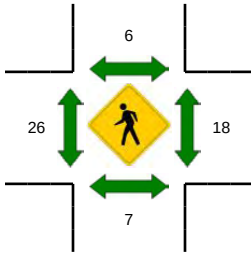
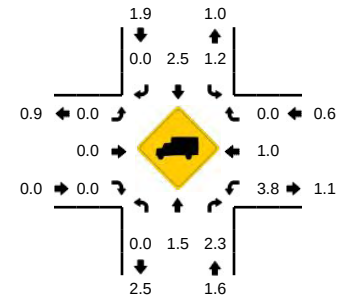
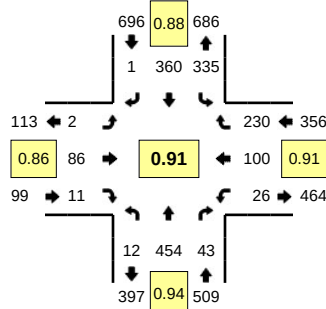
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				55th St (Eastbound)				55th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	6	1	0	10	9	0	0	0	2	0	0	2	2	4	0	36	
7:05 AM	0	3	2	0	22	11	0	0	0	3	0	0	0	4	3	0	48	
7:10 AM	0	3	3	0	12	11	1	0	0	0	0	0	0	0	3	0	33	
7:15 AM	0	8	2	0	11	9	0	0	0	3	1	0	0	3	2	0	39	
7:20 AM	0	7	0	0	17	12	0	0	0	3	1	0	0	3	8	0	51	
7:25 AM	0	9	1	0	10	15	0	0	0	2	0	0	1	3	8	0	49	
7:30 AM	0	12	1	0	11	6	0	0	0	4	0	0	1	5	9	0	49	
7:35 AM	0	14	2	0	27	7	0	0	0	3	1	0	1	5	11	0	71	
7:40 AM	0	19	1	0	12	19	0	0	0	2	0	0	1	0	12	0	66	
7:45 AM	1	21	2	0	33	18	0	0	0	4	0	0	1	8	14	0	102	
7:50 AM	2	20	0	0	28	21	0	0	0	6	2	0	1	8	15	0	103	
7:55 AM	2	17	4	0	28	26	0	0	0	5	3	0	1	7	5	0	98	745
8:00 AM	1	12	1	0	26	30	0	0	1	2	0	0	0	10	13	0	96	805
8:05 AM	1	18	2	0	26	30	0	0	0	5	1	0	2	9	7	0	101	858
8:10 AM	1	13	3	0	24	32	0	0	0	4	0	0	4	8	7	0	96	921
8:15 AM	1	23	3	0	26	23	1	0	0	4	1	0	3	12	13	0	110	992
8:20 AM	0	25	1	0	26	23	0	0	0	8	0	0	3	17	14	0	117	1058
8:25 AM	1	25	3	0	20	25	0	0	0	8	2	0	4	10	13	0	111	1120
8:30 AM	2	13	3	0	16	20	0	0	0	7	0	0	5	10	20	0	96	1167
8:35 AM	1	16	6	0	19	23	0	0	0	1	0	0	3	5	11	0	85	1181
8:40 AM	1	13	3	0	26	20	0	0	0	4	3	0	0	10	14	0	94	1209
8:45 AM	2	16	0	0	17	15	0	0	0	5	0	0	2	4	13	0	74	1181
8:50 AM	0	26	2	0	19	30	0	0	0	9	0	0	3	14	17	0	120	1198
8:55 AM	0	26	6	0	28	27	0	0	0	3	1	0	2	4	20	0	117	1217
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	8	292	28	0	288	284	4	0	0	80	12	0	40	156	160	0	1352	
Heavy Trucks	0	12	0	0	4	12	4	0	0	4	0	0	0	8	0	0	44	
Pedestrians		24				16				44				16			100	
Bicycles	0	2	0	0	0	4	0	0	0	1	0	0	0	6	0	0	13	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Market St -- 55th St
CITY/STATE: Oakland, CA

QC JOB #: 10602312
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:05 PM -- 5:20 PM



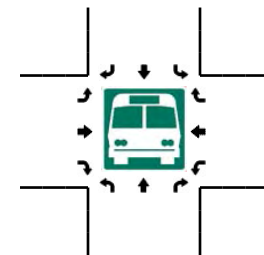
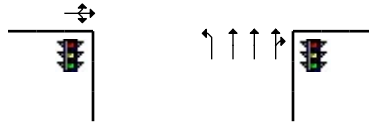
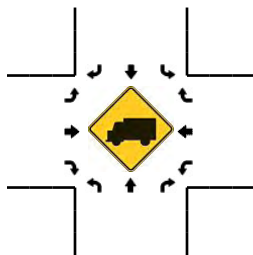
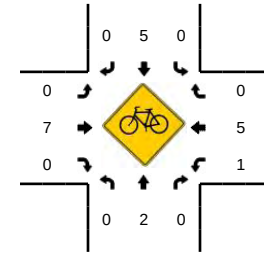
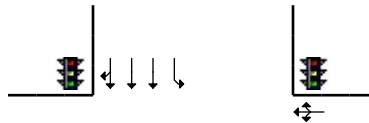
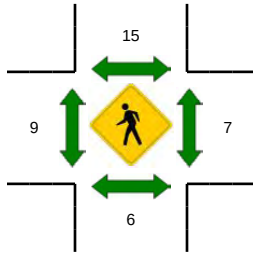
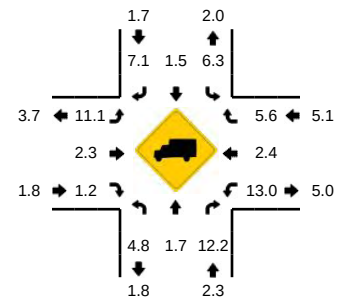
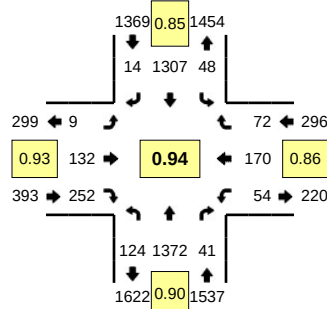
5-Min Count Period Beginning At	Market St (Northbound)				Market St (Southbound)				55th St (Eastbound)				55th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	28	1	0	21	18	1	0	0	9	0	0	0	4	11	0	95	
4:05 PM	0	25	2	0	22	15	1	0	0	4	0	0	2	8	14	0	93	
4:10 PM	1	32	4	0	25	17	0	0	0	4	0	0	2	7	13	0	105	
4:15 PM	1	25	1	0	22	24	0	0	0	10	0	0	2	9	13	0	107	
4:20 PM	0	16	3	0	5	13	1	0	1	6	0	0	1	3	16	0	65	
4:25 PM	0	34	3	0	29	20	0	0	1	7	0	0	2	4	16	0	116	
4:30 PM	1	35	3	0	23	16	2	0	1	6	1	0	0	8	13	0	109	
4:35 PM	0	27	4	0	24	26	0	0	0	4	1	0	2	7	20	0	115	
4:40 PM	1	39	0	0	24	22	0	0	0	7	2	0	2	14	10	0	121	
4:45 PM	0	37	2	0	31	32	1	0	0	11	1	0	1	12	11	0	139	
4:50 PM	1	31	2	0	28	20	0	0	0	6	1	0	3	4	21	0	117	
4:55 PM	0	32	2	0	18	23	0	0	0	6	0	0	0	7	18	0	106	1288
5:00 PM	2	34	4	0	27	19	0	0	0	5	3	0	2	4	17	0	117	1310
5:05 PM	0	42	4	0	30	31	0	0	0	7	1	0	3	6	22	0	146	1363
5:10 PM	0	43	0	0	34	35	0	0	0	6	1	0	4	10	18	0	151	1409
5:15 PM	1	41	1	0	30	38	0	0	0	11	2	0	1	11	23	0	159	1461
5:20 PM	2	42	5	0	28	26	0	0	0	6	0	0	2	8	21	0	140	1536
5:25 PM	2	34	6	0	26	33	0	0	0	8	0	0	2	7	14	0	132	1552
5:30 PM	0	32	2	0	14	19	0	0	1	11	1	0	2	7	21	0	110	1553
5:35 PM	2	38	5	0	33	42	0	0	0	9	1	0	2	7	21	0	160	1598
5:40 PM	1	36	2	0	24	36	0	0	0	4	0	0	1	7	23	0	134	1611
5:45 PM	1	45	6	0	30	29	0	0	0	4	0	0	2	9	18	0	144	1616
5:50 PM	0	27	4	0	27	26	0	0	0	8	0	0	4	11	15	0	122	1621
5:55 PM	1	40	4	0	32	26	1	0	1	7	2	0	1	13	17	0	145	1660
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	4	504	20	0	376	416	0	0	0	96	16	0	32	108	252	0	1824	
Heavy Trucks	0	12	4		0	16	0		0	0	0		0	0	0		32	
Pedestrians		16				8				36				16			76	
Bicycles	0	7	0		0	4	0		0	0	0		0	1	0		12	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Martin Luther King Jr. Way -- 55th St
CITY/STATE: Oakland, CA

QC JOB #: 10602313
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM



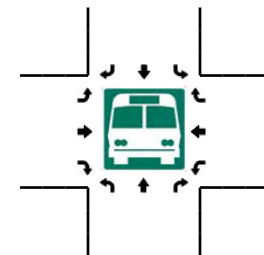
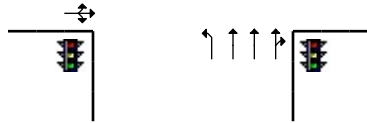
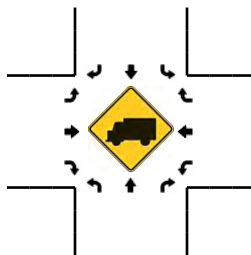
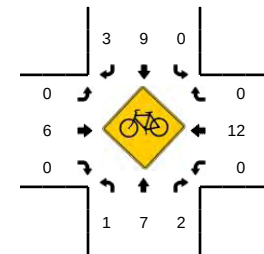
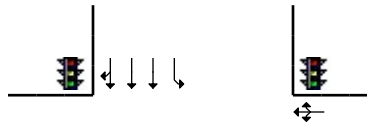
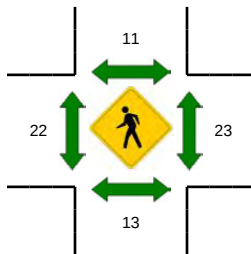
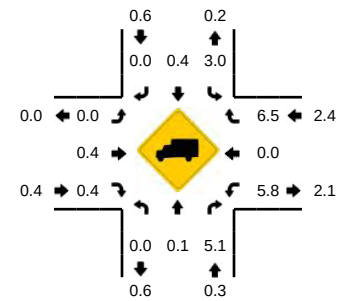
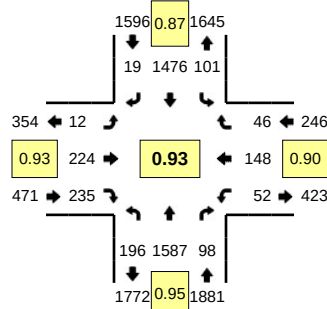
5-Min Count Period Beginning At	Martin Luther King Jr. Way (Northbound)				Martin Luther King Jr. Way (Southbound)				55th St (Eastbound)				55th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	4	67	5	0	1	36	0	0	0	4	10	0	4	3	2	0	136	
7:05 AM	2	38	4	0	6	44	0	0	0	3	21	0	3	5	2	0	128	
7:10 AM	1	46	2	0	3	48	0	0	1	5	11	0	1	3	0	0	121	
7:15 AM	5	55	2	0	3	49	1	1	0	5	10	0	5	2	1	0	139	
7:20 AM	8	62	1	2	1	63	0	0	0	5	14	0	5	5	3	0	169	
7:25 AM	7	71	2	0	1	68	1	0	0	2	13	0	2	6	8	0	181	
7:30 AM	9	92	4	2	4	71	1	0	0	4	10	0	3	4	1	0	205	
7:35 AM	4	91	2	0	1	78	1	0	1	14	22	0	2	8	4	0	228	
7:40 AM	9	99	4	1	5	97	0	0	0	2	12	0	3	7	3	0	242	
7:45 AM	11	103	2	0	2	82	0	2	1	9	29	0	5	16	2	0	264	
7:50 AM	11	91	4	1	2	75	0	0	0	9	24	0	9	10	5	0	241	
7:55 AM	8	79	5	0	3	88	1	0	3	9	26	0	1	14	4	0	241	2295
8:00 AM	10	121	4	0	2	111	1	1	0	2	27	0	4	9	6	0	298	2457
8:05 AM	1	91	1	0	7	81	0	0	1	11	24	0	1	14	8	0	240	2569
8:10 AM	8	110	3	0	2	108	2	0	0	9	21	0	4	17	3	0	287	2735
8:15 AM	7	130	3	1	4	138	3	0	0	14	26	0	4	13	3	0	346	2942
8:20 AM	13	94	2	2	3	114	1	0	1	13	23	0	2	21	8	0	297	3070
8:25 AM	10	105	3	0	6	133	1	0	0	17	16	0	6	16	3	0	316	3205
8:30 AM	12	116	6	0	5	105	1	0	0	8	24	0	7	19	4	0	307	3307
8:35 AM	9	111	4	3	5	93	0	0	1	11	17	0	3	11	7	0	275	3354
8:40 AM	11	120	6	0	3	108	1	0	0	13	19	0	9	12	5	0	307	3419
8:45 AM	7	131	2	0	4	95	1	0	4	8	19	0	1	14	9	0	295	3450
8:50 AM	19	124	4	2	4	126	2	0	1	11	13	0	5	10	5	0	326	3535
8:55 AM	8	119	3	1	2	95	1	0	1	15	23	0	8	14	11	0	301	3595
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	120	1316	32	12	52	1540	20	0	4	176	260	0	48	200	56	0	3836	
Heavy Trucks	0	36	4		0	16	0		0	8	4		4	8	4		84	
Pedestrians		4				44				24				8			80	
Bicycles	0	0	0		0	0	0		0	4	0		0	4	0		8	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Martin Luther King Jr. Way -- 55th St
CITY/STATE: Oakland, CA

QC JOB #: 10602314
DATE: 4/13/2011

Peak-Hour: 5:00 PM -- 6:00 PM
Peak 15-Min: 5:35 PM -- 5:50 PM



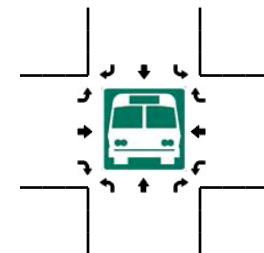
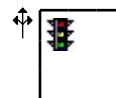
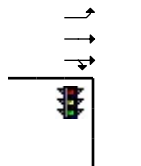
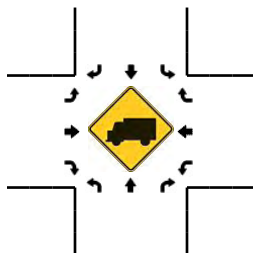
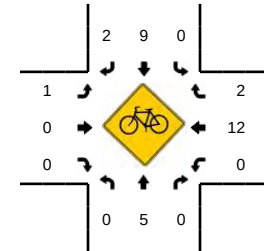
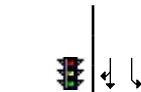
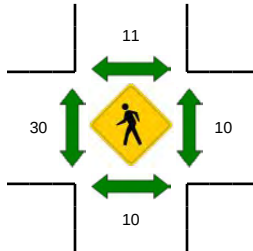
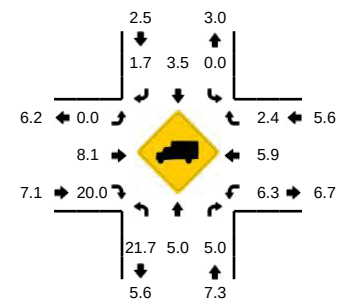
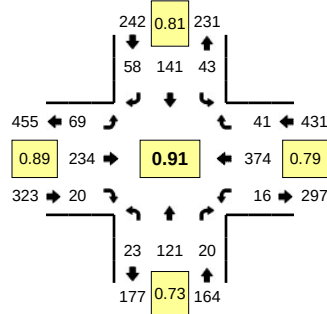
5-Min Count Period Beginning At	Martin Luther King Jr. Way (Northbound)				Martin Luther King Jr. Way (Southbound)				55th St (Eastbound)				55th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	11	69	4	3	6	87	1	0	2	16	22	0	4	8	4	0	237	
4:05 PM	17	96	5	1	8	84	1	0	0	7	19	0	3	7	6	0	254	
4:10 PM	16	91	2	1	8	102	2	0	2	13	18	0	4	9	6	0	274	
4:15 PM	15	105	4	0	2	97	1	0	4	13	15	0	2	8	7	0	273	
4:20 PM	14	129	8	0	15	107	3	0	0	8	0	0	4	2	4	0	294	
4:25 PM	15	123	8	1	8	88	0	0	0	7	25	0	4	9	7	0	295	
4:30 PM	16	100	7	2	11	77	6	0	0	12	23	0	6	11	7	0	278	
4:35 PM	15	115	4	1	8	116	4	0	2	11	18	0	4	9	6	0	313	
4:40 PM	12	135	9	4	5	85	3	0	0	9	19	0	5	18	3	0	307	
4:45 PM	14	134	9	1	6	136	2	0	0	14	15	0	6	5	4	0	346	
4:50 PM	14	124	5	2	6	127	3	0	0	19	19	0	1	7	4	0	331	
4:55 PM	17	110	3	1	7	85	3	0	2	15	20	0	4	6	6	0	279	3481
5:00 PM	15	137	6	1	6	114	0	0	1	15	30	0	5	8	2	0	340	3584
5:05 PM	15	115	13	0	8	104	1	0	0	22	18	0	4	9	4	0	313	3643
5:10 PM	18	132	10	1	7	124	1	0	3	15	17	0	5	9	4	0	346	3715
5:15 PM	19	127	13	2	11	123	1	0	1	19	29	0	3	13	3	0	364	3806
5:20 PM	11	144	12	0	7	155	1	0	2	16	18	0	5	12	2	0	385	3897
5:25 PM	17	140	6	1	7	99	2	0	1	23	18	0	6	12	5	0	337	3939
5:30 PM	8	121	8	0	13	120	1	0	1	18	11	0	6	14	5	0	326	3987
5:35 PM	19	154	4	0	8	146	4	0	0	23	16	0	2	13	4	0	393	4067
5:40 PM	20	139	7	1	6	135	2	0	2	20	15	0	1	16	7	0	371	4131
5:45 PM	15	132	6	0	11	148	1	0	0	16	16	0	4	6	6	0	361	4146
5:50 PM	17	139	6	1	8	106	3	0	1	16	24	0	3	23	1	0	348	4163
5:55 PM	13	107	7	2	9	102	2	0	0	21	23	0	8	13	3	0	310	4194
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	216	1700	68	4	100	1716	28	0	8	236	188	0	28	140	68	0	4500	
Heavy Trucks	0	0	4		4	12	0		0	0	0		0	0	0		20	
Pedestrians	0	0	0		4	4			12	12			20	20			36	
Bicycles	0	0	0		0	4	1		0	2	0		0	6	0		13	
Railroad																		
Stopped Buses																		

Comments:

LOCATION: Adeline St -- 40th St
CITY/STATE: Emeryville, CA

QC JOB #: 10602318
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:20 AM -- 8:35 AM



5-Min Count Period Beginning At	Adeline St (Northbound)				Adeline St (Southbound)				40th St (Eastbound)				40th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	3	1	0	1	3	2	0	2	18	0	0	0	8	0	0	38	
7:05 AM	2	4	0	0	2	3	2	0	1	9	1	0	0	14	0	0	38	
7:10 AM	3	3	0	0	1	4	1	0	2	9	1	0	0	11	2	0	37	
7:15 AM	1	2	1	0	3	8	2	0	3	19	0	0	1	13	0	0	53	
7:20 AM	2	5	1	0	2	5	1	0	2	23	2	0	0	19	1	0	63	
7:25 AM	3	5	1	0	3	4	1	0	0	17	1	0	1	11	0	0	47	
7:30 AM	0	4	2	0	3	7	3	0	5	11	4	0	0	12	2	0	53	
7:35 AM	4	4	0	0	0	9	3	0	2	21	2	0	0	22	1	0	68	
7:40 AM	0	4	0	0	3	3	5	0	4	18	1	0	1	26	4	0	69	
7:45 AM	2	6	2	0	4	8	1	0	2	18	6	0	1	15	3	0	68	
7:50 AM	0	14	0	0	1	5	6	0	7	18	4	0	1	14	0	0	70	
7:55 AM	1	5	1	0	2	11	8	0	7	18	1	0	0	38	2	0	94	698
8:00 AM	5	17	0	0	6	9	2	0	1	10	1	0	0	22	4	0	77	737
8:05 AM	0	10	6	0	2	11	5	0	7	18	3	0	0	20	5	0	87	786
8:10 AM	3	16	1	0	2	14	6	0	8	30	1	0	1	23	4	0	109	858
8:15 AM	0	12	4	0	4	18	4	0	8	14	1	0	5	19	3	0	92	897
8:20 AM	2	12	1	0	3	12	7	0	5	22	3	0	1	43	4	0	115	949
8:25 AM	3	10	1	0	7	17	4	0	8	18	2	0	0	19	2	0	91	993
8:30 AM	0	14	2	0	4	13	4	0	5	24	1	0	0	40	6	0	113	1053
8:35 AM	3	4	0	0	4	12	4	0	9	17	2	0	2	35	2	0	94	1079
8:40 AM	0	9	3	0	4	11	5	0	5	22	0	0	2	31	2	0	94	1104
8:45 AM	0	5	2	0	1	9	6	0	5	18	2	0	0	32	1	0	81	1117
8:50 AM	2	8	0	0	4	5	7	0	6	18	1	0	1	45	6	0	103	1150
8:55 AM	5	4	0	0	2	10	4	0	2	23	3	0	4	45	2	0	104	1160
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	20	144	16	0	56	168	60	0	72	256	24	0	4	408	48	0	1276	
Heavy Trucks	8	4	0	0	0	4	0	0	0	12	4	0	0	24	0	0	56	
Pedestrians		8				8				32				12			60	
Bicycles	0	1	0		0	1	1		1	0	0		0	3	0		7	
Railroad																		
Stopped Buses																		

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-031 ADELINE-40TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 1

Groups Printed- Unshifted

	ADELINE ST. Southbound					40 TH ST. Westbound					ADELINE ST. Northbound					40 TH ST. Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
16:00	18	24	21	3	63	1	105	1	2	107	0	34	6	8	40	26	120	6	2	152	15	362	377
16:15	2	24	18	2	44	1	88	13	2	102	1	32	6	14	39	17	130	7	1	154	19	339	358
16:30	11	24	20	5	55	8	95	10	6	113	5	30	2	7	37	21	144	5	0	170	18	375	393
16:45	10	30	13	2	53	4	109	11	1	124	3	38	7	12	48	22	142	8	3	172	18	397	415
Total	41	102	72	12	215	14	397	35	11	446	9	134	21	41	164	86	536	26	6	648	70	1473	1543
17:00	12	32	17	9	61	9	96	11	6	116	6	30	7	10	43	29	149	9	6	187	31	407	438
17:15	9	45	17	2	71	9	112	12	0	133	5	37	3	6	45	24	120	8	5	152	13	401	414
17:30	15	25	20	6	60	7	88	8	5	103	2	38	13	6	53	24	145	6	2	175	19	391	410
17:45	12	22	8	3	42	4	95	13	5	112	5	59	9	5	73	14	194	7	1	215	14	442	456
Total	48	124	62	20	234	29	391	44	16	464	18	164	32	27	214	91	608	30	14	729	77	1641	1718
Grand Total	89	226	134	32	449	43	788	79	27	910	27	298	53	68	378	177	1144	56	20	1377	147	3114	3261
Apprch %	19.8	50.3	29.8			4.7	86.6	8.7			7.1	78.8	14			12.9	83.1	4.1					
Total %	2.9	7.3	4.3		14.4	1.4	25.3	2.5		29.2	0.9	9.6	1.7		12.1	5.7	36.7	1.8		44.2	4.5	95.5	

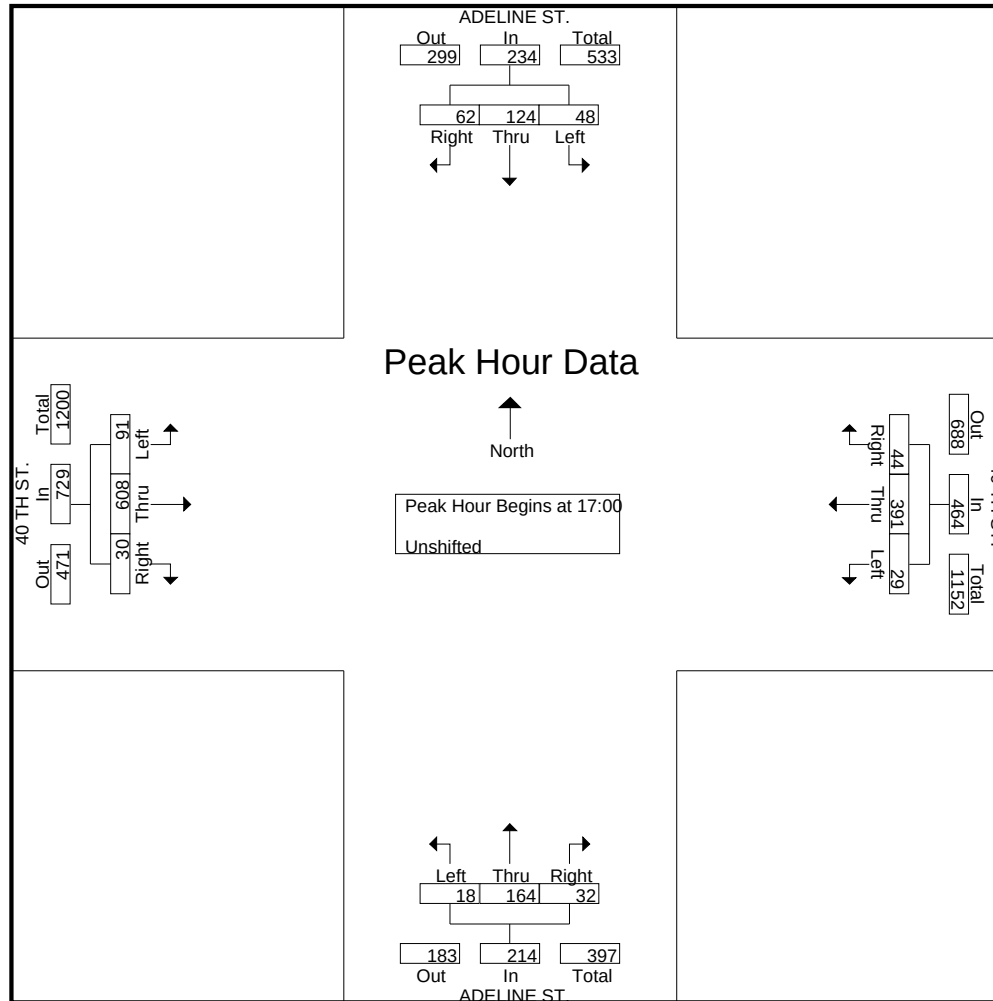
	ADELINE ST. Southbound				40 TH ST. Westbound				ADELINE ST. Northbound				40 TH ST. Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	12	32	17	61	9	96	11	116	6	30	7	43	29	149	9	187	407
17:15	9	45	17	71	9	112	12	133	5	37	3	45	24	120	8	152	401
17:30	15	25	20	60	7	88	8	103	2	38	13	53	24	145	6	175	391
17:45	12	22	8	42	4	95	13	112	5	59	9	73	14	194	7	215	442
Total Volume	48	124	62	234	29	391	44	464	18	164	32	214	91	608	30	729	1641
% App. Total	20.5	53	26.5		6.2	84.3	9.5		8.4	76.6	15		12.5	83.4	4.1		
PHF	.800	.689	.775	.824	.806	.873	.846	.872	.750	.695	.615	.733	.784	.784	.833	.848	.928

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

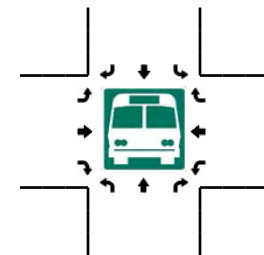
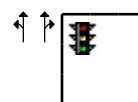
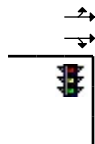
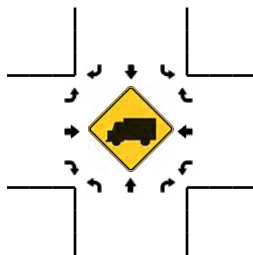
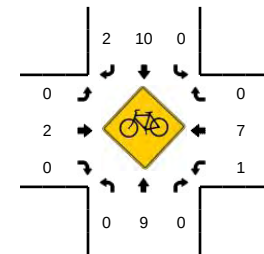
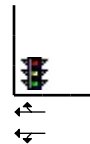
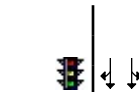
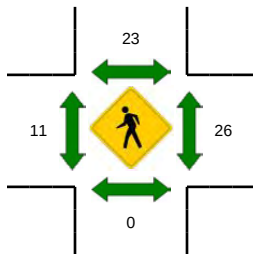
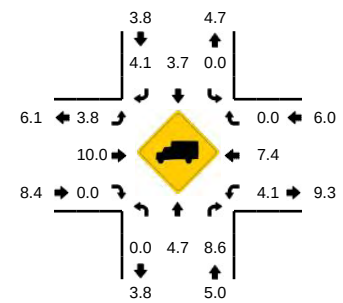
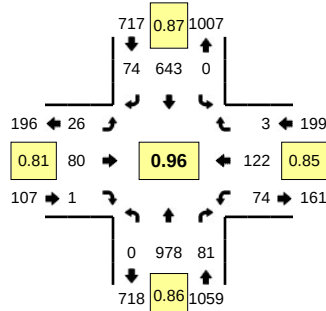
File Name : 10-7189-031 ADELINE-40TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 2



LOCATION: San Pablo Ave -- Adeline St
CITY/STATE: Emeryville, CA

QC JOB #: 10602319
DATE: 4/14/2011

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



5-Min Count Period Beginning At	San Pablo Ave (Northbound)				San Pablo Ave (Southbound)				Adeline St (Eastbound)				Adeline St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	33	4	0	0	22	2	0	0	3	0	0	0	2	0	0	66	
7:05 AM	0	35	4	0	0	38	2	0	0	2	0	0	1	7	0	0	89	
7:10 AM	0	48	7	0	0	33	2	0	3	1	0	0	1	4	0	0	99	
7:15 AM	0	55	2	0	0	25	3	0	2	3	0	0	5	10	0	0	105	
7:20 AM	0	46	3	0	0	25	1	0	4	4	1	0	2	7	0	0	93	
7:25 AM	0	60	9	0	0	34	2	0	0	4	0	0	0	6	0	0	115	
7:30 AM	0	57	6	0	0	35	1	0	3	4	0	0	5	5	0	0	116	
7:35 AM	0	61	7	0	0	36	3	0	1	4	0	0	4	10	0	0	126	
7:40 AM	0	73	8	0	0	43	4	0	1	4	0	0	3	9	0	0	145	
7:45 AM	0	89	6	0	0	42	1	0	4	5	0	0	0	5	1	0	153	
7:50 AM	0	91	6	0	0	49	4	0	4	12	0	0	2	10	0	0	178	
7:55 AM	0	82	5	0	0	52	2	0	2	5	0	0	9	12	2	0	171	1456
8:00 AM	0	73	7	0	0	49	4	0	3	7	0	0	6	14	0	0	163	1553
8:05 AM	0	81	11	0	0	48	6	0	3	11	0	0	5	8	0	0	173	1637
8:10 AM	0	67	10	0	0	53	8	0	5	7	1	0	8	11	1	0	171	1709
8:15 AM	0	55	7	0	0	63	6	0	1	10	0	0	15	8	1	0	166	1770
8:20 AM	0	87	12	0	0	61	9	0	1	3	0	0	3	14	0	0	190	1867
8:25 AM	0	91	6	0	0	47	2	0	4	8	0	0	4	13	1	0	176	1928
8:30 AM	0	71	6	0	0	31	7	0	2	9	0	0	9	14	0	0	149	1961
8:35 AM	0	75	2	0	0	66	8	0	3	6	0	0	4	10	0	0	174	2009
8:40 AM	0	83	6	0	0	64	7	0	1	6	0	0	4	6	0	0	177	2041
8:45 AM	0	93	2	0	0	56	6	0	2	5	0	0	4	5	0	0	173	2061
8:50 AM	0	100	6	0	0	46	7	0	1	7	0	0	6	11	0	0	184	2067
8:55 AM	0	102	6	0	0	59	4	0	0	1	0	0	6	8	0	0	186	2082
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	1180	56	0	0	644	68	0	12	52	0	0	64	96	0	0	2172	
Heavy Trucks	0	52	8	0	0	32	0	0	4	8	0	0	8	8	0	0	120	
Pedestrians	0	0	0	0	0	20	0	0	0	4	0	0	0	44	0	0	68	
Bicycles	0	4	0	0	0	0	1	0	0	0	0	0	1	2	0	0	8	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments: At intersection 12, only the four Adeline/San Pablo legs need to be counted. We don't need to count any of the ramps coming from or going to W

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-036 SAN PABLO-ADELINE
Site Code : 00000000
Start Date : 5/13/2010
Page No : 1

Groups Printed- Unshifted

	SAN PABLO AVE. Southbound					ADELINE ST. Westbound					SAN PABLO AVE. Northbound					ADELINE ST. Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
16:00	0	282	17	10	299	18	13	5	17	36	0	210	19	0	229	14	23	2	10	39	37	603	640
16:15	0	260	19	4	279	14	20	3	6	37	0	232	18	0	250	20	28	3	4	51	14	617	631
16:30	0	242	17	2	259	11	26	2	5	39	0	246	17	0	263	16	27	1	2	44	9	605	614
16:45	0	258	21	3	279	18	20	2	6	40	0	221	28	0	249	21	20	1	5	42	14	610	624
Total	0	1042	74	19	1116	61	79	12	34	152	0	909	82	0	991	71	98	7	21	176	74	2435	2509
17:00	0	279	25	7	304	11	36	5	3	52	0	259	16	0	275	14	24	4	3	42	13	673	686
17:15	0	285	20	4	305	19	38	3	2	60	0	288	33	0	321	20	21	2	1	43	7	729	736
17:30	0	314	30	3	344	11	21	2	3	34	0	273	22	0	295	19	38	4	12	61	18	734	752
17:45	0	298	22	5	320	12	21	2	2	35	0	263	24	0	287	11	44	2	2	57	9	699	708
Total	0	1176	97	19	1273	53	116	12	10	181	0	1083	95	0	1178	64	127	12	18	203	47	2835	2882
Grand Total	0	2218	171	38	2389	114	195	24	44	333	0	1992	177	0	2169	135	225	19	39	379	121	5270	5391
Apprch %	0	92.8	7.2			34.2	58.6	7.2			0	91.8	8.2			35.6	59.4	5					
Total %	0	42.1	3.2		45.3	2.2	3.7	0.5		6.3	0	37.8	3.4		41.2	2.6	4.3	0.4		7.2	2.2	97.8	

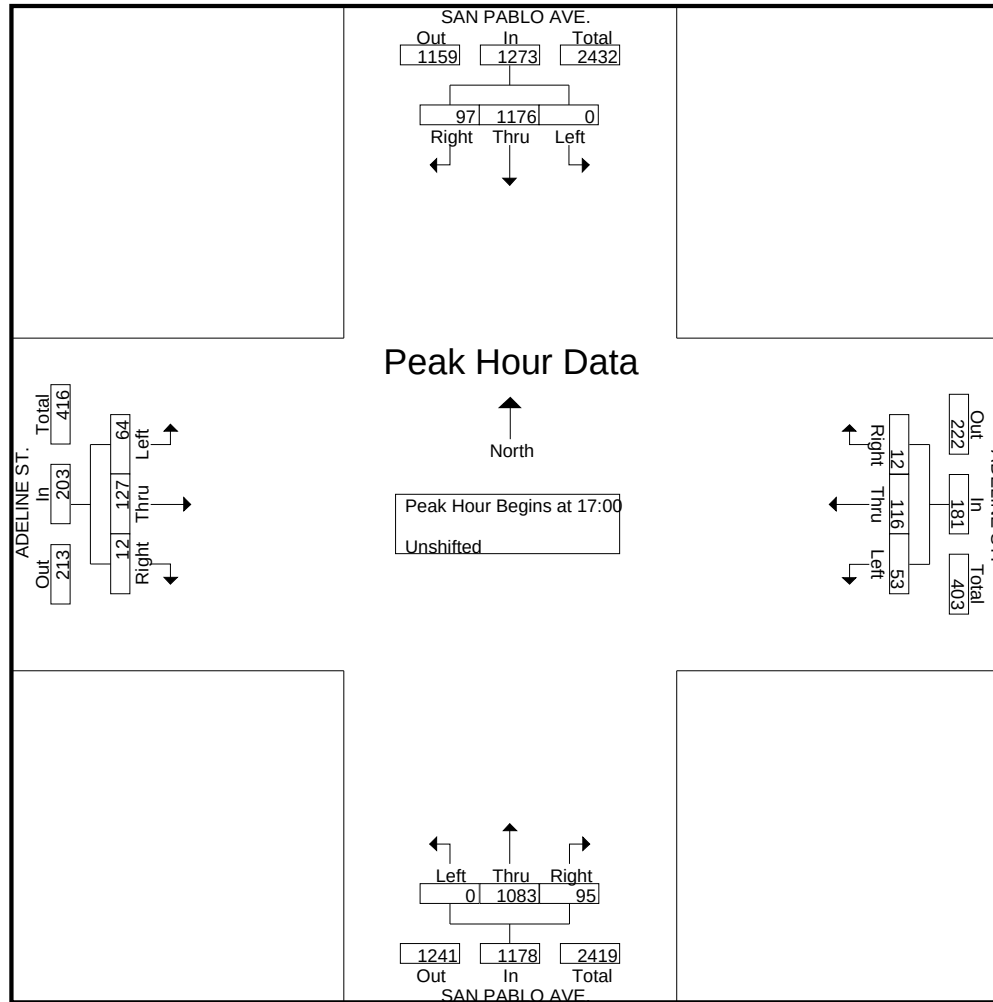
	SAN PABLO AVE. Southbound				ADELINE ST. Westbound				SAN PABLO AVE. Northbound				ADELINE ST. Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	279	25	304	11	36	5	52	0	259	16	275	14	24	4	42	673
17:15	0	285	20	305	19	38	3	60	0	288	33	321	20	21	2	43	729
17:30	0	314	30	344	11	21	2	34	0	273	22	295	19	38	4	61	734
17:45	0	298	22	320	12	21	2	35	0	263	24	287	11	44	2	57	699
Total Volume	0	1176	97	1273	53	116	12	181	0	1083	95	1178	64	127	12	203	2835
% App. Total	0	92.4	7.6		29.3	64.1	6.6		0	91.9	8.1		31.5	62.6	5.9		
PHF	.000	.936	.808	.925	.697	.763	.600	.754	.000	.940	.720	.917	.800	.722	.750	.832	.966

All Traffic Data

(916) 771-8700

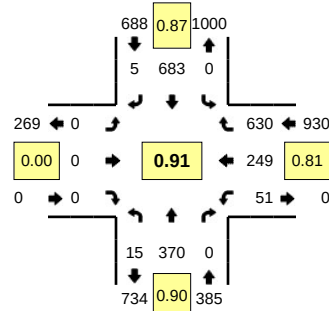
CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-036 SAN PABLO-ADELINE
Site Code : 00000000
Start Date : 5/13/2010
Page No : 2

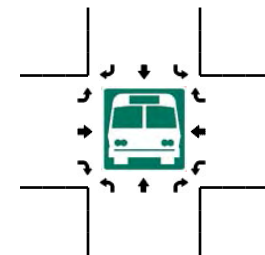
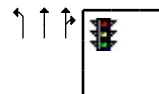
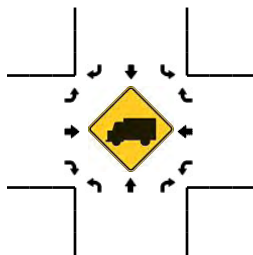
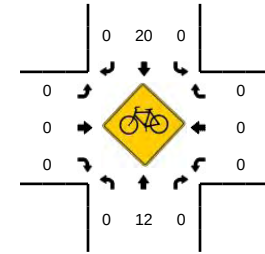
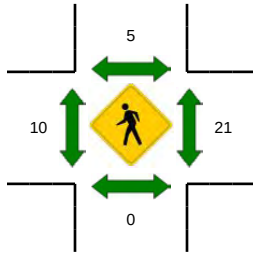
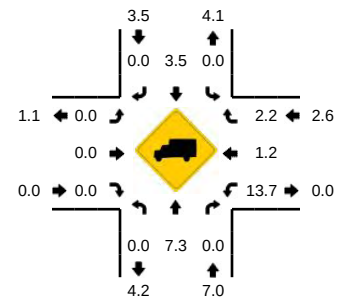


LOCATION: San Pablo Ave -- 36th Ave
CITY/STATE: Oakland, CA

QC JOB #: 10602320
DATE: 4/14/2011



Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:45 AM -- 9:00 AM



5-Min Count Period Beginning At	San Pablo Ave (Northbound)				San Pablo Ave (Southbound)				36th Ave (Eastbound)				36th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	14	0	0	0	23	0	0	0	0	0	0	1	12	21	0	71	1494
7:05 AM	3	7	0	0	0	34	0	0	0	0	0	0	3	19	29	0	95	
7:10 AM	1	23	0	0	0	33	1	0	0	0	0	0	4	12	27	0	101	
7:15 AM	1	26	0	0	0	30	0	0	0	0	0	0	4	22	46	0	129	
7:20 AM	2	14	0	0	0	24	2	0	0	0	0	0	4	17	36	0	99	
7:25 AM	2	15	0	0	0	28	0	0	0	0	0	0	4	21	44	0	114	
7:30 AM	0	19	0	0	0	37	0	0	0	0	0	0	0	11	46	0	113	
7:35 AM	2	18	0	0	0	36	0	0	0	0	0	0	9	23	52	0	140	
7:40 AM	1	38	0	0	0	46	0	0	0	0	0	0	1	13	53	0	152	
7:45 AM	2	33	0	0	0	41	1	0	0	0	0	0	3	22	47	0	149	
7:50 AM	0	34	0	0	0	57	1	0	0	0	0	0	4	25	62	0	183	1958
7:55 AM	1	26	0	0	0	45	0	0	0	0	0	0	1	20	55	0	148	
8:00 AM	2	35	0	0	0	48	0	0	0	0	0	0	4	29	52	0	170	
8:05 AM	1	31	0	0	0	54	1	0	0	0	0	0	5	14	37	0	143	
8:10 AM	0	27	0	0	0	67	0	0	0	0	0	0	3	12	41	0	150	
8:15 AM	1	30	0	0	0	67	0	0	0	0	0	0	6	20	46	0	170	
8:20 AM	3	42	0	0	0	62	1	0	0	0	0	0	5	14	48	0	175	
8:25 AM	1	29	0	0	0	51	1	0	0	0	0	0	4	26	55	0	167	
8:30 AM	0	29	0	0	0	44	0	0	0	0	0	0	2	25	46	0	146	
8:35 AM	1	21	0	0	0	58	0	0	0	0	0	0	3	21	50	0	154	
8:40 AM	2	35	0	0	0	63	0	0	0	0	0	0	6	19	51	0	176	1968
8:45 AM	1	25	0	0	0	57	1	0	0	0	0	0	2	21	69	0	176	
8:50 AM	2	38	0	0	0	47	1	0	0	0	0	0	7	30	68	0	193	
8:55 AM	1	28	0	0	0	65	0	0	0	0	0	0	4	18	67	0	183	
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
All Vehicles	16	364	0	0	0	676	8	0	0	0	0	0	52	276	816	0	2208	
Heavy Trucks	0	32	0	0	0	28	0	0	0	0	0	0	12	4	28	0	104	
Pedestrians	0	0	0	0	0	0	0	0	12	0	0	0	0	0	0	0	40	
Bicycles	0	5	0	0	0	3	0	0	0	0	0	0	0	0	0	0	8	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-037 SAN PABLO-36TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 1

Groups Printed- Unshifted

	SAN PABLO AVE. Southbound					36TH ST. Westbound					SAN PABLO AVE. Northbound					36TH ST. Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
16:00	0	259	2	2	261	14	44	89	3	147	4	137	0	0	141	0	0	0	6	0	11	549	560
16:15	0	250	2	0	252	7	44	95	2	146	6	142	0	0	148	0	0	0	0	0	2	546	548
16:30	0	253	3	0	256	14	62	79	5	155	8	178	0	0	186	0	0	0	2	0	7	597	604
16:45	0	267	0	5	267	11	71	100	6	182	4	164	0	0	168	0	0	0	10	0	21	617	638
Total	0	1029	7	7	1036	46	221	363	16	630	22	621	0	0	643	0	0	0	18	0	41	2309	2350
17:00	0	280	3	0	283	20	64	102	2	186	1	168	0	0	169	0	0	0	4	0	6	638	644
17:15	0	304	5	1	309	9	45	111	5	165	6	178	0	0	184	0	0	0	5	0	11	658	669
17:30	0	298	3	4	301	16	43	94	3	153	9	196	0	0	205	0	0	0	15	0	22	659	681
17:45	0	281	4	1	285	4	51	105	2	160	2	171	0	0	173	0	0	0	3	0	6	618	624
Total	0	1163	15	6	1178	49	203	412	12	664	18	713	0	0	731	0	0	0	27	0	45	2573	2618
Grand Total	0	2192	22	13	2214	95	424	775	28	1294	40	1334	0	0	1374	0	0	0	45	0	86	4882	4968
Apprch %	0	99	1			7.3	32.8	59.9			2.9	97.1	0			0	0	0					
Total %	0	44.9	0.5		45.4	1.9	8.7	15.9		26.5	0.8	27.3	0		28.1	0	0	0		0	1.7	98.3	

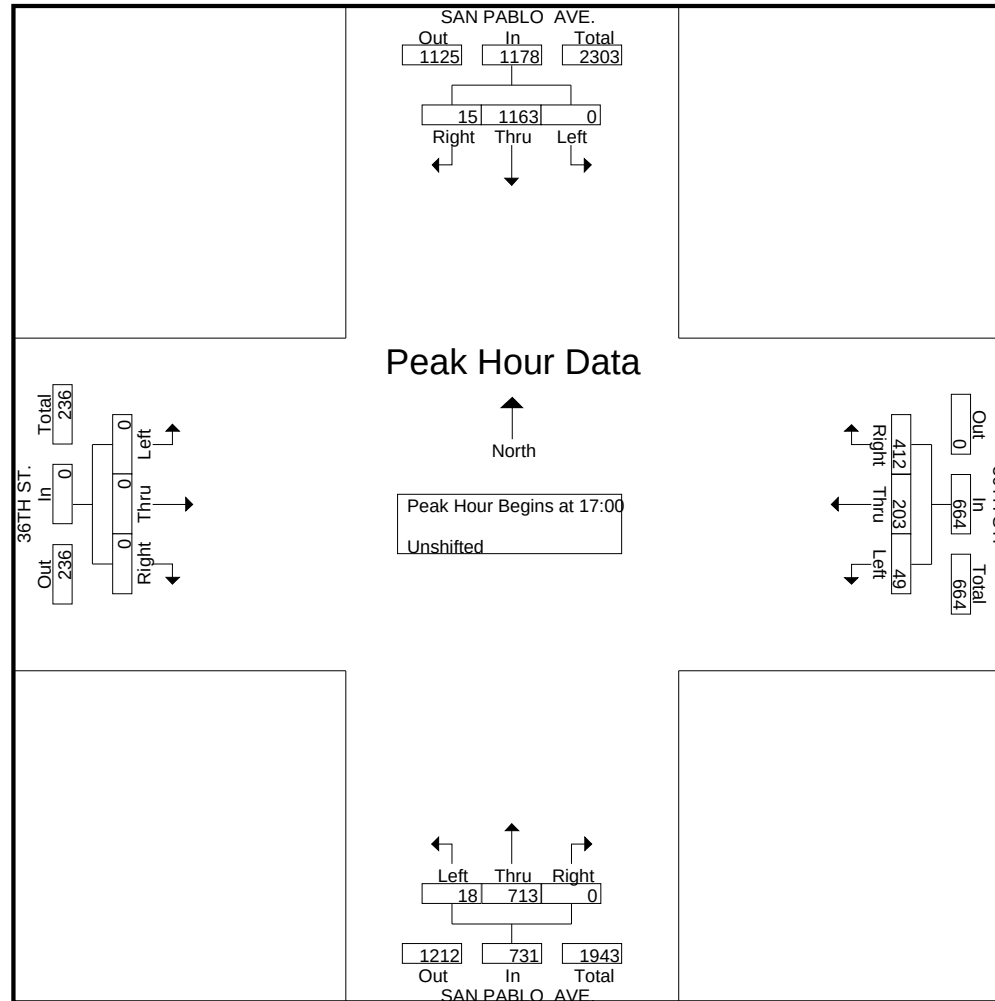
	SAN PABLO AVE. Southbound				36TH ST. Westbound				SAN PABLO AVE. Northbound				36TH ST. Eastbound				
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Int. Total
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	0	280	3	283	20	64	102	186	1	168	0	169	0	0	0	0	638
17:15	0	304	5	309	9	45	111	165	6	178	0	184	0	0	0	0	658
17:30	0	298	3	301	16	43	94	153	9	196	0	205	0	0	0	0	659
17:45	0	281	4	285	4	51	105	160	2	171	0	173	0	0	0	0	618
Total Volume	0	1163	15	1178	49	203	412	664	18	713	0	731	0	0	0	0	2573
% App. Total	0	98.7	1.3		7.4	30.6	62		2.5	97.5	0		0	0	0		
PHF	.000	.956	.750	.953	.613	.793	.928	.892	.500	.909	.000	.891	.000	.000	.000	.000	.976

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

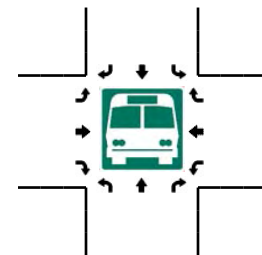
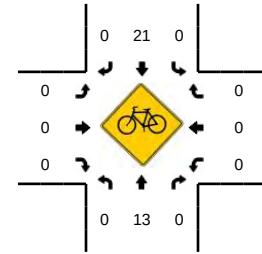
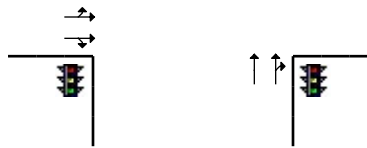
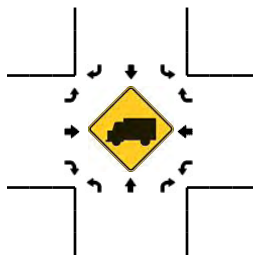
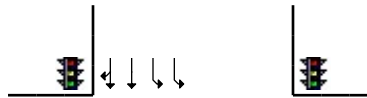
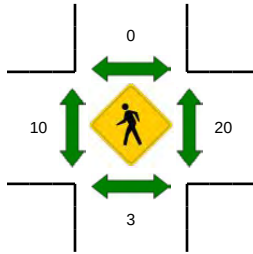
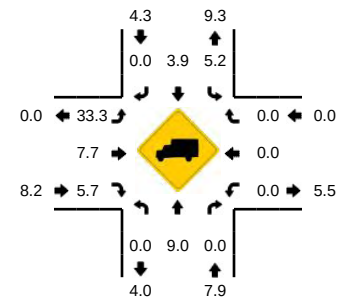
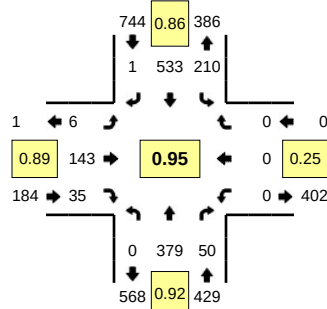
File Name : 10-7189-037 SAN PABLO-36TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 2



LOCATION: San Pablo Ave -- 35th St
CITY/STATE: Oakland, CA

QC JOB #: 10602321
DATE: 4/14/2011

Peak-Hour: 7:55 AM -- 8:55 AM
Peak 15-Min: 8:15 AM -- 8:30 AM



5-Min Count Period Beginning At	San Pablo Ave (Northbound)				San Pablo Ave (Southbound)				35th St (Eastbound)				35th St (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	13	0	0	7	23	0	0	0	7	0	0	0	0	0	0	50	
7:05 AM	0	12	4	0	10	25	0	0	0	3	1	0	0	0	0	0	55	
7:10 AM	0	19	2	0	11	24	0	0	2	6	3	0	0	0	0	0	67	
7:15 AM	0	21	1	0	15	15	0	0	1	4	3	0	0	0	0	0	60	
7:20 AM	0	23	2	0	9	21	0	0	0	5	5	0	1	0	0	0	66	
7:25 AM	0	17	1	0	18	19	0	0	0	3	1	0	0	0	0	0	59	
7:30 AM	0	21	2	0	12	20	0	0	1	14	4	0	0	0	0	0	74	
7:35 AM	0	19	2	0	20	27	0	0	0	8	3	0	0	0	0	0	79	
7:40 AM	0	37	12	0	8	36	0	0	2	13	1	0	0	0	0	0	109	
7:45 AM	0	30	4	0	18	26	0	0	1	8	2	0	0	0	0	0	89	
7:50 AM	0	27	3	0	17	38	0	0	0	4	0	0	0	0	0	0	89	
7:55 AM	0	36	3	0	19	47	0	0	1	9	3	0	0	0	0	0	118	915
8:00 AM	0	35	10	0	13	29	0	0	1	10	6	0	0	0	0	0	104	969
8:05 AM	0	29	4	0	22	39	0	0	0	13	2	0	0	0	0	0	109	1023
8:10 AM	0	28	2	0	22	49	1	0	0	10	3	0	0	0	0	0	115	1071
8:15 AM	0	33	2	0	24	59	0	0	1	10	1	0	0	0	0	0	130	1141
8:20 AM	0	38	0	0	12	38	0	0	1	17	3	0	0	0	0	0	109	1184
8:25 AM	0	34	5	0	20	48	0	0	1	6	3	0	0	0	0	0	117	1242
8:30 AM	0	26	2	0	14	36	0	0	0	18	1	0	0	0	0	0	97	1265
8:35 AM	0	22	4	0	11	55	0	0	0	10	3	0	0	0	0	0	105	1291
8:40 AM	0	32	5	0	18	43	0	1	0	21	2	0	0	0	0	0	122	1304
8:45 AM	0	25	3	0	19	38	0	0	0	10	4	0	0	0	0	0	99	1314
8:50 AM	0	41	10	0	15	52	0	0	1	9	4	0	0	0	0	0	132	1357
8:55 AM	0	27	5	0	17	41	0	0	0	18	6	0	0	0	0	0	114	1353
Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total	
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
All Vehicles	0	420	28	0	224	580	0	0	12	132	28	0	0	0	0	0	1424	
Heavy Trucks	0	44	0	0	12	28	0	0	0	20	0	0	0	0	0	0	104	
Pedestrians	0	4	0	0	0	0	0	0	0	12	0	0	0	4	0	0	20	
Bicycles	0	3	0	0	0	5	0	0	0	0	0	0	0	0	0	0	8	
Railroad	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Stopped Buses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	

Comments:

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-038 SAN PABLO-35TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 1

Groups Printed- Unshifted

	SAN PABLO AVE. Southbound					35TH ST. Westbound					SAN PABLO AVE. Northbound					35TH ST. Eastbound					Exclu. Total	Inclu. Total	Int. Total
Start Time	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total	Left	Thru	Right	Peds	App. Total			
16:00	183	90	0	0	273	0	0	0	2	0	0	140	19	2	159	1	87	12	7	100	11	532	543
16:15	152	105	0	0	257	0	0	0	2	0	0	142	14	1	156	6	104	8	3	118	6	531	537
16:30	129	138	0	0	267	0	0	0	5	0	0	183	18	4	201	3	112	13	3	128	12	596	608
16:45	154	124	0	0	278	0	0	0	4	0	0	163	16	2	179	5	94	13	10	112	16	569	585
Total	618	457	0	0	1075	0	0	0	13	0	0	628	67	9	695	15	397	46	23	458	45	2228	2273
17:00	159	141	0	0	300	0	0	0	3	0	0	166	20	3	186	3	99	19	4	121	10	607	617
17:15	184	129	0	0	313	0	0	0	6	0	0	182	18	2	200	2	87	15	5	104	13	617	630
17:30	154	160	0	0	314	0	0	0	2	0	0	199	18	6	217	6	104	31	15	141	23	672	695
17:45	153	132	0	0	285	0	0	0	2	0	0	167	14	2	181	6	104	17	5	127	9	593	602
Total	650	562	0	0	1212	0	0	0	13	0	0	714	70	13	784	17	394	82	29	493	55	2489	2544
Grand Total	1268	1019	0	0	2287	0	0	0	26	0	0	1342	137	22	1479	32	791	128	52	951	100	4717	4817
Apprch %	55.4	44.6	0			0	0	0			0	90.7	9.3			3.4	83.2	13.5					
Total %	26.9	21.6	0		48.5	0	0	0		0	0	28.5	2.9		31.4	0.7	16.8	2.7		20.2	2.1	97.9	

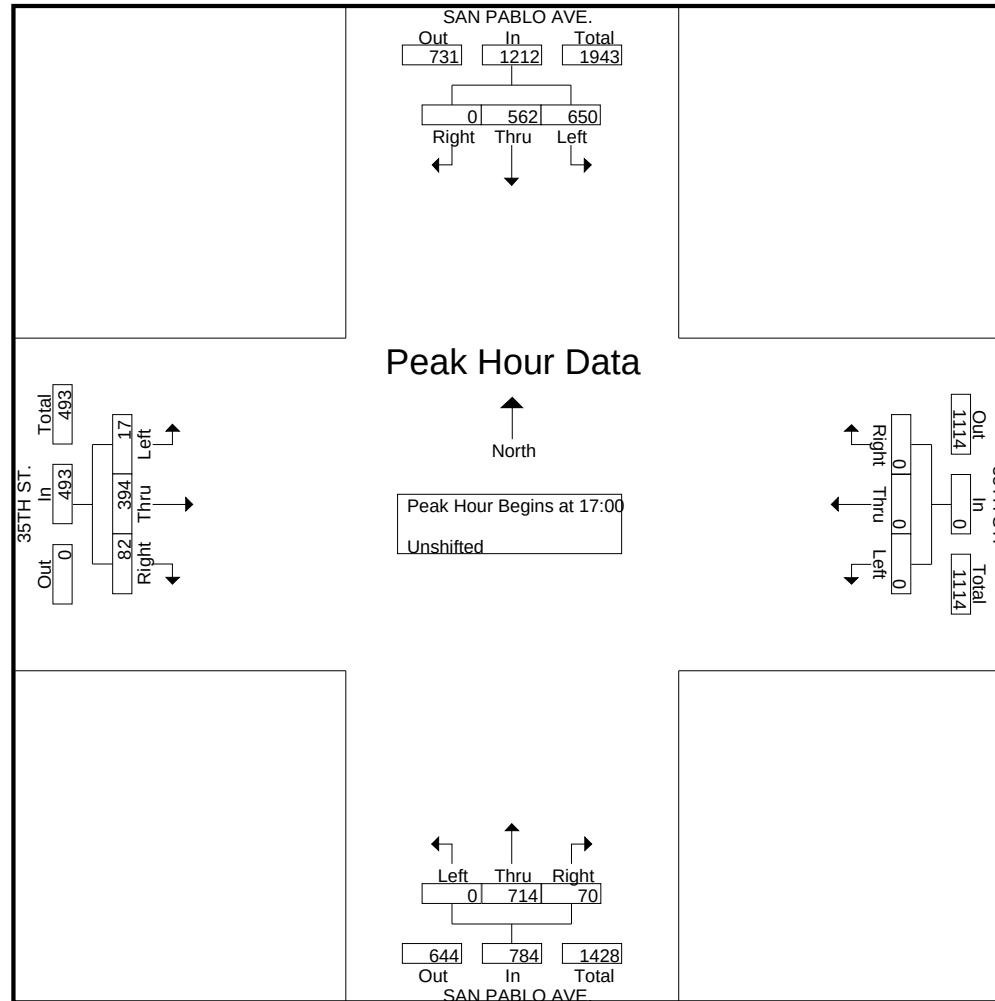
	SAN PABLO AVE. Southbound				35TH ST. Westbound				SAN PABLO AVE. Northbound				35TH ST. Eastbound				Int. Total
Start Time	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
Peak Hour Analysis From 16:00 to 17:45 - Peak 1 of 1																	
Peak Hour for Entire Intersection Begins at 17:00																	
17:00	159	141	0	300	0	0	0	0	0	166	20	186	3	99	19	121	607
17:15	184	129	0	313	0	0	0	0	0	182	18	200	2	87	15	104	617
17:30	154	160	0	314	0	0	0	0	0	199	18	217	6	104	31	141	672
17:45	153	132	0	285	0	0	0	0	0	167	14	181	6	104	17	127	593
Total Volume	650	562	0	1212	0	0	0	0	0	714	70	784	17	394	82	493	2489
% App. Total	53.6	46.4	0		0	0	0		0	91.1	8.9		3.4	79.9	16.6		
PHF	.883	.878	.000	.965	.000	.000	.000	.000	.000	.897	.875	.903	.708	.947	.661	.874	.926

All Traffic Data

(916) 771-8700

CITY OF EMERYVILLE
BIKES ON BANK 1
TRUCKS ON BANK 2

File Name : 10-7189-038 SAN PABLO-35TH
Site Code : 00000000
Start Date : 5/13/2010
Page No : 2



Appendix E-2
LOS Calculation Worksheets
Existing Conditions

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	225	41	24	407	159	52	285	31	139	492	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1809			1771		1758	3468		1739	3498	
Flt Permitted		0.89			0.98		0.36	1.00		0.53	1.00	
Satd. Flow (perm)		1625			1740		662	3468		963	3498	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	245	45	26	442	173	57	310	34	151	535	34
RTOR Reduction (vph)	0	8	0	0	19	0	0	12	0	0	6	0
Lane Group Flow (vph)	0	323	0	0	622	0	57	332	0	151	563	0
Confl. Peds. (#/hr)	41		19	19		41	12		21	21		12
Confl. Bikes (#/hr)			3			12			6			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0			36.0			26.0			26.0		
Effective Green, g (s)	36.0			36.0			26.0			26.0		
Actuated g/C Ratio	0.51			0.51			0.37			0.37		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	836			895			246			358		
v/s Ratio Prot							0.10			c0.16		
v/s Ratio Perm	0.20			c0.36			0.09			0.16		
v/c Ratio	0.39			0.70			0.23			0.42		
Uniform Delay, d1	10.3			12.9			15.1			16.4		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	1.3			4.4			2.2			3.6		
Delay (s)	11.6			17.3			17.3			20.0		
Level of Service	B			B			B			C		
Approach Delay (s)	11.6			17.3			16.0			18.1		
Approach LOS	B			B			B			B		
Intersection Summary												
HCM Average Control Delay			16.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.59									
Actuated Cycle Length (s)			70.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			75.8%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	4	67	1	3	10	38	306	3	7	487	52
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	33	4	73	1	3	11	41	333	3	8	529	57
Pedestrians		1			15			8			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.90	0.90	0.90	0.90	0.90		0.90					
vC, conflicting volume	837	1007	302	795	1034	185	587			351		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	587	777	0	540	807	185	308			351		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	90	98	92	100	99	99	96			99		
cM capacity (veh/h)	329	276	965	327	266	814	1119			1190		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	110	15	208	170	272	321						
Volume Left	33	1	41	0	8	0						
Volume Right	73	11	0	3	0	57						
cSH	577	526	1119	1700	1190	1700						
Volume to Capacity	0.19	0.03	0.04	0.10	0.01	0.19						
Queue Length 95th (ft)	17	2	3	0	0	0						
Control Delay (s)	12.7	12.1	1.9	0.0	0.3	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	12.7	12.1	1.1		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.9									
Intersection Capacity Utilization			49.7%	ICU Level of Service					A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	331	875	290	55	526	74	83	18	56	83	53	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3371	1219	1770	3539	1561	1681	1714	1583		1808	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3371	1219	1770	3539	1561	1681	1714	1583		1808	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	352	931	309	59	560	79	88	19	60	88	56	391
RTOR Reduction (vph)	0	2	140	0	0	28	0	0	55	0	0	200
Lane Group Flow (vph)	352	960	138	59	560	51	53	54	5	0	144	191
Confl. Peds. (#/hr)			10									13
Confl. Bikes (#/hr)						3						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	42.6	55.0	14.0	38.1	38.1	8.9	8.9	8.9		30.5	48.0
Effective Green, g (s)	17.0	42.1	54.5	13.5	38.6	38.6	8.4	8.4	8.4		30.0	47.0
Actuated g/C Ratio	0.15	0.38	0.50	0.12	0.35	0.35	0.08	0.08	0.08		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1290	604	217	1242	548	128	131	121		493	1123
v/s Ratio Prot	0.10	c0.28	0.11	0.03	c0.16		c0.03	0.03			c0.08	0.07
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.66	0.74	0.23	0.27	0.45	0.09	0.41	0.41	0.04		0.29	0.17
Uniform Delay, d1	43.8	29.3	15.8	43.8	27.5	24.0	48.5	48.4	47.1		31.6	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.4	3.9	0.1	0.2	1.2	0.3	1.6	1.5	0.1		1.5	0.3
Delay (s)	50.2	33.2	15.9	44.0	28.7	24.3	50.0	50.0	47.2		33.1	19.8
Level of Service	D	C	B	D	C	C	D	D	D		C	B
Approach Delay (s)		34.0			29.5			49.0			23.4	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM Average Control Delay			31.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			65.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

BMSP Redevelopment Area

4: Powell St & Hollis St

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	279	221	35	362	38	172	134	20	27	132	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3266		1770	3474		1770	1821		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3266		1770	3474		1770	1821		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	201	317	251	40	411	43	195	152	23	31	150	135
RTOR Reduction (vph)	0	91	0	0	5	0	0	5	0	0	0	114
Lane Group Flow (vph)	201	477	0	40	449	0	195	170	0	31	150	21
Confl. Peds. (#/hr)			2			9			3			33
Confl. Bikes (#/hr)			1			1			5			6
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	18.8	63.5		6.8	51.5		18.4	22.9		11.8	16.3	18.8
Effective Green, g (s)	18.3	64.0		6.3	52.0		17.9	22.4		11.3	15.8	18.3
Actuated g/C Ratio	0.15	0.53		0.05	0.43		0.15	0.19		0.09	0.13	0.15
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	270	1742		93	1505		264	340		167	245	241
v/s Ratio Prot	c0.11	0.15		c0.02	c0.13		c0.11	c0.09		0.02	c0.08	0.01
v/s Ratio Perm												
v/c Ratio	0.74	0.27		0.43	0.30		0.74	0.50		0.19	0.61	0.09
Uniform Delay, d1	48.6	15.3		55.1	22.1		48.8	43.8		50.1	49.2	43.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.6	0.4		3.2	0.5		10.3	1.2		0.5	4.5	0.2
Delay (s)	59.2	15.7		58.3	22.6		59.1	44.9		50.6	53.7	43.8
Level of Service	E	B		E	C		E	D		D	D	D
Approach Delay (s)		27.1			25.5			52.4			49.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			35.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			65.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	145	63	88	307	23	144	534	45	50	592	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3341		1770	3498		1770	3483		1770	3495	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3341		1770	3498		1770	3483		1770	3495	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	48	167	72	101	353	26	166	614	52	57	680	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	3	0
Lane Group Flow (vph)	48	239	0	101	379	0	166	662	0	57	721	0
Confl. Peds. (#/hr)			18			4			28			31
Confl. Bikes (#/hr)			2			1			20			13
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.2	15.7		10.1	18.6		13.4	61.7		7.5	55.8	
Effective Green, g (s)	6.2	16.2		9.1	19.1		12.4	62.2		6.5	56.3	
Actuated g/C Ratio	0.06	0.15		0.08	0.17		0.11	0.57		0.06	0.51	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	100	492		146	607		200	1969		105	1789	
v/s Ratio Prot	0.03	0.07		c0.06	c0.11		c0.09	0.19		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.48	0.49		0.69	0.62		0.83	0.34		0.54	0.40	
Uniform Delay, d1	50.3	43.1		49.1	42.1		47.8	12.8		50.3	16.5	
Progression Factor	1.00	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.8		13.2	2.0		23.9	0.5		5.6	0.7	
Delay (s)	53.9	43.8		61.7	43.6		71.6	13.3		55.9	17.2	
Level of Service	D	D		E	D		E	B		E	B	
Approach Delay (s)		45.5			47.4			24.9			20.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			30.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			62.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Stanford Ave & Lowell St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	268	16	0	402	11	0	0	33	0	0	69
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	327	20	0	490	13	0	0	40	0	0	84
Pedestrians		5						5			5	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					619							
pX, platoon unblocked												
vC, conflicting volume	509			351			676	850	178	706	853	262
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	509			351			676	850	178	706	853	262
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	95	100	100	88
cM capacity (veh/h)	1048			1199			296	294	831	304	292	731
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	218	128	327	177	40	84						
Volume Left	0	0	0	0	0	0						
Volume Right	0	20	0	13	40	84						
cSH	1700	1700	1700	1700	831	731						
Volume to Capacity	0.13	0.08	0.19	0.10	0.05	0.12						
Queue Length 95th (ft)	0	0	0	0	4	10						
Control Delay (s)	0.0	0.0	0.0	0.0	9.6	10.6						
Lane LOS					A	B						
Approach Delay (s)	0.0		0.0		9.6	10.6						
Approach LOS					A	B						
Intersection Summary												
Average Delay			1.3									
Intersection Capacity Utilization			24.5%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
Existing AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	19	20	261	8	395	7	24	1
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	24	318	0	482	9	29	1
Pedestrians					4		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					0		0	
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.98		0.00			0.98	0.98
vC, conflicting volume	0	491		0			699	246
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	429		0			642	178
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	98		0			92	100
cM capacity (veh/h)	0	1099		0			386	814
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	24	159	159	321	169	30		
Volume Left	24	0	0	0	0	29		
Volume Right	0	0	0	0	9	1		
cSH	1099	1700	1700	1700	1700	395		
Volume to Capacity	0.02	0.09	0.09	0.19	0.10	0.08		
Queue Length 95th (ft)	2	0	0	0	0	6		
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	14.9		
Lane LOS	A					B		
Approach Delay (s)	0.6			0.0		14.9		
Approach LOS						B		
Intersection Summary								
Average Delay			0.8					
Intersection Capacity Utilization			31.9%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	161	7	57	274	6	107	299	11	35	530	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	1.00		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3513		1770	3526		1770	3518		1770	3513	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3513		1770	3526		1770	3518		1770	3513	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	36	164	7	58	280	6	109	305	11	36	541	22
RTOR Reduction (vph)	0	2	0	0	2	0	0	2	0	0	3	0
Lane Group Flow (vph)	36	169	0	58	284	0	109	314	0	36	560	0
Confl. Peds. (#/hr)			17			10			9			18
Confl. Bikes (#/hr)			6			2			11			17
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	2.3	10.8		3.9	12.4		6.9	24.6		2.3	20.0	
Effective Green, g (s)	2.3	10.8		3.9	12.4		6.9	24.6		2.3	20.0	
Actuated g/C Ratio	0.04	0.18		0.07	0.21		0.12	0.42		0.04	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	69	647		118	746		208	1477		69	1199	
v/s Ratio Prot	0.02	0.05		c0.03	c0.08		c0.06	0.09		0.02	c0.16	
v/s Ratio Perm												
v/c Ratio	0.52	0.26		0.49	0.38		0.52	0.21		0.52	0.47	
Uniform Delay, d1	27.6	20.5		26.4	19.8		24.3	10.8		27.6	15.1	
Progression Factor	1.01	1.02		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.3	0.2		1.2	0.2		1.1	0.1		3.3	0.4	
Delay (s)	31.0	21.0		27.6	20.0		25.4	10.9		30.9	15.5	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		22.7			21.3			14.6			16.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			17.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			58.6			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			50.9%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR
Lane Configurations												
Volume (vph)	1	1	1	3	3	3	3	5	3	1	315	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0				3.0				6.0	
Lane Util. Factor			1.00				1.00				0.95	
Frpb, ped/bikes			0.99				0.99				1.00	
Flpb, ped/bikes			1.00				1.00				1.00	
Frt			0.93				0.93				0.99	
Flt Protected			0.98				0.98				1.00	
Satd. Flow (prot)			1690				1687				3477	
Flt Permitted			1.00				1.00				0.95	
Satd. Flow (perm)			1719				1715				3316	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	1	1	3	3	3	3	6	3	1	350	29
RTOR Reduction (vph)	0	0	0	0	0	0	3	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	0	0	15	0	0	0	386	0
Confl. Peds. (#/hr)				1								2
Confl. Bikes (#/hr)								1	1			4
Turn Type	Perm	Perm			Perm	Perm				Perm		
Protected Phases			3				3				1	
Permitted Phases	3	3			3	3				1		
Actuated Green, G (s)			2.5				2.5				23.7	
Effective Green, g (s)			2.5				2.5				23.7	
Actuated g/C Ratio			0.03				0.03				0.33	
Clearance Time (s)			3.0				3.0				6.0	
Vehicle Extension (s)			3.0				3.0				3.0	
Lane Grp Cap (vph)			59				59				1080	
v/s Ratio Prot												
v/s Ratio Perm			0.00				0.01				0.12	
v/c Ratio			0.10				0.26				0.36	
Uniform Delay, d1			34.1				34.2				18.7	
Progression Factor			1.00				1.00				1.00	
Incremental Delay, d2			0.8				2.3				0.2	
Delay (s)			34.8				36.5				18.9	
Level of Service			C				D				B	
Approach Delay (s)			34.8				36.5				18.9	
Approach LOS			C				D				B	
Intersection Summary												
HCM Average Control Delay			20.5				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.36									
Actuated Cycle Length (s)			72.8				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			64.4%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area

Existing AM Peak Hour

												
Movement	NBR2	SBL2	SBL	SBT	SBR	NEL	NET	NER	NER2	SWL2	SWL	SWT
Lane Configurations												
Volume (vph)	6	3	1	540	106	55	87	2	1	1	6	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0			6.0					6.0
Lane Util. Factor				0.95			0.95					0.95
Frpb, ped/bikes				1.00			1.00					1.00
Flpb, ped/bikes				1.00			1.00					1.00
Frt				0.98			1.00					1.00
Flt Protected				1.00			0.98					0.99
Satd. Flow (prot)				3435			3461					3474
Flt Permitted				0.95			0.85					0.90
Satd. Flow (perm)				3273			2994					3182
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	3	1	600	118	61	97	2	1	1	7	22
RTOR Reduction (vph)	0	0	0	0	0	0	1	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	722	0	0	160	0	0	0	0	31
Confl. Peds. (#/hr)	2				1			1	1			
Confl. Bikes (#/hr)	4				24			13	13			
Turn Type		Perm	Perm			Perm				Perm	Perm	
Protected Phases				1			2					2
Permitted Phases		1	1			2				2	2	
Actuated Green, G (s)				23.7			31.6					31.6
Effective Green, g (s)				23.7			31.6					31.6
Actuated g/C Ratio				0.33			0.43					0.43
Clearance Time (s)				6.0			6.0					6.0
Vehicle Extension (s)				3.0			3.0					3.0
Lane Grp Cap (vph)				1066			1300					1381
v/s Ratio Prot												
v/s Ratio Perm				0.22			0.05					0.01
v/c Ratio				0.68			0.12					0.02
Uniform Delay, d1				21.2			12.3					11.8
Progression Factor				1.00			1.00					1.00
Incremental Delay, d2				1.7			0.0					0.0
Delay (s)				23.0			12.4					11.8
Level of Service				C			B					B
Approach Delay (s)				23.0			12.4					11.8
Approach LOS				C			B					B
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour



Movement	SWR
Lane Configurations	
Volume (vph)	1
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	1
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	8
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	76	61	178	165	15
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	27	101	81	237	220	20
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	511	120	240			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	511	120	240			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	89	94			
cM capacity (veh/h)	462	909	1324			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	128	160	158	147	93	
Volume Left	27	81	0	0	0	
Volume Right	101	0	0	0	20	
cSH	756	1324	1700	1700	1700	
Volume to Capacity	0.17	0.06	0.09	0.09	0.05	
Queue Length 95th (ft)	15	5	0	0	0	
Control Delay (s)	10.7	4.3	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	10.7	2.1		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.0			
Intersection Capacity Utilization			27.5%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	60	8	31	113	162	11	226	33	273	298	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.98			0.93		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825			1697		1746	1816		1748	1862	
Flt Permitted		0.99			0.96		0.56	1.00		0.58	1.00	
Satd. Flow (perm)		1816			1643		1023	1816		1074	1862	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	67	9	34	126	180	12	251	37	303	331	1
RTOR Reduction (vph)	0	6	0	0	71	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	71	0	0	269	0	12	279	0	303	332	0
Confl. Peds. (#/hr)	9		13	13		9	20		17	17		20
Confl. Bikes (#/hr)			1			9			10			23
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		12.7			12.7		19.4	19.4		19.4	19.4	
Effective Green, g (s)		12.7			12.7		19.4	19.4		19.4	19.4	
Actuated g/C Ratio		0.30			0.30		0.46	0.46		0.46	0.46	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		548			496		471	837		495	858	
v/s Ratio Prot								0.15			0.18	
v/s Ratio Perm		0.04			0.16		0.01			0.28		
v/c Ratio		0.13			0.54		0.03	0.33		0.61	0.39	
Uniform Delay, d1		10.7			12.3		6.2	7.2		8.5	7.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.2		0.0	0.2		2.2	0.3	
Delay (s)		10.8			13.5		6.2	7.5		10.8	7.7	
Level of Service		B			B		A	A		B	A	
Approach Delay (s)		10.8			13.5			7.4			9.2	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM Average Control Delay		10.0			HCM Level of Service			A				
HCM Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		42.1			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		67.6%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Volume (vph)	9	132	252	54	170	72	124	1372	41	48	1307	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1676			1774		1770	5058		1770	5075	
Flt Permitted		0.99			0.74		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1660			1332		1770	5058		1770	5075	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	10	140	268	57	181	77	132	1460	44	51	1390	15
RTOR Reduction (vph)	0	84	0	0	15	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	334	0	0	300	0	132	1501	0	51	1404	0
Confl. Peds. (#/hr)			6			15			7			9
Confl. Bikes (#/hr)			7			5			2			5
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		19.9			19.9		9.4	33.2		4.0	27.8	
Effective Green, g (s)		19.9			19.9		9.4	33.2		4.0	27.8	
Actuated g/C Ratio		0.28			0.28		0.13	0.46		0.06	0.39	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		461			370		232	2345		99	1970	
v/s Ratio Prot							0.07	c0.30		0.03	c0.28	
v/s Ratio Perm		0.20			c0.23							
v/c Ratio		0.72			0.81		0.57	0.64		0.52	0.71	
Uniform Delay, d1		23.4			24.1		29.2	14.6		32.9	18.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.6			12.6		3.2	0.6		4.5	1.2	
Delay (s)		28.9			36.7		32.4	15.2		37.3	19.8	
Level of Service		C			D		C	B		D	B	
Approach Delay (s)		28.9			36.7			16.6			20.4	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM Average Control Delay		21.1			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		71.6			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		88.6%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	69	234	20	16	374	41	23	121	20	43	141	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3489		1770	3478			1814		1770	1762	
Flt Permitted	0.95	1.00		0.95	1.00			0.93		0.59	1.00	
Satd. Flow (perm)	1770	3489		1770	3478			1695		1094	1762	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	76	257	22	18	411	45	25	133	22	47	155	64
RTOR Reduction (vph)	0	9	0	0	14	0	0	11	0	0	31	0
Lane Group Flow (vph)	76	270	0	18	442	0	0	169	0	47	188	0
Confl. Peds. (#/hr)			10			11			10			30
Confl. Bikes (#/hr)						12			5			9
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	4.5	28.6		1.2	25.3			9.2		9.2	9.2	
Effective Green, g (s)	4.0	28.6		0.7	25.3			8.7		8.7	8.7	
Actuated g/C Ratio	0.08	0.57		0.01	0.51			0.17		0.17	0.17	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	142	1996		25	1760			295		190	307	
v/s Ratio Prot	c0.04	c0.08		0.01	c0.13						c0.11	
v/s Ratio Perm								0.10		0.04		
v/c Ratio	0.54	0.14		0.72	0.25			0.57		0.25	0.61	
Uniform Delay, d1	22.1	5.0		24.6	7.0			18.9		17.8	19.1	
Progression Factor	1.09	1.25		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.1		58.2	0.3			2.7		0.7	3.6	
Delay (s)	25.2	6.3		82.8	7.3			21.6		18.5	22.7	
Level of Service	C	A		F	A			C		B	C	
Approach Delay (s)		10.3			10.2			21.6			22.0	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			14.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.38									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			60.0%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area

Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	80	1	74	122	3	0	978	81	0	643	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.99			0.98	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3491			3463			3477			3474	
Flt Permitted		0.83			0.98			1.00			1.00	
Satd. Flow (perm)		2916			3463			3477			3474	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	83	1	77	127	3	0	1019	84	0	670	77
RTOR Reduction (vph)	0	1	0	0	1	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	110	0	0	206	0	0	1099	0	0	742	0
Confl. Peds. (#/hr)						23			26			11
Confl. Bikes (#/hr)			2			7			9			10
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		8.5			10.9			74.6			74.6	
Effective Green, g (s)		9.5			11.9			76.6			76.6	
Actuated g/C Ratio		0.09			0.11			0.70			0.70	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		252			375			2421			2419	
v/s Ratio Prot					c0.06			c0.32			0.21	
v/s Ratio Perm		c0.04										
v/c Ratio		0.44			0.55			0.45			0.31	
Uniform Delay, d1		47.7			46.5			7.4			6.4	
Progression Factor		1.00			1.00			0.93			1.00	
Incremental Delay, d2		0.4			0.9			0.5			0.3	
Delay (s)		48.2			47.4			7.4			6.8	
Level of Service		D			D			A			A	
Approach Delay (s)		48.2			47.4			7.4			6.8	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			13.1			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			53.2%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	249	630	15	370	0	0	683	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3509	1551		3533			5078	
Flt Permitted					0.99	1.00		0.92			1.00	
Satd. Flow (perm)					3509	1551		3245			5078	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	56	274	692	16	407	0	0	751	5
RTOR Reduction (vph)	0	0	0	0	0	384	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	330	308	0	423	0	0	755	0
Confl. Peds. (#/hr)						5			10			21
Confl. Bikes (#/hr)									12			20
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					23.2	23.2		77.8			77.8	
Effective Green, g (s)					23.2	23.2		78.8			78.8	
Actuated g/C Ratio					0.21	0.21		0.72			0.72	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					740	327		2325			3638	
v/s Ratio Prot					0.09						c0.15	
v/s Ratio Perm						c0.20		0.13				
v/c Ratio					0.45	0.94		0.18			0.21	
Uniform Delay, d1					37.8	42.7		5.1			5.2	
Progression Factor					1.00	1.00		0.06			0.86	
Incremental Delay, d2					0.2	34.2		0.2			0.1	
Delay (s)					38.0	76.9		0.5			4.6	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			64.4			0.5			4.6	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			31.6				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.37									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			61.2%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	143	35	0	0	0	0	379	50	210	533	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3422						3452		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3422						3452		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	151	37	0	0	0	0	399	53	221	561	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	12	0	0	0	0
Lane Group Flow (vph)	0	171	0	0	0	0	0	440	0	221	561	0
Confl. Peds. (#/hr)			3						20			10
Confl. Bikes (#/hr)									13			21
Turn Type	Split				Prot							
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		9.9						18.6		66.5	91.1	
Effective Green, g (s)		10.9						19.6		67.5	91.1	
Actuated g/C Ratio		0.10						0.18		0.61	0.83	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		339						615		2107	2931	
v/s Ratio Prot		c0.05						c0.13		0.06	c0.16	
v/s Ratio Perm												
v/c Ratio		0.51						0.71		0.10	0.19	
Uniform Delay, d1		47.0						42.6		8.8	1.9	
Progression Factor		1.00						1.00		1.00	0.98	
Incremental Delay, d2		0.4						3.3		0.1	0.0	
Delay (s)		47.4						45.9		8.9	1.9	
Level of Service		D						D		A	A	
Approach Delay (s)		47.4			0.0			45.9			3.9	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		23.1										
HCM Volume to Capacity ratio		0.32										
Actuated Cycle Length (s)		110.0								8.0		
Intersection Capacity Utilization		35.7%								A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	345	37	36	320	243	51	683	33	137	532	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.99			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1826			1735		1752	3508		1762	3487	
Flt Permitted		0.91			0.96		0.32	1.00		0.23	1.00	
Satd. Flow (perm)		1670			1665		584	3508		426	3487	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	375	40	39	348	264	55	742	36	149	578	45
RTOR Reduction (vph)	0	4	0	0	31	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	454	0	0	620	0	55	774	0	149	616	0
Confl. Peds. (#/hr)	27		24	24		27	18		10	10		18
Confl. Bikes (#/hr)			21			3			7			7
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.52			0.52		0.38	0.38		0.38	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		877			874		219	1316		160	1308	
v/s Ratio Prot								0.22			0.18	
v/s Ratio Perm		0.27			0.37		0.09			0.35		
v/c Ratio		0.52			0.71		0.25	0.59		0.93	0.47	
Uniform Delay, d1		12.4			14.4		17.2	20.0		24.0	19.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			4.9		2.7	1.9		54.9	1.2	
Delay (s)		14.6			19.2		20.0	22.0		78.9	20.2	
Level of Service		B			B		B	C		E	C	
Approach Delay (s)		14.6			19.2			21.8			31.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay		22.7					HCM Level of Service			C		
HCM Volume to Capacity ratio		0.80										
Actuated Cycle Length (s)		80.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		80.4%					ICU Level of Service			D		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	2	29	0	2	9	26	704	4	9	502	88
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	40	2	33	0	2	10	29	791	4	10	564	99
Pedestrians		6			6			1			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.92	0.92	0.88	0.92	0.92	0.92	0.88			0.92		
vC, conflicting volume	1110	1500	338	1195	1547	409	669			802		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	557	982	0	649	1033	191	344			616		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	99	97	100	99	99	97			99		
cM capacity (veh/h)	354	216	946	298	201	748	1058			881		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	75	12	425	400	292	381						
Volume Left	40	0	29	0	10	0						
Volume Right	33	10	0	4	0	99						
cSH	473	501	1058	1700	881	1700						
Volume to Capacity	0.16	0.02	0.03	0.24	0.01	0.22						
Queue Length 95th (ft)	14	2	2	0	1	0						
Control Delay (s)	14.1	12.4	0.9	0.0	0.4	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	14.1	12.4	0.4		0.2							
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.1									
Intersection Capacity Utilization			55.9%		ICU Level of Service				B			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	303	661	685	200	793	92	165	42	102	115	193	664
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (prot)	3467	3224	1231	1805	3574	1591	1698	1742	1586		1842	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (perm)	3467	3224	1231	1805	3574	1591	1698	1742	1586		1842	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	316	689	714	208	826	96	172	44	106	120	201	692
RTOR Reduction (vph)	0	35	130	0	0	24	0	0	94	0	0	76
Lane Group Flow (vph)	316	932	306	208	826	72	107	109	12	0	321	616
Confl. Peds. (#/hr)			15									46
Confl. Bikes (#/hr)			5			4			3			4
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	35.0	51.5	17.5	34.0	34.0	13.0	13.0	13.0		30.5	48.0
Effective Green, g (s)	17.0	34.5	51.0	17.0	34.5	34.5	12.5	12.5	12.5		30.0	47.0
Actuated g/C Ratio	0.15	0.31	0.46	0.15	0.31	0.31	0.11	0.11	0.11		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	1011	571	279	1121	499	193	198	180		502	1134
v/s Ratio Prot	0.09	c0.29	c0.25	0.12	c0.23		0.06	0.06			c0.17	0.23
v/s Ratio Perm						0.05			0.01			
v/c Ratio	0.59	0.92	0.54	0.75	0.74	0.14	0.55	0.55	0.07		0.64	0.54
Uniform Delay, d1	43.3	36.4	21.1	44.4	33.7	27.1	46.1	46.1	43.5		35.2	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	14.8	0.8	9.1	4.3	0.6	2.7	2.6	0.1		6.1	1.9
Delay (s)	48.0	51.2	21.8	53.5	38.0	27.7	48.9	48.7	43.7		41.4	25.4
Level of Service	D	D	C	D	D	C	D	D	D		D	C
Approach Delay (s)		43.2			40.0			47.1			30.4	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			39.5			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			81.0%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	581	137	47	420	35	323	304	36	87	249	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3447		1770	3524		1805	1845		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3447		1770	3524		1805	1845		1719	1845	1599
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	132	625	147	51	452	38	347	327	39	94	268	244
RTOR Reduction (vph)	0	14	0	0	5	0	0	4	0	0	0	197
Lane Group Flow (vph)	132	758	0	51	485	0	347	362	0	94	268	47
Confl. Peds. (#/hr)			5			7			10			6
Confl. Bikes (#/hr)			5			3			11			20
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	13.7	49.2		6.8	42.3		27.6	29.0		20.5	21.9	13.7
Effective Green, g (s)	13.2	49.7		6.3	42.8		27.1	28.5		20.0	21.4	13.2
Actuated g/C Ratio	0.11	0.41		0.05	0.36		0.22	0.24		0.17	0.18	0.11
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	194	1422		93	1252		406	436		285	328	175
v/s Ratio Prot	c0.07	c0.22		c0.03	0.14		0.19	c0.20		0.05	c0.15	0.03
v/s Ratio Perm												
v/c Ratio	0.68	0.53		0.55	0.39		0.85	0.83		0.33	0.82	0.27
Uniform Delay, d1	51.6	26.7		55.7	29.1		44.8	43.7		44.3	47.7	49.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.4	1.4		6.5	0.9		15.9	12.6		0.7	14.5	0.8
Delay (s)	61.0	28.1		62.2	30.0		60.7	56.4		45.0	62.2	50.1
Level of Service	E	C		E	C		E	E		D	E	D
Approach Delay (s)		32.9			33.0			58.5			54.6	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			44.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			70.3%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	524	118	93	281	32	109	788	96	88	775	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3460		1770	3541		1736	3492		1805	3494	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3460		1770	3541		1736	3492		1805	3494	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	119	535	120	95	287	33	111	804	98	90	791	69
RTOR Reduction (vph)	0	18	0	0	9	0	0	8	0	0	6	0
Lane Group Flow (vph)	119	637	0	95	311	0	111	894	0	90	854	0
Confl. Peds. (#/hr)			13			16			37			13
Confl. Bikes (#/hr)			7			3			14			3
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.5	24.7		9.9	24.1		11.6	52.0		8.4	48.8	
Effective Green, g (s)	9.5	25.2		8.9	24.6		10.6	52.5		7.4	49.3	
Actuated g/C Ratio	0.09	0.23		0.08	0.22		0.10	0.48		0.07	0.45	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	793		143	792		167	1667		121	1566	
v/s Ratio Prot	c0.07	c0.18		0.05	0.09		c0.06	c0.26		0.05	0.24	
v/s Ratio Perm												
v/c Ratio	0.78	0.80		0.66	0.39		0.66	0.54		0.74	0.55	
Uniform Delay, d1	49.2	40.1		49.1	36.3		48.0	20.2		50.4	22.2	
Progression Factor	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.6	5.9		11.0	0.3		9.6	1.2		21.7	1.4	
Delay (s)	70.8	46.0		60.3	36.1		57.5	21.4		72.0	23.5	
Level of Service	E	D		E	D		E	C		E	C	
Approach Delay (s)		49.8			41.7			25.4			28.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			34.4			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.63									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			68.2%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	716	11	0	407	23	0	0	56	0	0	63
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	754	12	0	428	24	0	0	59	0	0	66
Pedestrians								1			14	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	619											
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	467			766			1041	1227	384	890	1221	240
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	441			766			1021	1209	384	869	1203	213
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	90	100	100	91
cM capacity (veh/h)	1091			842			171	177	614	215	179	775
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	502	263	286	167	59	66						
Volume Left	0	0	0	0	0	0						
Volume Right	0	12	0	24	59	66						
cSH	1700	1700	1700	1700	614	775						
Volume to Capacity	0.30	0.15	0.17	0.10	0.10	0.09						
Queue Length 95th (ft)	0	0	0	0	8	7						
Control Delay (s)	0.0	0.0	0.0	0.0	11.5	10.1						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		11.5	10.1						
Approach LOS					B	B						
Intersection Summary												
Average Delay	1.0											
Intersection Capacity Utilization	30.3%				ICU Level of Service				A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
Existing PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations		↰	↶↷		↶↷		↰	
Volume (veh/h)	15	28	741	5	405	11	54	1
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	30	797	0	435	12	58	1
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage (veh)								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.96		0.00			0.96	0.96
vC, conflicting volume	0	447		0			900	224
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	331		0			804	97
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	97		0			81	100
cM capacity (veh/h)	0	1172		0			299	900
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	30	398	398	290	157	59		
Volume Left	30	0	0	0	0	58		
Volume Right	0	0	0	0	12	1		
cSH	1172	1700	1700	1700	1700	302		
Volume to Capacity	0.03	0.23	0.23	0.17	0.09	0.20		
Queue Length 95th (ft)	2	0	0	0	0	18		
Control Delay (s)	8.2	0.0	0.0	0.0	0.0	19.8		
Lane LOS	A					C		
Approach Delay (s)	0.3			0.0		19.8		
Approach LOS						C		
Intersection Summary								
Average Delay			1.1					
Intersection Capacity Utilization			45.5%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	107	427	7	113	277	29	120	625	16	58	489	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	1.00		1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3529		1770	3478		1770	3523		1770	3509	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3529		1770	3478		1770	3523		1770	3509	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	115	459	8	122	298	31	129	672	17	62	526	26
RTOR Reduction (vph)	0	1	0	0	7	0	0	1	0	0	3	0
Lane Group Flow (vph)	115	466	0	122	322	0	129	688	0	62	549	0
Confl. Peds. (#/hr)			6			19			13			15
Confl. Bikes (#/hr)			2			4			10			4
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	8.0	16.2		8.3	16.5		10.7	26.9		6.0	22.2	
Effective Green, g (s)	8.0	16.2		8.3	16.5		10.7	26.9		6.0	22.2	
Actuated g/C Ratio	0.11	0.22		0.11	0.22		0.14	0.36		0.08	0.30	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	190	768		197	771		255	1274		143	1047	
v/s Ratio Prot	0.06	c0.13		c0.07	0.09		c0.07	c0.20		0.04	0.16	
v/s Ratio Perm												
v/c Ratio	0.61	0.61		0.62	0.42		0.51	0.54		0.43	0.52	
Uniform Delay, d1	31.7	26.2		31.5	24.8		29.4	18.8		32.6	21.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.7	1.2		4.0	0.3		0.6	0.6		0.8	0.6	
Delay (s)	35.4	27.4		35.6	25.1		30.0	19.4		33.3	22.3	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s)		29.0			27.9			21.1			23.4	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			24.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			74.4			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			56.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL2	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL	NBT	NBR
Lane Configurations												
Volume (vph)	2	2	3	1	2	2	2	5	3	1	606	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0					3.0				6.0	
Lane Util. Factor		1.00					1.00				0.95	
Frpb, ped/bikes		0.99					0.99				1.00	
Flpb, ped/bikes		1.00					1.00				1.00	
Frt		0.93					0.92				0.99	
Flt Protected		0.99					0.99				1.00	
Satd. Flow (prot)		1704					1676				3485	
Flt Permitted		0.96					0.99				0.95	
Satd. Flow (perm)		1659					1681				3326	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	2	2	3	1	2	2	2	5	3	1	666	25
RTOR Reduction (vph)	0	1	0	0	0	0	3	0	0	0	2	0
Lane Group Flow (vph)	0	7	0	0	0	0	11	0	0	0	716	0
Confl. Peds. (#/hr)			1	1				5	5			
Confl. Bikes (#/hr)												22
Turn Type	Perm				Perm	Perm				Perm		
Protected Phases		3					3				1	
Permitted Phases	3				3	3				1		
Actuated Green, G (s)		2.6					2.6				29.1	
Effective Green, g (s)		2.6					2.6				29.1	
Actuated g/C Ratio		0.03					0.03				0.37	
Clearance Time (s)		3.0					3.0				6.0	
Vehicle Extension (s)		3.0					3.0				3.0	
Lane Grp Cap (vph)		55					56				1244	
v/s Ratio Prot												
v/s Ratio Perm		0.00					0.01				0.22	
v/c Ratio		0.13					0.20				0.58	
Uniform Delay, d1		36.5					36.6				19.4	
Progression Factor		1.00					1.00				1.00	
Incremental Delay, d2		1.1					1.7				0.6	
Delay (s)		37.6					38.3				20.1	
Level of Service		D					D				C	
Approach Delay (s)		37.6					38.3				20.1	
Approach LOS		D					D				C	
Intersection Summary												
HCM Average Control Delay		21.4					HCM Level of Service				C	
HCM Volume to Capacity ratio		0.46										
Actuated Cycle Length (s)		77.8					Sum of lost time (s)			15.0		
Intersection Capacity Utilization		74.1%					ICU Level of Service			D		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	SWL2	SWL	SWT
Lane Configurations												
Volume (vph)	24	2	5	674	139	2	104	101	4	1	5	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0				6.0				6.0
Lane Util. Factor				0.95				0.95				0.95
Frpb, ped/bikes				0.99				1.00				1.00
Flpb, ped/bikes				1.00				1.00				1.00
Frt				0.97				1.00				1.00
Flt Protected				1.00				0.98				0.99
Satd. Flow (prot)				3399				3442				3507
Flt Permitted				0.95				0.80				0.91
Satd. Flow (perm)				3226				2808				3232
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	26	2	5	741	153	2	114	111	4	1	5	27
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	903	0	0	0	229	0	0	0	33
Confl. Peds. (#/hr)					7	7			1			
Confl. Bikes (#/hr)	22				14	14			15			
Turn Type		Perm	Perm				Perm			Perm	Perm	
Protected Phases				1				2				2
Permitted Phases		1	1				2			2	2	
Actuated Green, G (s)				29.1				31.1				31.1
Effective Green, g (s)				29.1				31.1				31.1
Actuated g/C Ratio				0.37				0.40				0.40
Clearance Time (s)				6.0				6.0				6.0
Vehicle Extension (s)				3.0				3.0				3.0
Lane Grp Cap (vph)				1207				1122				1292
v/s Ratio Prot												
v/s Ratio Perm				c0.28				c0.08				0.01
v/c Ratio				0.75				0.20				0.03
Uniform Delay, d1				21.2				15.3				14.2
Progression Factor				1.00				1.00				1.00
Incremental Delay, d2				2.6				0.1				0.0
Delay (s)				23.7				15.4				14.2
Level of Service				C				B				B
Approach Delay (s)				23.7				15.4				14.2
Approach LOS				C				B				B
Intersection Summary												

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	12	97	110	253	170	16
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	13	103	117	269	181	17
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	561	102	201			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	561	102	201			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	97	89	91			
cM capacity (veh/h)	417	931	1365			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	116	207	179	121	77	
Volume Left	13	117	0	0	0	
Volume Right	103	0	0	0	17	
cSH	820	1365	1700	1700	1700	
Volume to Capacity	0.14	0.09	0.11	0.07	0.05	
Queue Length 95th (ft)	12	7	0	0	0	
Control Delay (s)	10.1	4.8	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	10.1	2.6		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			32.9%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	86	11	26	100	230	12	454	43	335	360	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.99			0.91		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1827			1670		1735	1829		1752	1862	
Flt Permitted		0.99			0.97		0.50	1.00		0.38	1.00	
Satd. Flow (perm)		1818			1626		912	1829		702	1862	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	2	95	12	29	110	253	13	499	47	368	396	1
RTOR Reduction (vph)	0	8	0	0	123	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	101	0	0	269	0	13	541	0	368	397	0
Confl. Peds. (#/hr)	6		7	7		6	26		18	18		26
Confl. Bikes (#/hr)			1			5			26			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		13.5			13.5		30.3	30.3		30.3	30.3	
Effective Green, g (s)		13.5			13.5		30.3	30.3		30.3	30.3	
Actuated g/C Ratio		0.25			0.25		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		456			408		514	1030		395	1049	
v/s Ratio Prot								0.30			0.21	
v/s Ratio Perm		0.06			0.17		0.01			0.52		
v/c Ratio		0.22			0.66		0.03	0.53		0.93	0.38	
Uniform Delay, d1		16.0			18.1		5.2	7.3		10.8	6.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			3.8		0.0	0.5		28.6	0.2	
Delay (s)		16.2			21.9		5.2	7.8		39.4	6.8	
Level of Service		B			C		A	A		D	A	
Approach Delay (s)		16.2			21.9			7.7			22.5	
Approach LOS		B			C			A			C	
Intersection Summary												
HCM Average Control Delay			17.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.85									
Actuated Cycle Length (s)			53.8			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			85.6%			ICU Level of Service				E		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area

Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	224	235	52	148	46	196	1587	98	101	1476	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1712			1787		1770	5020		1770	5071	
Flt Permitted		0.99			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1696			1225		1770	5020		1770	5071	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	241	253	56	159	49	211	1706	105	109	1587	20
RTOR Reduction (vph)	0	38	0	0	9	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	469	0	0	255	0	211	1805	0	109	1606	0
Confl. Peds. (#/hr)			13			11			23			22
Confl. Bikes (#/hr)			6			12			7			9
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		29.4			29.4		19.3	40.6		8.2	29.5	
Effective Green, g (s)		29.4			29.4		19.3	40.6		8.2	29.5	
Actuated g/C Ratio		0.32			0.32		0.21	0.44		0.09	0.32	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		538			389		369	2199		157	1614	
v/s Ratio Prot							0.12	c0.36		0.06	c0.32	
v/s Ratio Perm		c0.28			0.21							
v/c Ratio		0.87			0.66		0.57	0.82		0.69	0.99	
Uniform Delay, d1		29.9			27.3		33.0	22.9		41.0	31.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		14.5			4.0		2.1	2.6		12.5	21.0	
Delay (s)		44.4			31.2		35.1	25.4		53.5	52.6	
Level of Service		D			C		D	C		D	D	
Approach Delay (s)		44.4			31.2			26.5			52.6	
Approach LOS		D			C			C			D	
Intersection Summary												
HCM Average Control Delay			38.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.88									
Actuated Cycle Length (s)			92.7			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			91.1%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	91	608	30	29	391	44	18	164	32	48	124	62
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3539		1805	3546			1830		1794	1783	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.47	1.00	
Satd. Flow (perm)	1805	3539		1805	3546			1766		889	1783	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	98	654	32	31	420	47	19	176	34	52	133	67
RTOR Reduction (vph)	0	6	0	0	14	0	0	13	0	0	37	0
Lane Group Flow (vph)	98	680	0	31	453	0	0	216	0	52	163	0
Confl. Peds. (#/hr)			27			20	14		16	16		14
Confl. Bikes (#/hr)			36			4			10			14
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	4.8	26.8		2.6	24.6			9.6		9.6	9.6	
Effective Green, g (s)	4.3	26.8		2.1	24.6			9.1		9.1	9.1	
Actuated g/C Ratio	0.09	0.54		0.04	0.49			0.18		0.18	0.18	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	155	1897		76	1745			321		162	325	
v/s Ratio Prot	c0.05	c0.19		0.02	0.13						0.09	
v/s Ratio Perm								c0.12		0.06		
v/c Ratio	0.63	0.36		0.41	0.26			0.67		0.32	0.50	
Uniform Delay, d1	22.1	6.7		23.3	7.4			19.1		17.8	18.4	
Progression Factor	1.11	1.20		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.3		1.3	0.4			5.5		1.2	1.2	
Delay (s)	28.2	8.3		24.6	7.8			24.5		18.9	19.6	
Level of Service	C	A		C	A			C		B	B	
Approach Delay (s)		10.8			8.8			24.5			19.5	
Approach LOS		B			A			C			B	
Intersection Summary												
HCM Average Control Delay			13.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			59.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	127	12	53	116	12	0	1083	95	0	1176	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		3518			3505			3516			3487	
Flt Permitted		0.80			0.99			1.00			1.00	
Satd. Flow (perm)		2851			3505			3516			3487	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	66	131	12	55	120	12	0	1116	98	0	1212	100
RTOR Reduction (vph)	0	4	0	0	4	0	0	5	0	0	4	0
Lane Group Flow (vph)	0	205	0	0	183	0	0	1209	0	0	1308	0
Confl. Peds. (#/hr)						19			10			18
Confl. Bikes (#/hr)			7			11			23			29
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		12.3			10.1			71.6			71.6	
Effective Green, g (s)		13.3			11.1			73.6			73.6	
Actuated g/C Ratio		0.12			0.10			0.67			0.67	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		345			354			2353			2333	
v/s Ratio Prot					c0.05			0.34			c0.37	
v/s Ratio Perm	c0.07											
v/c Ratio		0.59			0.52			0.51			0.56	
Uniform Delay, d1		45.8			46.9			9.2			9.6	
Progression Factor		1.00			1.00			0.56			1.00	
Incremental Delay, d2		1.8			0.5			0.7			1.0	
Delay (s)		47.6			47.4			5.9			10.6	
Level of Service		D			D			A			B	
Approach Delay (s)		47.6			47.4			5.9			10.6	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM Average Control Delay			13.6			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			59.4%			ICU Level of Service			B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	49	203	412	18	713	0	0	1163	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3519	1563		3537			5073	
Flt Permitted					0.99	1.00		0.91			1.00	
Satd. Flow (perm)					3519	1563		3209			5073	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	50	207	420	18	728	0	0	1187	15
RTOR Reduction (vph)	0	0	0	0	0	217	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	257	203	0	746	0	0	1201	0
Confl. Peds. (#/hr)						6			12			27
Confl. Bikes (#/hr)									24			27
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					17.9	17.9		83.1			83.1	
Effective Green, g (s)					17.9	17.9		84.1			84.1	
Actuated g/C Ratio					0.16	0.16		0.76			0.76	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					573	254		2453			3879	
v/s Ratio Prot					0.07						c0.24	
v/s Ratio Perm						c0.13		0.23				
v/c Ratio					0.45	0.80		0.30			0.31	
Uniform Delay, d1					41.6	44.3		4.0			4.0	
Progression Factor					1.00	1.00		0.01			0.87	
Incremental Delay, d2					0.2	15.0		0.2			0.2	
Delay (s)					41.8	59.4		0.3			3.6	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			52.7			0.3			3.6	
Approach LOS		A			D			A			A	
Intersection Summary												
HCM Average Control Delay			15.3				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			53.0%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	394	82	0	0	0	0	714	70	650	562	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.98						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3497						3485		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3497						3485		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	424	88	0	0	0	0	768	75	699	604	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	514	0	0	0	0	0	836	0	699	604	0
Confl. Peds. (#/hr)			13						13			29
Confl. Bikes (#/hr)			1						22			27
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		20.4						31.3		43.3	80.6	
Effective Green, g (s)		21.4						32.3		44.3	80.6	
Actuated g/C Ratio		0.19						0.29		0.40	0.73	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		680						1023		1383	2568	
v/s Ratio Prot		c0.15						c0.24		c0.20	0.17	
v/s Ratio Perm												
v/c Ratio		0.76						0.82		0.51	0.24	
Uniform Delay, d1		41.8						36.1		24.6	4.7	
Progression Factor		1.00						1.00		1.06	1.03	
Incremental Delay, d2		4.3						4.9		1.3	0.0	
Delay (s)		46.1						41.0		27.4	4.9	
Level of Service		D						D		C	A	
Approach Delay (s)		46.1			0.0			41.0			17.0	
Approach LOS		D			A			D			B	
Intersection Summary												
HCM Average Control Delay		30.3										
HCM Volume to Capacity ratio		0.66										
Actuated Cycle Length (s)		110.0										
Intersection Capacity Utilization		67.8%										
Analysis Period (min)		15										
c Critical Lane Group												

Appendix E-3

Signal Warrant Worksheets

Major Street Market Street
Minor Street Lowell Street / 63rd Street

Sheet No 1 of 1

Project BMSP Redevelopment
Scenario 2035 Plus Project
Peak Hour Weekday PM

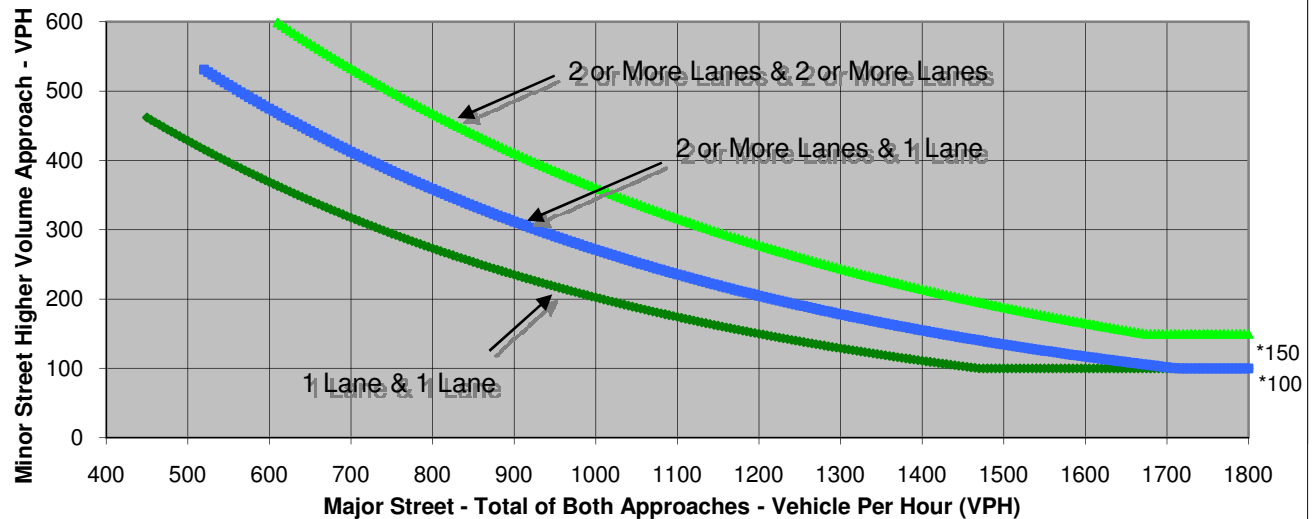
Turn Movement Volumes

	NB	SB	EB	WB
Left	40	10	61	10
Through	934	875	10	20
Right	10	112	15	10
Total	984	997	86	40

Major Street Direction

x	North/South
	East/West

**Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)**



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street	Minor Street	<u>Warrant Met</u>
	Market Street	Lowell Street / 63rd Street	
Number of Approach Lanes	2	1	<u>NO</u>
Traffic Volume (VPH) *	1,981	86	

* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Major Street Stanford Avenue
Minor Street Lowell Street

Sheet No 1 of 1

Project BMSF Redevelopment
Scenario 2035 Plus Project
Peak Hour Weekday PM

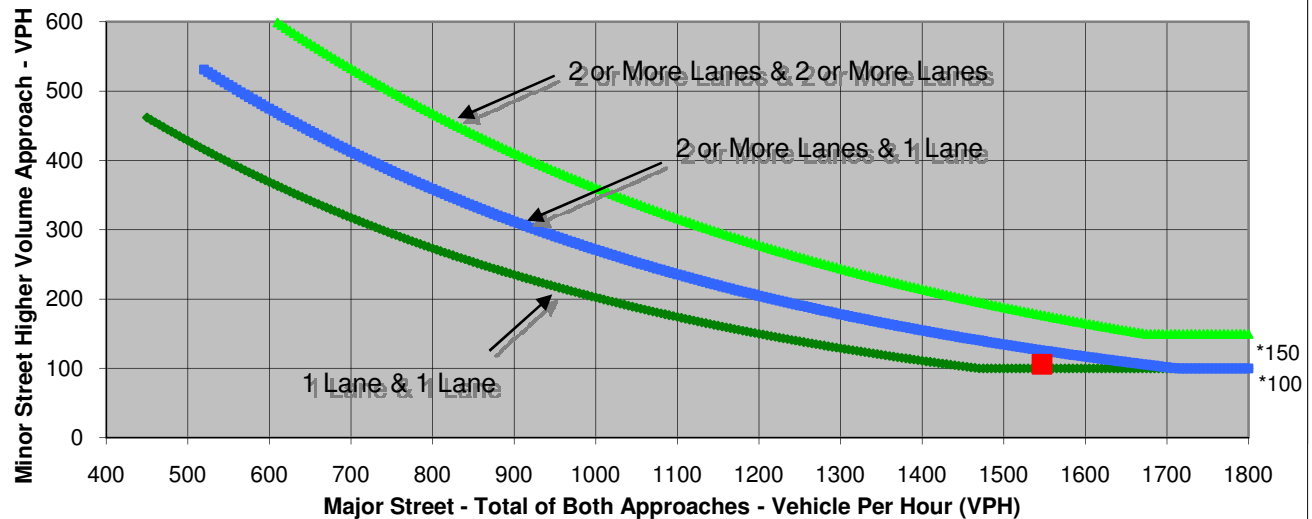
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	0	0	0
Through	0	0	877	575
Right	100	106	37	58
Total	100	106	914	633

Major Street Direction

	North/South
x	East/West

**Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)**



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Stanford Avenue	Minor Street Lowell Street	<u>Warrant Met</u>
Number of Approach Lanes	2	1	<u>NO</u>
Traffic Volume (VPH) *	1,547	106	

* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Major Street Stanford Avenue
Minor Street 60th Street

Sheet No 1 of 1

Project BMSF Redevelopment
Scenario 2035 Plus Project
Peak Hour Weekday PM

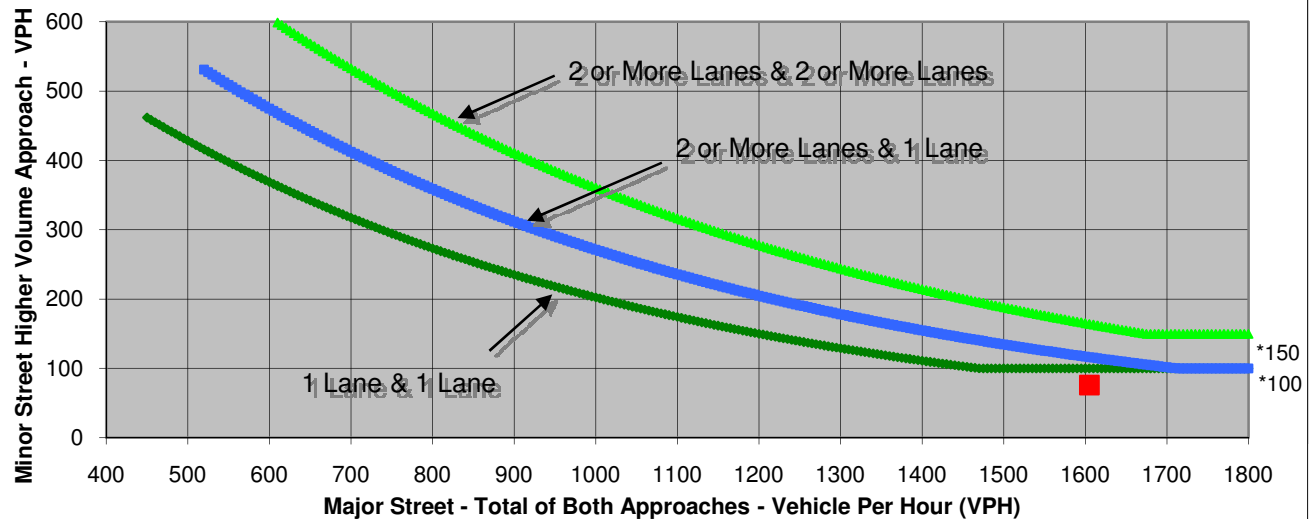
Turn Movement Volumes

	NB	SB	EB	WB
Left	0	66	92	10
Through	0	0	895	588
Right	0	10	0	20
Total	0	76	987	618

Major Street Direction

	North/South
x	East/West

**Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)**



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street Stanford Avenue	Minor Street 60th Street	<u>Warrant Met</u>
Number of Approach Lanes	2	1	<u>NO</u>
Traffic Volume (VPH) *	1,605	76	

* Note: Traffic Volume for Major Street is Total Volume of Both Approaches.
Traffic Volume for Minor Street is the Volume of High Volume Approach.

Major Street Adeline Street
Minor Street Lowell Street

Sheet No 1 of 1

Project BMSR Redevelopment
Scenario 2035 Plus Project
Peak Hour Weekday PM

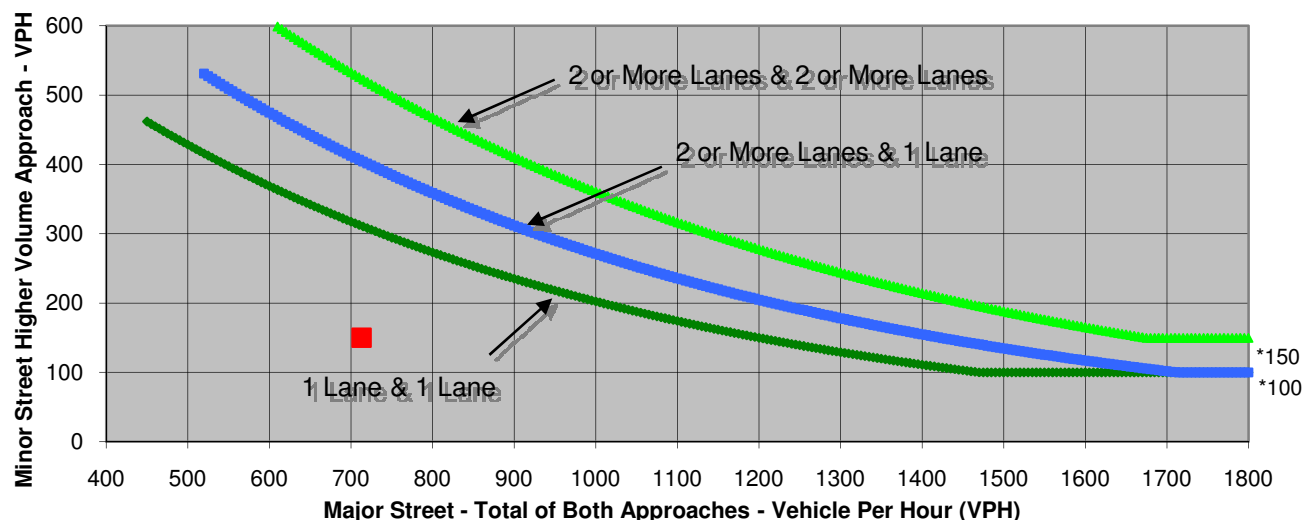
Turn Movement Volumes

	NB	SB	EB	WB
Left	132	0	30	0
Through	314	220	0	0
Right	0	47	120	0
Total	446	267	150	0

Major Street Direction

x	North/South
	East/West

**Figure 4C-3
Warrant 3, Peak Hour
(Urban Areas)**



* Note: 150 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACH WITH TWO OR MORE LANES AND 100 VPH APPLIES AS THE LOWER THRESHOLD VOLUME FOR A MINOR STREET APPROACHING WITH ONE LANE.

Source: *California Manual on Uniform Traffic Control Devices*, Caltrans, 2006

	Major Street	Minor Street	<u>Warrant Met</u>
	Adeline Street	Lowell Street	
Number of Approach Lanes	1	1	<u>NO</u>
Traffic Volume (VPH) *	713	150	
* Note: Traffic Volume for Major Street is Total Volume of Both Approaches. Traffic Volume for Minor Street is the Volume of High Volume Approach.			

Appendix E-4
LOS Calculation Worksheets
Existing Plus Project Conditions

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	38	225	43	25	407	159	57	298	34	139	497	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.98		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1808			1771		1758	3466		1740	3499	
Flt Permitted		0.89			0.98		0.35	1.00		0.51	1.00	
Satd. Flow (perm)		1624			1738		656	3466		937	3499	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	41	245	47	27	442	173	62	324	37	151	540	34
RTOR Reduction (vph)	0	8	0	0	19	0	0	13	0	0	6	0
Lane Group Flow (vph)	0	325	0	0	623	0	62	348	0	151	568	0
Confl. Peds. (#/hr)	41		19	19		41	12		21	21		12
Confl. Bikes (#/hr)			3			12			6			8
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		36.0			36.0		26.0	26.0		26.0	26.0	
Effective Green, g (s)		36.0			36.0		26.0	26.0		26.0	26.0	
Actuated g/C Ratio		0.51			0.51		0.37	0.37		0.37	0.37	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		835			894		244	1287		348	1300	
v/s Ratio Prot								0.10			c0.16	
v/s Ratio Perm		0.20			c0.36		0.09			0.16		
v/c Ratio		0.39			0.70		0.25	0.27		0.43	0.44	
Uniform Delay, d1		10.3			12.9		15.3	15.4		16.5	16.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		1.4			4.5		2.5	0.5		3.9	1.1	
Delay (s)		11.7			17.4		17.8	15.9		20.4	17.6	
Level of Service		B			B		B	B		C	B	
Approach Delay (s)		11.7			17.4			16.2			18.2	
Approach LOS		B			B			B			B	
Intersection Summary												
HCM Average Control Delay		16.5			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.59										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		76.0%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	45	4	74	1	3	10	38	312	3	7	489	58
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	49	4	80	1	3	11	41	339	3	8	532	63
Pedestrians		1			15			8			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	846	1019	306	810	1049	188	596			357		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	592	786	0	552	819	188	312			357		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	85	98	92	100	99	99	96			99		
cM capacity (veh/h)	325	272	963	317	261	810	1113			1183		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	134	15	211	173	273	329						
Volume Left	49	1	41	0	8	0						
Volume Right	80	11	0	3	0	63						
cSH	535	518	1113	1700	1183	1700						
Volume to Capacity	0.25	0.03	0.04	0.10	0.01	0.19						
Queue Length 95th (ft)	24	2	3	0	0	0						
Control Delay (s)	14.0	12.2	1.9	0.0	0.3	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	14.0	12.2	1.1		0.1							
Approach LOS	B	B										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			51.2%	ICU Level of Service				A				
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	331	888	290	59	557	76	83	18	57	84	53	368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3372	1219	1770	3539	1561	1681	1714	1583		1807	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3372	1219	1770	3539	1561	1681	1714	1583		1807	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	352	945	309	63	593	81	88	19	61	89	56	391
RTOR Reduction (vph)	0	2	140	0	0	27	0	0	56	0	0	192
Lane Group Flow (vph)	352	974	138	63	593	54	53	54	5	0	145	199
Confl. Peds. (#/hr)			10									13
Confl. Bikes (#/hr)						3						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	42.6	55.0	14.0	38.1	38.1	8.9	8.9	8.9		30.5	48.0
Effective Green, g (s)	17.0	42.1	54.5	13.5	38.6	38.6	8.4	8.4	8.4		30.0	47.0
Actuated g/C Ratio	0.15	0.38	0.50	0.12	0.35	0.35	0.08	0.08	0.08		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1291	604	217	1242	548	128	131	121		493	1123
v/s Ratio Prot	0.10	c0.29	0.11	0.04	c0.17		c0.03	0.03			c0.08	0.08
v/s Ratio Perm						0.03			0.00			
v/c Ratio	0.66	0.75	0.23	0.29	0.48	0.10	0.41	0.41	0.04		0.29	0.18
Uniform Delay, d1	43.8	29.5	15.8	43.9	27.8	24.0	48.5	48.4	47.1		31.6	19.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.4	4.1	0.1	0.3	1.3	0.4	1.6	1.5	0.1		1.5	0.3
Delay (s)	50.2	33.6	15.9	44.2	29.2	24.4	50.0	50.0	47.2		33.1	19.9
Level of Service	D	C	B	D	C	C	D	D	D		C	B
Approach Delay (s)		34.2			29.9			49.0			23.5	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM Average Control Delay			32.1			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			66.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	177	294	221	35	399	38	172	134	20	27	132	119
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3274		1770	3480		1770	1821		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3274		1770	3480		1770	1821		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	201	334	251	40	453	43	195	152	23	31	150	135
RTOR Reduction (vph)	0	88	0	0	5	0	0	5	0	0	0	114
Lane Group Flow (vph)	201	497	0	40	491	0	195	170	0	31	150	21
Confl. Peds. (#/hr)			2			9			3			33
Confl. Bikes (#/hr)			1			1			5			6
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	18.8	63.5		6.8	51.5		18.4	22.9		11.8	16.3	18.8
Effective Green, g (s)	18.3	64.0		6.3	52.0		17.9	22.4		11.3	15.8	18.3
Actuated g/C Ratio	0.15	0.53		0.05	0.43		0.15	0.19		0.09	0.13	0.15
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	270	1746		93	1508		264	340		167	245	241
v/s Ratio Prot	c0.11	0.15		0.02	c0.14		c0.11	c0.09		0.02	c0.08	0.01
v/s Ratio Perm												
v/c Ratio	0.74	0.28		0.43	0.33		0.74	0.50		0.19	0.61	0.09
Uniform Delay, d1	48.6	15.4		55.1	22.4		48.8	43.8		50.1	49.2	43.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.6	0.4		3.2	0.6		10.3	1.2		0.5	4.5	0.2
Delay (s)	59.2	15.8		58.3	23.0		59.1	44.9		50.6	53.7	43.8
Level of Service	E	B		E	C		E	D		D	D	D
Approach Delay (s)		26.9			25.6			52.4			49.2	
Approach LOS		C			C			D			D	
Intersection Summary												
HCM Average Control Delay			34.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			65.0%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	42	160	63	105	344	27	144	534	45	51	592	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3355		1770	3496		1770	3483		1770	3495	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3355		1770	3496		1770	3483		1770	3495	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	48	184	72	121	395	31	166	614	52	59	680	44
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	48	256	0	121	426	0	166	662	0	59	720	0
Confl. Peds. (#/hr)			18			4			28			31
Confl. Bikes (#/hr)			2			1			20			13
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.2	16.9		10.5	20.2		13.4	60.0		7.6	54.2	
Effective Green, g (s)	6.2	17.4		9.5	20.7		12.4	60.5		6.6	54.7	
Actuated g/C Ratio	0.06	0.16		0.09	0.19		0.11	0.55		0.06	0.50	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	100	531		153	658		200	1916		106	1738	
v/s Ratio Prot	0.03	0.08		c0.07	c0.12		c0.09	0.19		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.48	0.48		0.79	0.65		0.83	0.35		0.56	0.41	
Uniform Delay, d1	50.3	42.2		49.3	41.3		47.8	13.7		50.3	17.5	
Progression Factor	1.00	1.00		0.98	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	3.6	0.7		23.7	2.2		23.9	0.5		6.2	0.7	
Delay (s)	53.9	42.9		71.9	42.7		71.6	14.2		56.5	18.2	
Level of Service	D	D		E	D		E	B		E	B	
Approach Delay (s)		44.6			49.1			25.7			21.1	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.8			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			63.2%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	276	24	0	423	25	0	0	75	0	0	106
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	337	29	0	516	30	0	0	91	0	0	129
Pedestrians		5						5			5	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					619							
pX, platoon unblocked												
vC, conflicting volume	551			371			748	908	188	796	907	283
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	551			371			748	908	188	796	907	283
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	89	100	100	82
cM capacity (veh/h)	1010			1179			242	272	819	244	272	708
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	224	141	344	202	91	129						
Volume Left	0	0	0	0	0	0						
Volume Right	0	29	0	30	91	129						
cSH	1700	1700	1700	1700	819	708						
Volume to Capacity	0.13	0.08	0.20	0.12	0.11	0.18						
Queue Length 95th (ft)	0	0	0	0	9	17						
Control Delay (s)	0.0	0.0	0.0	0.0	9.9	11.2						
Lane LOS					A	B						
Approach Delay (s)	0.0		0.0		9.9	11.2						
Approach LOS					A	B						
Intersection Summary												
Average Delay			2.1									
Intersection Capacity Utilization			27.4%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	40	28	282	8	409	7	33	1
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	34	344	0	499	9	40	1
Pedestrians					4		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					0		0	
Right turn flare (veh)								
Median type			None		None			
Median storage (veh)								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.97		0.00			0.97	0.97
vC, conflicting volume	0	508		0			748	255
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	430		0			678	169
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	97		0			89	100
cM capacity (veh/h)	0	1090		0			361	819
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	34	172	172	333	175	41		
Volume Left	34	0	0	0	0	40		
Volume Right	0	0	0	0	9	1		
cSH	1090	1700	1700	1700	1700	367		
Volume to Capacity	0.03	0.10	0.10	0.20	0.10	0.11		
Queue Length 95th (ft)	2	0	0	0	0	9		
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	16.1		
Lane LOS	A					C		
Approach Delay (s)	0.8			0.0		16.1		
Approach LOS						C		
Intersection Summary								
Average Delay			1.0					
Intersection Capacity Utilization			32.9%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	41	167	25	59	275	6	120	299	11	35	539	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.98		1.00	1.00		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3454		1770	3526		1770	3518		1770	3514	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3454		1770	3526		1770	3518		1770	3514	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	42	170	26	60	281	6	122	305	11	36	550	22
RTOR Reduction (vph)	0	12	0	0	2	0	0	2	0	0	2	0
Lane Group Flow (vph)	42	184	0	60	285	0	122	314	0	36	570	0
Confl. Peds. (#/hr)			17			10			9			18
Confl. Bikes (#/hr)			6			2			11			17
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	3.5	10.5		4.0	11.0		7.4	26.1		2.3	21.0	
Effective Green, g (s)	3.5	10.5		4.0	11.0		7.4	26.1		2.3	21.0	
Actuated g/C Ratio	0.06	0.18		0.07	0.18		0.12	0.44		0.04	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	103	605		118	648		219	1533		68	1232	
v/s Ratio Prot	0.02	0.05		c0.03	c0.08		c0.07	0.09		0.02	c0.16	
v/s Ratio Perm												
v/c Ratio	0.41	0.30		0.51	0.44		0.56	0.21		0.53	0.46	
Uniform Delay, d1	27.2	21.5		27.0	21.7		24.7	10.5		28.3	15.1	
Progression Factor	1.00	1.01		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.0	0.2		1.3	0.3		1.7	0.1		3.4	0.4	
Delay (s)	28.3	22.0		28.3	22.1		26.4	10.6		31.7	15.5	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		23.1			23.1			15.0			16.4	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			18.4			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			59.9			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			52.1%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBT	NBR
Lane Configurations												
Volume (vph)	1	1	1	3	3	3	3	5	3	5	321	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0				3.0				6.0	
Lane Util. Factor			1.00				1.00				0.95	
Frpb, ped/bikes			0.99				0.98				1.00	
Flpb, ped/bikes			1.00				1.00				1.00	
Frt			0.93				0.93				0.99	
Flt Protected			0.98				0.98				1.00	
Satd. Flow (prot)			1690				1673				3477	
Flt Permitted			1.00				1.00				0.94	
Satd. Flow (perm)			1719				1701				3278	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	1	1	3	3	3	3	6	3	6	357	29
RTOR Reduction (vph)	0	0	0	0	0	0	3	0	0	0	1	0
Lane Group Flow (vph)	0	0	6	0	0	0	15	0	0	0	398	0
Confl. Peds. (#/hr)				1								2
Confl. Bikes (#/hr)								1	1			4
Turn Type	Perm	Perm			Perm	Perm				Perm		
Protected Phases			3				3				1	
Permitted Phases	3	3			3	3				1		
Actuated Green, G (s)			2.5				2.5				24.8	
Effective Green, g (s)			2.5				2.5				24.8	
Actuated g/C Ratio			0.03				0.03				0.34	
Clearance Time (s)			3.0				3.0				6.0	
Vehicle Extension (s)			3.0				3.0				3.0	
Lane Grp Cap (vph)			58				58				1103	
v/s Ratio Prot												
v/s Ratio Perm			0.00				0.01				0.12	
v/c Ratio			0.10				0.26				0.36	
Uniform Delay, d1			34.5				34.7				18.5	
Progression Factor			1.00				1.00				1.00	
Incremental Delay, d2			0.8				2.4				0.2	
Delay (s)			35.3				37.1				18.7	
Level of Service			D				D				B	
Approach Delay (s)			35.3				37.1				18.7	
Approach LOS			D				D				B	
Intersection Summary												
HCM Average Control Delay			20.6				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.43									
Actuated Cycle Length (s)			73.7				Sum of lost time (s)			15.0		
Intersection Capacity Utilization			65.2%				ICU Level of Service			C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	NBR2	SBL2	SBL	SBT	SBR	NEL	NET	NER	NER2	SWL2	SWL	SWT
Lane Configurations												
Volume (vph)	6	3	1	565	110	62	87	2	1	1	6	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)				6.0			6.0					6.0
Lane Util. Factor				0.95			1.00					1.00
Frpb, ped/bikes				0.99			1.00					1.00
Flpb, ped/bikes				1.00			1.00					1.00
Frt				0.98			1.00					1.00
Flt Protected				1.00			0.98					0.99
Satd. Flow (prot)				3425			1820					1829
Flt Permitted				0.95			0.88					0.94
Satd. Flow (perm)				3264			1626					1739
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	7	3	1	628	122	69	97	2	1	1	7	22
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	0	0	754	0	0	169	0	0	0	0	31
Confl. Peds. (#/hr)	2				1			1	1			
Confl. Bikes (#/hr)	4				24			13	13			
Turn Type		Perm	Perm			Perm				Perm	Perm	
Protected Phases				1			2					2
Permitted Phases		1	1			2				2	2	
Actuated Green, G (s)				24.8			31.4					31.4
Effective Green, g (s)				24.8			31.4					31.4
Actuated g/C Ratio				0.34			0.43					0.43
Clearance Time (s)				6.0			6.0					6.0
Vehicle Extension (s)				3.0			3.0					3.0
Lane Grp Cap (vph)				1098			693					741
v/s Ratio Prot												
v/s Ratio Perm				c0.23			c0.10					0.02
v/c Ratio				0.69			0.24					0.04
Uniform Delay, d1				21.1			13.5					12.4
Progression Factor				1.00			1.00					1.00
Incremental Delay, d2				1.8			0.2					0.0
Delay (s)				22.9			13.7					12.4
Level of Service				C			B					B
Approach Delay (s)				22.9			13.7					12.4
Approach LOS				C			B					B
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour



Movement	SWR
Lane Configurations	
Volume (vph)	1
Ideal Flow (vphpl)	1900
Total Lost time (s)	
Lane Util. Factor	
Frpb, ped/bikes	
Flpb, ped/bikes	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Peak-hour factor, PHF	0.90
Adj. Flow (vph)	1
RTOR Reduction (vph)	0
Lane Group Flow (vph)	0
Confl. Peds. (#/hr)	2
Confl. Bikes (#/hr)	8
Turn Type	
Protected Phases	
Permitted Phases	
Actuated Green, G (s)	
Effective Green, g (s)	
Actuated g/C Ratio	
Clearance Time (s)	
Vehicle Extension (s)	
Lane Grp Cap (vph)	
v/s Ratio Prot	
v/s Ratio Perm	
v/c Ratio	
Uniform Delay, d1	
Progression Factor	
Incremental Delay, d2	
Delay (s)	
Level of Service	
Approach Delay (s)	
Approach LOS	
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	90	67	185	165	23
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	27	120	89	247	220	31
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	661	235	251			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	661	235	251			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	93	85	93			
cM capacity (veh/h)	399	804	1315			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	147	336	251			
Volume Left	27	89	0			
Volume Right	120	0	31			
cSH	678	1315	1700			
Volume to Capacity	0.22	0.07	0.15			
Queue Length 95th (ft)	20	5	0			
Control Delay (s)	11.8	2.6	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.8	2.6	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			40.2%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	60	8	31	113	172	11	226	33	298	298	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.98			0.93		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1825			1693		1746	1816		1748	1862	
Flt Permitted		0.99			0.96		0.55	1.00		0.58	1.00	
Satd. Flow (perm)		1816			1641		1019	1816		1073	1862	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	1	67	9	34	126	191	12	251	37	331	331	1
RTOR Reduction (vph)	0	6	0	0	75	0	0	9	0	0	0	0
Lane Group Flow (vph)	0	71	0	0	276	0	12	279	0	331	332	0
Confl. Peds. (#/hr)	9		13	13		9	20		17	17		20
Confl. Bikes (#/hr)			1			9			10			23
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		13.0			13.0		20.4	20.4		20.4	20.4	
Effective Green, g (s)		13.0			13.0		20.4	20.4		20.4	20.4	
Actuated g/C Ratio		0.30			0.30		0.47	0.47		0.47	0.47	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		544			492		479	854		504	875	
v/s Ratio Prot								0.15			0.18	
v/s Ratio Perm		0.04			0.17		0.01			0.31		
v/c Ratio		0.13			0.56		0.03	0.33		0.66	0.38	
Uniform Delay, d1		11.1			12.8		6.2	7.2		8.8	7.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.5		0.0	0.2		3.1	0.3	
Delay (s)		11.2			14.3		6.2	7.4		11.9	7.7	
Level of Service		B			B		A	A		B	A	
Approach Delay (s)		11.2			14.3			7.4			9.8	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM Average Control Delay		10.5			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.62										
Actuated Cycle Length (s)		43.4			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		69.6%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	9	146	263	54	175	72	129	1372	41	48	1307	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1680			1776		1770	5058		1770	5075	
Flt Permitted		0.99			0.75		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1665			1340		1770	5058		1770	5075	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	10	155	280	57	186	77	137	1460	44	51	1390	15
RTOR Reduction (vph)	0	78	0	0	15	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	367	0	0	305	0	137	1501	0	51	1404	0
Confl. Peds. (#/hr)			6			15			7			9
Confl. Bikes (#/hr)			7			5			2			5
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		21.5			21.5		9.4	33.4		3.9	27.9	
Effective Green, g (s)		21.5			21.5		9.4	33.4		3.9	27.9	
Actuated g/C Ratio		0.29			0.29		0.13	0.46		0.05	0.38	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		488			393		227	2305		94	1932	
v/s Ratio Prot							0.08	c0.30		0.03	c0.28	
v/s Ratio Perm		0.22			c0.23							
v/c Ratio		0.75			0.78		0.60	0.65		0.54	0.73	
Uniform Delay, d1		23.5			23.7		30.2	15.4		33.8	19.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		6.4			9.3		4.5	0.7		6.3	1.4	
Delay (s)		29.9			33.0		34.7	16.1		40.1	20.8	
Level of Service		C			C		C	B		D	C	
Approach Delay (s)		29.9			33.0			17.7			21.5	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay		21.8			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		73.3			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		89.8%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	72	234	20	16	374	41	23	131	20	43	152	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3489		1770	3473			1817		1770	1764	
Flt Permitted	0.95	1.00		0.95	1.00			0.92		0.56	1.00	
Satd. Flow (perm)	1770	3489		1770	3473			1683		1049	1764	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	79	257	22	18	411	45	25	144	22	47	167	67
RTOR Reduction (vph)	0	10	0	0	14	0	0	10	0	0	30	0
Lane Group Flow (vph)	79	269	0	18	442	0	0	181	0	47	204	0
Confl. Peds. (#/hr)			10			11			10			30
Confl. Bikes (#/hr)						12			5			9
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	4.6	28.4		1.2	25.0			9.4		9.4	9.4	
Effective Green, g (s)	4.1	28.4		0.7	25.0			8.9		8.9	8.9	
Actuated g/C Ratio	0.08	0.57		0.01	0.50			0.18		0.18	0.18	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	145	1982		25	1737			300		187	314	
v/s Ratio Prot	c0.04	c0.08		0.01	c0.13						c0.12	
v/s Ratio Perm								0.11		0.04		
v/c Ratio	0.54	0.14		0.72	0.25			0.60		0.25	0.65	
Uniform Delay, d1	22.1	5.1		24.6	7.2			18.9		17.7	19.1	
Progression Factor	1.10	1.25		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.2	0.1		58.2	0.4			3.4		0.7	4.8	
Delay (s)	25.4	6.4		82.8	7.5			22.3		18.4	23.9	
Level of Service	C	A		F	A			C		B	C	
Approach Delay (s)		10.6			10.4			22.3			23.0	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			14.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.40									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			60.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	26	80	1	85	122	3	0	978	91	0	656	74
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		1.00			1.00			0.99			0.98	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3491			3458			3470			3475	
Flt Permitted		0.82			0.98			1.00			1.00	
Satd. Flow (perm)		2904			3458			3470			3475	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	27	83	1	89	127	3	0	1019	95	0	683	77
RTOR Reduction (vph)	0	1	0	0	1	0	0	5	0	0	6	0
Lane Group Flow (vph)	0	110	0	0	218	0	0	1109	0	0	754	0
Confl. Peds. (#/hr)						23			26			11
Confl. Bikes (#/hr)			2			7			9			10
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		8.5			11.3			74.2			74.2	
Effective Green, g (s)		9.5			12.3			76.2			76.2	
Actuated g/C Ratio		0.09			0.11			0.69			0.69	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		251			387			2404			2407	
v/s Ratio Prot					c0.06			c0.32			0.22	
v/s Ratio Perm	c0.04											
v/c Ratio		0.44			0.56			0.46			0.31	
Uniform Delay, d1		47.7			46.3			7.6			6.6	
Progression Factor		1.00			1.00			0.93			1.00	
Incremental Delay, d2		0.4			1.1			0.5			0.3	
Delay (s)		48.2			47.4			7.6			7.0	
Level of Service		D			D			A			A	
Approach Delay (s)		48.2			47.4			7.6			7.0	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			13.4			HCM Level of Service			B			
HCM Volume to Capacity ratio			0.47									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			53.7%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	51	249	633	15	377	0	0	707	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3509	1551		3533			5079	
Flt Permitted					0.99	1.00		0.92			1.00	
Satd. Flow (perm)					3509	1551		3242			5079	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	56	274	696	16	414	0	0	777	5
RTOR Reduction (vph)	0	0	0	0	0	376	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	330	320	0	430	0	0	781	0
Confl. Peds. (#/hr)						5			10			21
Confl. Bikes (#/hr)									12			20
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					24.0	24.0		77.0			77.0	
Effective Green, g (s)					24.0	24.0		78.0			78.0	
Actuated g/C Ratio					0.22	0.22		0.71			0.71	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					766	338		2299			3601	
v/s Ratio Prot					0.09						c0.15	
v/s Ratio Perm						c0.21		0.13				
v/c Ratio					0.43	0.95		0.19			0.22	
Uniform Delay, d1					37.1	42.4		5.4			5.5	
Progression Factor					1.00	1.00		0.06			0.85	
Incremental Delay, d2					0.1	34.5		0.2			0.1	
Delay (s)					37.2	76.9		0.5			4.8	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			64.2			0.5			4.8	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			31.2				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.39									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			61.4%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	6	143	35	0	0	0	0	386	50	216	551	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3422						3454		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3422						3454		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	6	151	37	0	0	0	0	406	53	227	580	0
RTOR Reduction (vph)	0	23	0	0	0	0	0	11	0	0	0	0
Lane Group Flow (vph)	0	171	0	0	0	0	0	448	0	227	580	0
Confl. Peds. (#/hr)			3						20			10
Confl. Bikes (#/hr)									13			21
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		9.9						18.8		66.3	91.1	
Effective Green, g (s)		10.9						19.8		67.3	91.1	
Actuated g/C Ratio		0.10						0.18		0.61	0.83	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		339						622		2100	2931	
v/s Ratio Prot		c0.05						c0.13		0.07	c0.16	
v/s Ratio Perm												
v/c Ratio		0.51						0.72		0.11	0.20	
Uniform Delay, d1		47.0						42.5		8.9	1.9	
Progression Factor		1.00						1.00		1.06	1.10	
Incremental Delay, d2		0.4						3.3		0.1	0.0	
Delay (s)		47.4						45.8		9.5	2.2	
Level of Service		D						D		A	A	
Approach Delay (s)		47.4			0.0			45.8			4.2	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		23.0						HCM Level of Service		C		
HCM Volume to Capacity ratio		0.33										
Actuated Cycle Length (s)		110.0						Sum of lost time (s)		8.0		
Intersection Capacity Utilization		36.0%						ICU Level of Service		A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area

Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	345	42	38	320	243	55	692	35	137	542	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.99			0.95		1.00	0.99		1.00	0.99	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1822			1735		1752	3507		1762	3488	
Flt Permitted		0.91			0.95		0.31	1.00		0.22	1.00	
Satd. Flow (perm)		1668			1660		572	3507		414	3488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	375	46	41	348	264	60	752	38	149	589	45
RTOR Reduction (vph)	0	5	0	0	30	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	459	0	0	623	0	60	786	0	149	627	0
Confl. Peds. (#/hr)	27		24	24		27	18		10	10		18
Confl. Bikes (#/hr)			21			3			7			7
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.52			0.52		0.38	0.38		0.38	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		876			872		215	1315		155	1308	
v/s Ratio Prot								0.22			0.18	
v/s Ratio Perm		0.28			0.38		0.10			0.36		
v/c Ratio		0.52			0.71		0.28	0.60		0.96	0.48	
Uniform Delay, d1		12.5			14.4		17.5	20.1		24.4	19.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		2.2			5.0		3.2	2.0		62.7	1.3	
Delay (s)		14.7			19.4		20.7	22.1		87.1	20.3	
Level of Service		B			B		C	C		F	C	
Approach Delay (s)		14.7			19.4			22.0			33.0	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay		23.3					HCM Level of Service			C		
HCM Volume to Capacity ratio		0.82										
Actuated Cycle Length (s)		80.0					Sum of lost time (s)			8.0		
Intersection Capacity Utilization		81.0%					ICU Level of Service			D		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	47	2	34	0	2	9	26	708	4	9	507	100
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	53	2	38	0	2	10	29	796	4	10	570	112
Pedestrians		6			6			1			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.92	0.92	0.87	0.92	0.92	0.91	0.87			0.91		
vC, conflicting volume	1124	1516	348	1208	1570	411	688			806		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	511	936	0	601	995	147	356			582		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	86	99	96	100	99	99	97			99		
cM capacity (veh/h)	384	231	943	322	213	785	1043			892		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	93	12	427	402	295	397						
Volume Left	53	0	29	0	10	0						
Volume Right	38	10	0	4	0	112						
cSH	496	528	1043	1700	892	1700						
Volume to Capacity	0.19	0.02	0.03	0.24	0.01	0.23						
Queue Length 95th (ft)	17	2	2	0	1	0						
Control Delay (s)	13.9	12.0	0.9	0.0	0.4	0.0						
Lane LOS	B	B	A		A							
Approach Delay (s)	13.9	12.0	0.5		0.2							
Approach LOS	B	B										
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			56.9%	ICU Level of Service						B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	303	687	685	202	815	94	165	42	104	118	193	664
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (prot)	3467	3231	1231	1805	3574	1591	1698	1742	1586		1842	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (perm)	3467	3231	1231	1805	3574	1591	1698	1742	1586		1842	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	316	716	714	210	849	98	172	44	108	123	201	692
RTOR Reduction (vph)	0	32	129	0	0	24	0	0	96	0	0	74
Lane Group Flow (vph)	316	955	314	210	849	74	107	109	12	0	324	618
Confl. Peds. (#/hr)			15									46
Confl. Bikes (#/hr)			5			4			3			4
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	34.8	51.5	17.5	33.8	33.8	13.2	13.2	13.2		30.5	48.0
Effective Green, g (s)	17.0	34.3	51.0	17.0	34.3	34.3	12.7	12.7	12.7		30.0	47.0
Actuated g/C Ratio	0.15	0.31	0.46	0.15	0.31	0.31	0.12	0.12	0.12		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	1007	571	279	1114	496	196	201	183		502	1134
v/s Ratio Prot	0.09	c0.30	c0.25	0.12	c0.24		0.06	0.06			c0.18	0.23
v/s Ratio Perm						0.05			0.01			
v/c Ratio	0.59	0.95	0.55	0.75	0.76	0.15	0.55	0.54	0.07		0.65	0.55
Uniform Delay, d1	43.3	37.0	21.2	44.5	34.2	27.3	45.9	45.9	43.4		35.3	23.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	4.7	18.3	0.9	9.7	4.9	0.6	2.4	2.3	0.1		6.3	1.9
Delay (s)	48.0	55.3	22.1	54.2	39.1	28.0	48.4	48.3	43.5		41.6	25.4
Level of Service	D	E	C	D	D	C	D	D	D		D	C
Approach Delay (s)		45.5			40.9			46.7			30.6	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			40.8			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.76									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			81.9%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	123	612	137	47	446	35	323	304	36	87	249	227
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3452		1770	3527		1805	1845		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3452		1770	3527		1805	1845		1719	1845	1599
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	132	658	147	51	480	38	347	327	39	94	268	244
RTOR Reduction (vph)	0	14	0	0	4	0	0	4	0	0	0	197
Lane Group Flow (vph)	132	791	0	51	514	0	347	362	0	94	268	47
Confl. Peds. (#/hr)			5			7			10			6
Confl. Bikes (#/hr)			5			3			11			20
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	13.7	49.2		6.8	42.3		27.6	29.0		20.5	21.9	13.7
Effective Green, g (s)	13.2	49.7		6.3	42.8		27.1	28.5		20.0	21.4	13.2
Actuated g/C Ratio	0.11	0.41		0.05	0.36		0.22	0.24		0.17	0.18	0.11
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	194	1424		93	1253		406	436		285	328	175
v/s Ratio Prot	c0.07	c0.23		0.03	c0.15		0.19	c0.20		0.05	c0.15	0.03
v/s Ratio Perm												
v/c Ratio	0.68	0.56		0.55	0.41		0.85	0.83		0.33	0.82	0.27
Uniform Delay, d1	51.6	27.0		55.7	29.3		44.8	43.7		44.3	47.7	49.2
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	9.4	1.6		6.5	1.0		15.9	12.6		0.7	14.5	0.8
Delay (s)	61.0	28.6		62.2	30.3		60.7	56.4		45.0	62.2	50.1
Level of Service	E	C		E	C		E	E		D	E	D
Approach Delay (s)		33.1			33.2			58.5			54.6	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			44.2			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			70.3%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	117	555	118	105	307	35	109	788	96	91	775	68
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3465		1770	3541		1736	3492		1805	3494	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3465		1770	3541		1736	3492		1805	3494	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	119	566	120	107	313	36	111	804	98	93	791	69
RTOR Reduction (vph)	0	17	0	0	8	0	0	8	0	0	6	0
Lane Group Flow (vph)	119	669	0	107	341	0	111	894	0	93	854	0
Confl. Peds. (#/hr)			13			16			37			13
Confl. Bikes (#/hr)			7			3			14			3
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.5	25.4		10.2	25.1		11.6	51.0		8.4	47.8	
Effective Green, g (s)	9.5	25.9		9.2	25.6		10.6	51.5		7.4	48.3	
Actuated g/C Ratio	0.09	0.24		0.08	0.23		0.10	0.47		0.07	0.44	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	153	816		148	824		167	1635		121	1534	
v/s Ratio Prot	c0.07	c0.19		0.06	0.10		c0.06	c0.26		0.05	0.24	
v/s Ratio Perm												
v/c Ratio	0.78	0.82		0.72	0.41		0.66	0.55		0.77	0.56	
Uniform Delay, d1	49.2	39.8		49.2	35.8		48.0	20.9		50.5	22.9	
Progression Factor	1.00	1.00		1.01	0.97		1.00	1.00		1.00	1.00	
Incremental Delay, d2	21.6	6.6		16.0	0.3		9.6	1.3		24.9	1.5	
Delay (s)	70.8	46.5		65.4	35.3		57.5	22.2		75.3	24.4	
Level of Service	E	D		E	D		E	C		E	C	
Approach Delay (s)		50.1			42.3			26.1			29.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			35.3			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			69.5%			ICU Level of Service			C			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	733	28	0	422	51	0	0	86	0	0	89
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	772	29	0	444	54	0	0	91	0	0	94
Pedestrians								1			14	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	619											
pX, platoon unblocked	0.99						0.99	0.99		0.99	0.99	0.99
vC, conflicting volume	512			802			1103	1299	402	961	1287	263
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	478			802			1077	1276	402	933	1264	225
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	85	100	100	88
cM capacity (veh/h)	1054			817			148	161	598	181	164	758
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	514	287	296	202	91	94						
Volume Left	0	0	0	0	0	0						
Volume Right	0	29	0	54	91	94						
cSH	1700	1700	1700	1700	598	758						
Volume to Capacity	0.30	0.17	0.17	0.12	0.15	0.12						
Queue Length 95th (ft)	0	0	0	0	13	11						
Control Delay (s)	0.0	0.0	0.0	0.0	12.1	10.4						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		12.1	10.4						
Approach LOS					B	B						
Intersection Summary												
Average Delay	1.4											
Intersection Capacity Utilization	33.1%			ICU Level of Service					A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	30	45	756	5	433	11	60	1
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	48	813	0	466	12	65	1
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.96		0.00			0.96	0.96
vC, conflicting volume	0	477		0			975	239
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	360		0			880	110
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	96		0			75	100
cM capacity (veh/h)	0	1142		0			262	881
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	48	406	406	310	167	66		
Volume Left	48	0	0	0	0	65		
Volume Right	0	0	0	0	12	1		
cSH	1142	1700	1700	1700	1700	265		
Volume to Capacity	0.04	0.24	0.24	0.18	0.10	0.25		
Queue Length 95th (ft)	3	0	0	0	0	24		
Control Delay (s)	8.3	0.0	0.0	0.0	0.0	23.0		
Lane LOS	A					C		
Approach Delay (s)	0.5			0.0		23.0		
Approach LOS						C		
Intersection Summary								
Average Delay			1.4					
Intersection Capacity Utilization			46.7%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	111	431	20	116	279	29	146	625	16	58	499	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3512		1770	3478		1770	3523		1770	3510	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3512		1770	3478		1770	3523		1770	3510	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	119	463	22	125	300	31	157	672	17	62	537	26
RTOR Reduction (vph)	0	3	0	0	7	0	0	1	0	0	3	0
Lane Group Flow (vph)	119	482	0	125	324	0	157	688	0	62	560	0
Confl. Peds. (#/hr)			6			19			13			15
Confl. Bikes (#/hr)			2			4			10			4
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	8.5	17.8		10.5	19.8		12.0	27.5		6.3	21.8	
Effective Green, g (s)	8.5	17.8		10.5	19.8		12.0	27.5		6.3	21.8	
Actuated g/C Ratio	0.11	0.23		0.13	0.25		0.15	0.35		0.08	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	190	790		235	871		269	1225		141	967	
v/s Ratio Prot	0.07	c0.14		c0.07	0.09		c0.09	c0.20		0.04	0.16	
v/s Ratio Perm												
v/c Ratio	0.63	0.61		0.53	0.37		0.58	0.56		0.44	0.58	
Uniform Delay, d1	33.8	27.5		32.0	24.5		31.2	20.9		34.7	24.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	4.6	1.2		1.2	0.2		2.1	0.7		0.8	1.0	
Delay (s)	38.4	28.7		33.2	24.7		33.3	21.6		35.5	25.7	
Level of Service	D	C		C	C		C	C		D	C	
Approach Delay (s)		30.6			27.0			23.8			26.7	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			26.7			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			79.1			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			58.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL2	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL	NBT
Lane Configurations												
Volume (vph)	2	2	3	1	2	2	2	5	3	9	1	618
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		3.0					3.0					6.0
Lane Util. Factor		1.00					1.00					0.95
Frpb, ped/bikes		0.99					0.98					1.00
Flpb, ped/bikes		1.00					1.00					1.00
Frt		0.93					0.92					0.99
Flt Protected		0.99					0.99					1.00
Satd. Flow (prot)		1696					1663					3485
Flt Permitted		0.96					0.99					0.94
Satd. Flow (perm)		1651					1668					3263
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	2	2	3	1	2	2	2	5	3	10	1	679
RTOR Reduction (vph)	0	1	0	0	0	0	3	0	0	0	0	2
Lane Group Flow (vph)	0	7	0	0	0	0	11	0	0	0	0	739
Confl. Peds. (#/hr)			1	1				5	5			
Confl. Bikes (#/hr)												
Turn Type	Perm				Perm	Perm				Perm		
Protected Phases		3					3					1
Permitted Phases	3				3	3				1		
Actuated Green, G (s)		2.6					2.6					29.1
Effective Green, g (s)		2.6					2.6					29.1
Actuated g/C Ratio		0.03					0.03					0.37
Clearance Time (s)		3.0					3.0					6.0
Vehicle Extension (s)		3.0					3.0					3.0
Lane Grp Cap (vph)		55					56					1220
v/s Ratio Prot												
v/s Ratio Perm		0.00					0.01					0.23
v/c Ratio		0.13					0.20					0.61
Uniform Delay, d1		36.5					36.6					19.7
Progression Factor		1.00					1.00					1.00
Incremental Delay, d2		1.1					1.7					0.9
Delay (s)		37.6					38.3					20.6
Level of Service		D					D					C
Approach Delay (s)		37.6					38.3					20.6
Approach LOS		D					D					C
Intersection Summary												
HCM Average Control Delay		22.1					HCM Level of Service			C		
HCM Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		77.8					Sum of lost time (s)		15.0			
Intersection Capacity Utilization		74.9%					ICU Level of Service		D			
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

													
Movement	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	SWL2	SWL	
Lane Configurations													
Volume (vph)	23	24	2	5	692	147	2	118	101	4	1	5	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	
Total Lost time (s)					6.0					6.0			
Lane Util. Factor					0.95					1.00			
Frbp, ped/bikes					0.99					1.00			
Flpb, ped/bikes					1.00					1.00			
Frt					0.97					1.00			
Flt Protected					1.00					0.97			
Satd. Flow (prot)					3396					1810			
Flt Permitted					0.95					0.82			
Satd. Flow (perm)					3222					1516			
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	
Adj. Flow (vph)	25	26	2	5	760	162	2	130	111	4	1	5	
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0	
Lane Group Flow (vph)	0	0	0	0	931	0	0	0	245	0	0	0	
Confl. Peds. (#/hr)					7				1				
Confl. Bikes (#/hr)	22	22					14	14	15				
Turn Type			Perm	Perm					Perm			Perm	Perm
Protected Phases					1					2			
Permitted Phases			1	1					2			2	2
Actuated Green, G (s)					29.1					31.1			
Effective Green, g (s)					29.1					31.1			
Actuated g/C Ratio					0.37					0.40			
Clearance Time (s)					6.0					6.0			
Vehicle Extension (s)					3.0					3.0			
Lane Grp Cap (vph)					1205					606			
v/s Ratio Prot													
v/s Ratio Perm					c0.29					c0.16			
v/c Ratio					0.77					0.40			
Uniform Delay, d1					21.4					16.7			
Progression Factor					1.00					1.00			
Incremental Delay, d2					3.1					0.4			
Delay (s)					24.6					17.2			
Level of Service					C					B			
Approach Delay (s)					24.6					17.2			
Approach LOS					C					B			
Intersection Summary													

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour



Movement	SWT
Lane Configurations	
Volume (vph)	25
Ideal Flow (vphpl)	1900
Total Lost time (s)	6.0
Lane Util. Factor	1.00
Frpb, ped/bikes	1.00
Flpb, ped/bikes	1.00
Frt	1.00
Flt Protected	0.99
Satd. Flow (prot)	1846
Flt Permitted	0.95
Satd. Flow (perm)	1769
Peak-hour factor, PHF	0.91
Adj. Flow (vph)	27
RTOR Reduction (vph)	0
Lane Group Flow (vph)	33
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Turn Type	
Protected Phases	2
Permitted Phases	
Actuated Green, G (s)	31.1
Effective Green, g (s)	31.1
Actuated g/C Ratio	0.40
Clearance Time (s)	6.0
Vehicle Extension (s)	3.0
Lane Grp Cap (vph)	707
v/s Ratio Prot	
v/s Ratio Perm	0.02
v/c Ratio	0.05
Uniform Delay, d1	14.3
Progression Factor	1.00
Incremental Delay, d2	0.0
Delay (s)	14.3
Level of Service	B
Approach Delay (s)	14.3
Approach LOS	B
Intersection Summary	

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour



Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	12	107	122	267	170	33
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	13	114	130	284	181	35
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	745	201	219			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	745	201	219			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	96	86	90			
cM capacity (veh/h)	344	837	1347			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	127	414	216			
Volume Left	13	130	0			
Volume Right	114	0	35			
cSH	732	1347	1700			
Volume to Capacity	0.17	0.10	0.13			
Queue Length 95th (ft)	16	8	0			
Control Delay (s)	10.9	3.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	10.9	3.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			49.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	2	86	11	26	100	251	12	454	43	353	360	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.99			0.91		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1827			1665		1735	1829		1752	1862	
Flt Permitted		0.99			0.97		0.50	1.00		0.38	1.00	
Satd. Flow (perm)		1818			1624		907	1829		696	1862	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	2	95	12	29	110	276	13	499	47	388	396	1
RTOR Reduction (vph)	0	8	0	0	133	0	0	5	0	0	0	0
Lane Group Flow (vph)	0	101	0	0	282	0	13	541	0	388	397	0
Confl. Peds. (#/hr)	6		7	7		6	26		18	18		26
Confl. Bikes (#/hr)			1			5			26			10
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		14.0			14.0		30.3	30.3		30.3	30.3	
Effective Green, g (s)		14.0			14.0		30.3	30.3		30.3	30.3	
Actuated g/C Ratio		0.26			0.26		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		469			419		506	1021		388	1039	
v/s Ratio Prot								0.30			0.21	
v/s Ratio Perm		0.06			0.17		0.01			0.56		
v/c Ratio		0.22			0.67		0.03	0.53		1.00	0.38	
Uniform Delay, d1		15.8			18.1		5.4	7.5		12.0	6.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			4.2		0.0	0.5		45.7	0.2	
Delay (s)		16.1			22.3		5.4	8.1		57.7	7.0	
Level of Service		B			C		A	A		E	A	
Approach Delay (s)		16.1			22.3			8.0			32.0	
Approach LOS		B			C			A			C	
Intersection Summary												
HCM Average Control Delay		21.8					HCM Level of Service			C		
HCM Volume to Capacity ratio		0.90										
Actuated Cycle Length (s)		54.3					Sum of lost time (s)			10.0		
Intersection Capacity Utilization		87.9%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	12	234	243	52	159	46	206	1587	98	101	1476	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713			1791		1770	5020		1770	5071	
Flt Permitted		0.99			0.68		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1697			1234		1770	5020		1770	5071	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	13	252	261	56	171	49	222	1706	105	109	1587	20
RTOR Reduction (vph)	0	37	0	0	8	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	489	0	0	268	0	222	1805	0	109	1606	0
Confl. Peds. (#/hr)			13			11			23			22
Confl. Bikes (#/hr)			6			12			7			9
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		30.4			30.4		19.5	40.6		8.3	29.4	
Effective Green, g (s)		30.4			30.4		19.5	40.6		8.3	29.4	
Actuated g/C Ratio		0.32			0.32		0.21	0.43		0.09	0.31	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		550			400		368	2173		157	1589	
v/s Ratio Prot							0.13	c0.36		0.06	c0.32	
v/s Ratio Perm		c0.29			0.22							
v/c Ratio		0.89			0.67		0.60	0.83		0.69	1.01	
Uniform Delay, d1		30.1			27.4		33.6	23.6		41.5	32.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		16.0			4.2		2.8	2.8		12.5	25.2	
Delay (s)		46.1			31.6		36.4	26.4		54.0	57.4	
Level of Service		D			C		D	C		D	E	
Approach Delay (s)		46.1			31.6			27.5			57.2	
Approach LOS		D			C			C			E	
Intersection Summary												
HCM Average Control Delay		41.1			HCM Level of Service			D				
HCM Volume to Capacity ratio		0.89										
Actuated Cycle Length (s)		93.8			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		92.4%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	97	608	30	29	391	44	18	184	32	48	132	64
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3539		1805	3539			1835		1794	1786	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.43	1.00	
Satd. Flow (perm)	1805	3539		1805	3539			1775		816	1786	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	104	654	32	31	420	47	19	198	34	52	142	69
RTOR Reduction (vph)	0	6	0	0	15	0	0	11	0	0	36	0
Lane Group Flow (vph)	104	680	0	31	452	0	0	240	0	52	175	0
Confl. Peds. (#/hr)			27			20	14		16	16		14
Confl. Bikes (#/hr)			36			4			10			14
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.0	26.5		2.6	23.1			9.9		9.9	9.9	
Effective Green, g (s)	5.5	26.5		2.1	23.1			9.4		9.4	9.4	
Actuated g/C Ratio	0.11	0.53		0.04	0.46			0.19		0.19	0.19	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	199	1876		76	1635			334		153	336	
v/s Ratio Prot	c0.06	c0.19		0.02	0.13						0.10	
v/s Ratio Perm								c0.13		0.06		
v/c Ratio	0.52	0.36		0.41	0.28			0.72		0.34	0.52	
Uniform Delay, d1	21.0	6.8		23.3	8.3			19.1		17.6	18.3	
Progression Factor	1.12	1.19		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.7	0.3		1.3	0.4			7.2		1.3	1.5	
Delay (s)	24.2	8.4		24.6	8.7			26.2		18.9	19.7	
Level of Service	C	A		C	A			C		B	B	
Approach Delay (s)		10.5			9.7			26.2			19.6	
Approach LOS		B			A			C			B	
Intersection Summary												
HCM Average Control Delay			13.8			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			60.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	127	12	61	116	12	0	1083	115	0	1185	97
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		3518			3502			3504			3488	
Flt Permitted		0.80			0.98			1.00			1.00	
Satd. Flow (perm)		2841			3502			3504			3488	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	66	131	12	63	120	12	0	1116	119	0	1222	100
RTOR Reduction (vph)	0	4	0	0	4	0	0	6	0	0	4	0
Lane Group Flow (vph)	0	205	0	0	191	0	0	1229	0	0	1318	0
Confl. Peds. (#/hr)						19			10			18
Confl. Bikes (#/hr)			7			11			23			29
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		12.3			10.3			71.4			71.4	
Effective Green, g (s)		13.3			11.3			73.4			73.4	
Actuated g/C Ratio		0.12			0.10			0.67			0.67	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		344			360			2338			2327	
v/s Ratio Prot					c0.05			0.35			c0.38	
v/s Ratio Perm	c0.07											
v/c Ratio		0.59			0.53			0.53			0.57	
Uniform Delay, d1		45.8			46.8			9.4			9.8	
Progression Factor		1.00			1.00			0.57			1.00	
Incremental Delay, d2		1.8			0.6			0.8			1.0	
Delay (s)		47.6			47.5			6.1			10.8	
Level of Service		D			D			A			B	
Approach Delay (s)		47.6			47.5			6.1			10.8	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM Average Control Delay		13.8			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.57										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		59.7%			ICU Level of Service			B				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	49	203	418	18	727	0	0	1180	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3519	1563		3537			5073	
Flt Permitted					0.99	1.00		0.91			1.00	
Satd. Flow (perm)					3519	1563		3208			5073	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	50	207	427	18	742	0	0	1204	15
RTOR Reduction (vph)	0	0	0	0	0	209	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	257	218	0	760	0	0	1218	0
Confl. Peds. (#/hr)						6			12			27
Confl. Bikes (#/hr)									24			27
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					18.6	18.6		82.4			82.4	
Effective Green, g (s)					18.6	18.6		83.4			83.4	
Actuated g/C Ratio					0.17	0.17		0.76			0.76	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					595	264		2432			3846	
v/s Ratio Prot					0.07						c0.24	
v/s Ratio Perm						c0.14		0.24				
v/c Ratio					0.43	0.82		0.31			0.32	
Uniform Delay, d1					41.0	44.1		4.2			4.2	
Progression Factor					1.00	1.00		0.01			0.86	
Incremental Delay, d2					0.2	17.7		0.2			0.2	
Delay (s)					41.1	61.8		0.3			3.8	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			54.0			0.3			3.8	
Approach LOS		A			D			A			A	
Intersection Summary												
HCM Average Control Delay			15.7				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.41									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			53.8%				ICU Level of Service		A			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	394	82	0	0	0	0	728	70	654	575	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.98						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3497						3486		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3497						3486		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	18	424	88	0	0	0	0	783	75	703	618	0
RTOR Reduction (vph)	0	16	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	514	0	0	0	0	0	851	0	703	618	0
Confl. Peds. (#/hr)			13						13			29
Confl. Bikes (#/hr)			1						22			27
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split						Prot					
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		20.4						31.7		42.9	80.6	
Effective Green, g (s)		21.4						32.7		43.9	80.6	
Actuated g/C Ratio		0.19						0.30		0.40	0.73	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		680						1036		1370	2568	
v/s Ratio Prot		c0.15						c0.24		c0.20	0.18	
v/s Ratio Perm												
v/c Ratio		0.76						0.82		0.51	0.24	
Uniform Delay, d1		41.8						35.9		25.0	4.8	
Progression Factor		1.00						1.00		1.06	1.02	
Incremental Delay, d2		4.3						5.1		1.3	0.0	
Delay (s)		46.1						41.0		27.8	4.9	
Level of Service		D						D		C	A	
Approach Delay (s)		46.1			0.0			41.0			17.1	
Approach LOS		D			A			D			B	
Intersection Summary												
HCM Average Control Delay		30.3										
HCM Volume to Capacity ratio		0.67										
Actuated Cycle Length (s)		110.0								12.0		
Intersection Capacity Utilization		68.3%										
Analysis Period (min)		15										
c Critical Lane Group												

Appendix E-5

Land Use Assumptions Memorandum

MEMORANDUM

Date: July 1, 2011

To: Reema Mahamood, ESA

From: Sam Tabibnia

**Subject: *Broadway/MacArthur/San Pablo Redevelopment Plan EIR –
ACTC Travel Demand Model Land Use Assumptions***

WC11-2811

This memorandum summarizes Fehr & Peers approach to developing land use assumptions for forecasting future traffic volumes. We have reviewed the land use database in the most recent Alameda County Transportation Commission (ACTC), formerly known as Alameda County Congestion Management Authority's (ACCMA) Travel Demand Model, which was released in February 2009. The land use database is based on the Association of Bay Area Governments' *Projections 2007* (P'07).

The ACTC model represents potential trip origins and destinations with transportation analysis zones, or TAZs. Each TAZ represents an area of several blocks, and is assigned land use characteristics, including the number of households and the number of jobs of varied types (agricultural, manufacturing, retail, service, trade and other) in the zone. Since the ACTC model is a regional forecasting model, the distribution of future developments may not be very accurate at the TAZ level. In addition, the model land uses were last updated in 2007 and may not reflect the latest expected future land uses.

Our review methodology and modifications to the land use database are summarized below.

YEAR 2010 LAND USES

The previous versions of the ACTC Model used 2005 as the base year. Fehr & Peers modified the ACTC Model to develop a year 2010 scenario based on the 2005 scenario to better reflect current conditions in the study area and to establish the baseline conditions for future analysis. The 2005 land uses in the ACTC Model were updated to reflect major development projects that have been completed since 2005. **Attachment A** provides the employment and household data associated with each Traffic Analysis Zone (TAZ) in the study area.

YEAR 2035 LAND USES

Fehr & Peers developed model land uses for year 2035 model scenario using the following steps.

Conversion to Projections 2009

The land use input data for the 2035 scenario in the ACTC Model was developed in 2008 consistent with ABAG P'07 land use projections. ABAG has published P'09 land use projections since the release of the last ACTC Model; however, ACTC has not converted the Model land uses to P'09. For this analysis, the model land uses were updated to reflect ABAG P'09. For TAZs in Oakland, the land uses in each TAZ were modified based on their proportional amount as allocated in the P'07 Model so that the citywide totals match ABAG P'09. For areas outside Oakland, land uses in each TAZ were adjusted so that the countywide totals match ABAG P'09. **Table 1** summarizes the land use totals for the original (P'07-based) and the modified (P'09 based) models. Consistent with P'09 projections, the modified model assumes more residential growth than the original model, and it assumes less growth in employment than the original model.

TABLE 1 ACTC TRAVEL DEMAND MODEL 2035 MODEL LAND USE ADJUSTMENTS				
Jurisdiction	Original Model¹		Modified Model	
	Total households	Total Employment	Total households	Total Employment
City of Oakland	207,255	285,995	211,960	281,939
County of Alameda	700,090	1,099,550	707,960	1,039,680
Bay Area	3,292,530	5,247,780	3,302,780	5,107,390
1. 2035 land uses in the original Model as developed by ACTC based on P'07 2. 2035 land uses as modified by Fehr & Peers to reflect P'09 Source: Fehr & Peers, 2011				

Further Refinement

The land use growth assumptions in the project vicinity area were compared to planned, approved and pending projects, including those listed on the City of Oakland's Active Major Development Projects matrix (updated in January 2011), and the developments expected under the Broadway/MacArthur/San Pablo Redevelopment Plan.

Since the model land use is based on employment numbers and information regarding specific development projects is available in square footages, the project square footage measurements were converted to employment numbers by assuming one employee per 500 square feet for retail space and one employee per 300 square feet of office (service) space. Only service and retail employments were included in the comparison, as these employment types are the majority of employment growth in the project vicinity area. **Attachment A** presents the further modified number of households and jobs by TAZ in the project vicinity area in 2035.

In addition to the project vicinity area, the model land use database was checked and if necessary modified to assure that the following major projects in other parts of Oakland were also accounted for: Oak to Ninth Mixed Use Project, Wood Street Mixed Use Project, Jack London

Square Redevelopment Project, Alta Bates Summit Medical Center, Kaiser Medical Center, Kaiser Center, and MacArthur and Fruitvale Transit Villages.

In general, for TAZs where pending, planned, and proposed projects include more growth than assumed in the TAZs in 2035, we increased the land uses to reflect the pending, planned, and proposed developments. We then reduced the land use growth in the rest of TAZs in the project vicinity area so that the overall 2035 number of households and jobs in project vicinity area remains consistent. **Table 2** summarizes the growth in number of households and jobs in the project vicinity area.

TABLE 2 ACTC TRAVEL DEMAND MODEL PROJECT VICINITY AREA LAND USE GROWTH ASSUMPTIONS			
Land Use Variable	2010	2035	2010 – 2035 Growth
Households (HH)	13,955	22,024	8,069
Total Employment	17,162	25,926	8,764
Source: ACTC model as summarized by Fehr & Peers, 2011.			

**Attachment A
Original and Modified Model Land Uses in the Project Vicinity Study Area**

TAZ	2005 Model (Original)		2010 Model (Modified)		2035 Model (Original)		2035 Model (Modified)	
	Households	Employment	Households	Employment	Households	Employment	Households	Employment
128	639	155	639	155	639	164	639	157
142	397	59	397	58	397	67	397	68
143	878	393	954	399	880	615	1,087	512
144	935	453	935	454	940	687	1,031	574
145	459	212	459	212	626	236	553	319
146	572	177	572	176	852	205	699	214
147	216	200	216	200	216	218	273	203
148	207	736	371	736	425	736	603	705
149	842	346	842	345	1003	377	1,094	458
150	218	72	218	72	218	91	370	162
185	190	575	322	576	993	649	952	903
186	555	339	605	338	1610	449	1,034	346
187	296	1,143	296	1,143	516	1488	393	1,399
188	64	2,982	64	2,983	64	6189	588	6,029
189	180	138	180	137	189	138	322	116
190	275	114	275	114	275	203	430	156
195	647	255	721	255	1058	344	1,003	257
200	79	111	79	111	79	113	79	41
201	180	266	180	266	2213	787	1,491	329
204	440	262	440	263	440	279	440	206
205	664	242	664	243	664	293	664	229
206	317	858	317	1,341	317	858	317	1,341
207	392	430	392	431	392	432	392	366
210	930	921	930	921	930	928	930	792
212	205	2,973	205	2,973	211	2768	210	239
214	137	1,385	378	1,385	4531	1577	3,248	3,577
216	1,262	333	1,262	333	1805	584	1,718	952
217	390	380	390	380	390	4168	390	5,072
218	652	162	652	162	652	167	677	204
Subtotal	13,218	16,672	13,955	17,162	23,525	25,810	22,024	25,926

Appendix E-6
LOS Calculation Worksheets
2015 Conditions

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	240	50	30	430	170	60	310	30	150	520	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1805			1769		1757	3474		1738	3501	
Flt Permitted		0.89			0.97		0.34	1.00		0.50	1.00	
Satd. Flow (perm)		1611			1726		627	3474		922	3501	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	261	54	33	467	185	65	337	33	163	565	33
RTOR Reduction (vph)	0	9	0	0	19	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	349	0	0	666	0	65	359	0	163	592	0
Confl. Peds. (#/hr)	44		21	21		44	13		23	23		13
Confl. Bikes (#/hr)			3			13			6			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0			36.0			26.0			26.0		
Effective Green, g (s)	36.0			36.0			26.0			26.0		
Actuated g/C Ratio	0.51			0.51			0.37			0.37		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	829			888			233			342		
v/s Ratio Prot							0.10			0.17		
v/s Ratio Perm	0.22			c0.39			0.10			c0.18		
v/c Ratio	0.42			0.75			0.28			0.48		
Uniform Delay, d1	10.5			13.4			15.4			16.8		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	1.6			5.8			3.0			4.7		
Delay (s)	12.1			19.2			18.4			21.5		
Level of Service	B			B			B			C		
Approach Delay (s)	12.1			19.2			16.3			18.6		
Approach LOS	B			B			B			B		
Intersection Summary												
HCM Average Control Delay			17.3		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			70.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			79.6%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	40	20	90	10	20	10	50	340	10	10	520	60
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	43	22	98	11	22	11	54	370	11	11	565	65
Pedestrians		1			16			9			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	938	1126	325	922	1153	208	631			396		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	675	887	0	657	918	208	330			396		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	83	91	90	95	90	99	95			99		
cM capacity (veh/h)	259	232	954	239	222	786	1087			1143		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	163	43	239	196	293	348						
Volume Left	43	11	54	0	11	0						
Volume Right	98	11	0	11	0	65						
cSH	448	277	1087	1700	1143	1700						
Volume to Capacity	0.36	0.16	0.05	0.12	0.01	0.20						
Queue Length 95th (ft)	41	14	4	0	1	0						
Control Delay (s)	17.6	20.4	2.3	0.0	0.4	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	17.6	20.4	1.3		0.2							
Approach LOS	C	C										
Intersection Summary												
Average Delay			3.4									
Intersection Capacity Utilization			51.4%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	890	320	60	560	80	90	20	60	90	60	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3370	1219	1770	3539	1561	1681	1714	1583		1808	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3370	1219	1770	3539	1561	1681	1714	1583		1808	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	362	947	340	64	596	85	96	21	64	96	64	436
RTOR Reduction (vph)	0	2	154	0	0	28	0	0	59	0	0	180
Lane Group Flow (vph)	362	979	152	64	596	57	58	59	5	0	160	256
Confl. Peds. (#/hr)			11									14
Confl. Bikes (#/hr)						3						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	42.4	55.0	14.0	37.9	37.9	9.1	9.1	9.1		30.5	48.0
Effective Green, g (s)	17.0	41.9	54.5	13.5	38.4	38.4	8.6	8.6	8.6		30.0	47.0
Actuated g/C Ratio	0.15	0.38	0.50	0.12	0.35	0.35	0.08	0.08	0.08		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1284	604	217	1235	545	131	134	124		493	1123
v/s Ratio Prot	0.11	c0.29	0.12	0.04	c0.17		c0.03	0.03			c0.09	0.10
v/s Ratio Perm						0.04			0.00			
v/c Ratio	0.68	0.76	0.25	0.29	0.48	0.10	0.44	0.44	0.04		0.32	0.23
Uniform Delay, d1	43.9	29.7	16.0	43.9	28.0	24.2	48.4	48.4	46.9		31.9	20.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.9	4.3	0.2	0.3	1.4	0.4	1.7	1.7	0.1		1.7	0.5
Delay (s)	50.9	34.0	16.1	44.2	29.4	24.6	50.1	50.1	47.0		33.7	20.5
Level of Service	D	C	B	D	C	C	D	D	D		C	C
Approach Delay (s)		34.4			30.1			49.0			24.0	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM Average Control Delay			32.3			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			66.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	290	230	40	390	40	180	150	20	50	150	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.93		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3266		1770	3475		1770	1824		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3266		1770	3475		1770	1824		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	216	330	261	45	443	45	205	170	23	57	170	148
RTOR Reduction (vph)	0	93	0	0	5	0	0	4	0	0	0	124
Lane Group Flow (vph)	216	498	0	45	483	0	205	189	0	57	170	24
Confl. Peds. (#/hr)			2			10			3			36
Confl. Bikes (#/hr)			1			1			5			6
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	19.8	62.2		6.8	49.2		19.1	20.3		15.7	16.9	19.8
Effective Green, g (s)	19.3	62.7		6.3	49.7		18.6	19.8		15.2	16.4	19.3
Actuated g/C Ratio	0.16	0.52		0.05	0.41		0.16	0.17		0.13	0.14	0.16
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	285	1706		93	1439		274	301		224	255	255
v/s Ratio Prot	c0.12	0.15		c0.03	c0.14		c0.12	0.10		0.03	c0.09	0.02
v/s Ratio Perm												
v/c Ratio	0.76	0.29		0.48	0.34		0.75	0.63		0.25	0.67	0.09
Uniform Delay, d1	48.1	16.1		55.3	23.9		48.5	46.7		47.3	49.2	42.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.0	0.4		3.9	0.6		10.6	4.0		0.6	6.4	0.2
Delay (s)	59.1	16.6		59.2	24.6		59.1	50.7		47.9	55.6	43.1
Level of Service	E	B		E	C		E	D		D	E	D
Approach Delay (s)		28.0			27.5			55.0			49.5	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			36.8			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			66.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	180	70	90	330	20	150	590	50	50	650	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3355		1770	3505		1770	3483		1770	3497	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3355		1770	3505		1770	3483		1770	3497	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	57	207	80	103	379	23	172	678	57	57	747	46
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	3	0
Lane Group Flow (vph)	57	287	0	103	402	0	172	731	0	57	790	0
Confl. Peds. (#/hr)			19			4			30			34
Confl. Bikes (#/hr)			2			1			22			14
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.5	16.8		10.1	19.4		13.5	60.6		7.5	54.6	
Effective Green, g (s)	6.5	17.3		9.1	19.9		12.5	61.1		6.5	55.1	
Actuated g/C Ratio	0.06	0.16		0.08	0.18		0.11	0.56		0.06	0.50	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	528		146	634		201	1935		105	1752	
v/s Ratio Prot	0.03	0.09		c0.06	c0.11		c0.10	0.21		0.03	c0.23	
v/s Ratio Perm												
v/c Ratio	0.54	0.54		0.71	0.63		0.86	0.38		0.54	0.45	
Uniform Delay, d1	50.3	42.7		49.1	41.7		47.9	13.8		50.3	17.7	
Progression Factor	1.00	1.00		0.99	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	1.1		14.4	2.1		28.2	0.6		5.6	0.8	
Delay (s)	55.9	43.9		62.8	43.2		76.0	14.3		55.9	18.5	
Level of Service	E	D		E	D		E	B		E	B	
Approach Delay (s)		45.9			47.2			26.0			21.0	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			31.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			63.4%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	290	20	0	420	10	0	0	30	0	0	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	354	24	0	512	12	0	0	37	0	0	85
Pedestrians		5						5			5	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage veh												
Upstream signal (ft)					619							
pX, platoon unblocked												
vC, conflicting volume	529			383			717	900	194	737	906	272
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	529			383			717	900	194	737	906	272
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	95	100	100	88
cM capacity (veh/h)	1030			1167			275	274	811	290	272	719
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	236	142	341	183	37	85						
Volume Left	0	0	0	0	0	0						
Volume Right	0	24	0	12	37	85						
cSH	1700	1700	1700	1700	811	719						
Volume to Capacity	0.14	0.08	0.20	0.11	0.05	0.12						
Queue Length 95th (ft)	0	0	0	0	4	10						
Control Delay (s)	0.0	0.0	0.0	0.0	9.6	10.7						
Lane LOS					A	B						
Approach Delay (s)	0.0		0.0		9.6	10.7						
Approach LOS					A	B						
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			25.0%		ICU Level of Service		A					
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2015 No Project AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	20	20	280	10	410	10	30	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	24	341	0	500	12	37	12
Pedestrians					4		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					0		0	
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.97		0.00			0.97	0.97
vC, conflicting volume	0	513		0			731	257
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	424		0			649	159
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	98		0			90	99
cM capacity (veh/h)	0	1092		0			378	828
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	24	171	171	333	179	49		
Volume Left	24	0	0	0	0	37		
Volume Right	0	0	0	0	12	12		
cSH	1092	1700	1700	1700	1700	438		
Volume to Capacity	0.02	0.10	0.10	0.20	0.11	0.11		
Queue Length 95th (ft)	2	0	0	0	0	9		
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	14.3		
Lane LOS	A					B		
Approach Delay (s)	0.6			0.0		14.3		
Approach LOS						B		
Intersection Summary								
Average Delay			1.0					
Intersection Capacity Utilization			33.0%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	180	90	70	290	10	110	340	10	40	560	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	1.00		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3324		1770	3519		1770	3522		1770	3505	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3324		1770	3519		1770	3522		1770	3505	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	41	184	92	71	296	10	112	347	10	41	571	31
RTOR Reduction (vph)	0	59	0	0	2	0	0	1	0	0	3	0
Lane Group Flow (vph)	41	217	0	71	304	0	112	356	0	41	599	0
Confl. Peds. (#/hr)			18			11			10			19
Confl. Bikes (#/hr)			6			2			12			18
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	3.7	11.4		5.8	13.5		7.1	24.4		3.7	21.0	
Effective Green, g (s)	3.7	11.4		5.8	13.5		7.1	24.4		3.7	21.0	
Actuated g/C Ratio	0.06	0.18		0.09	0.22		0.11	0.39		0.06	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	105	608		165	763		202	1379		105	1181	
v/s Ratio Prot	0.02	0.07		c0.04	c0.09		c0.06	c0.10		0.02	c0.17	
v/s Ratio Perm												
v/c Ratio	0.39	0.36		0.43	0.40		0.55	0.26		0.39	0.51	
Uniform Delay, d1	28.2	22.2		26.7	20.9		26.1	12.8		28.2	16.5	
Progression Factor	1.00	1.02		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.3		0.7	0.2		1.9	0.1		0.9	0.5	
Delay (s)	29.2	23.0		27.3	21.2		28.0	13.0		29.1	17.0	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		23.8			22.3			16.5			17.8	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			19.5			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.48									
Actuated Cycle Length (s)			62.3			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			54.4%			ICU Level of Service			A			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1718					1715				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1609					1607				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	11	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1							
Confl. Bikes (#/hr)									1	1		
Turn Type	Perm	Perm				Perm	Perm				Perm	Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3				1	1
Actuated Green, G (s)			6.4					6.4				
Effective Green, g (s)			6.4					6.4				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			129					128				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			34.9					34.9				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.7				
Delay (s)			36.5					36.5				
Level of Service			D					D				
Approach Delay (s)			36.5					36.5				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			23.5			HCM Level of Service		C				
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			80.1			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			78.3%			ICU Level of Service		D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↑	↗	↘	↖	↙	↓	↘	↙	↗	↖	↘	↙
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔					↔				↔		
Volume (vph)	350	30	10	10	10	570	120	10	70	120	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				0.95		
Frpb, ped/bikes	1.00					0.99				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3467					3389				3416		
Flt Permitted	0.89					0.93				0.83		
Satd. Flow (perm)	3096					3164				2899		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	389	33	11	11	11	633	133	11	78	133	11	11
RTOR Reduction (vph)	1	0	0	0	0	1	0	0	0	3	0	0
Lane Group Flow (vph)	454	0	0	0	0	798	0	0	0	230	0	0
Confl. Peds. (#/hr)		2	2				1	1			1	1
Confl. Bikes (#/hr)		4	4				26	26			14	14
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	27.3					27.3				31.4		
Effective Green, g (s)	27.3					27.3				31.4		
Actuated g/C Ratio	0.34					0.34				0.39		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	1055					1078				1136		
v/s Ratio Prot												
v/s Ratio Perm	0.15					c0.25				c0.08		
v/c Ratio	0.43					0.74				0.20		
Uniform Delay, d1	20.4					23.3				16.1		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	0.3					2.8				0.1		
Delay (s)	20.7					26.1				16.2		
Level of Service	C					C				B		
Approach Delay (s)	20.7					26.1				16.2		
Approach LOS	C					C				B		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	10	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			0.95		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.95		
Flt Protected			0.98		
Satd. Flow (prot)			3279		
Flt Permitted			0.85		
Satd. Flow (perm)			2825		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	22	11	11
RTOR Reduction (vph)	0	0	7	0	0
Lane Group Flow (vph)	0	0	59	0	0
Confl. Peds. (#/hr)				2	2
Confl. Bikes (#/hr)				9	9
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.4		
Effective Green, g (s)			31.4		
Actuated g/C Ratio			0.39		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			1107		
v/s Ratio Prot					
v/s Ratio Perm			0.02		
v/c Ratio			0.05		
Uniform Delay, d1			15.1		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			15.1		
Level of Service			B		
Approach Delay (s)			15.1		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	80	60	200	180	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	40	107	80	267	240	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	553	140	280			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	553	140	280			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	88	94			
cM capacity (veh/h)	434	882	1280			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	147	169	178	160	120	
Volume Left	40	80	0	0	0	
Volume Right	107	0	0	0	40	
cSH	688	1280	1700	1700	1700	
Volume to Capacity	0.21	0.06	0.10	0.09	0.07	
Queue Length 95th (ft)	20	5	0	0	0	
Control Delay (s)	11.6	4.1	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	11.6	2.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilization			29.8%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	10	30	120	180	10	240	30	280	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.98			0.93		1.00	0.98		1.00	1.00	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1812			1692		1745	1822		1747	1851	
Flt Permitted		0.93			0.97		0.52	1.00		0.58	1.00	
Satd. Flow (perm)		1703			1642		949	1822		1061	1851	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	67	11	33	133	200	11	267	33	311	356	11
RTOR Reduction (vph)	0	8	0	0	75	0	0	8	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	291	0	11	292	0	311	365	0
Confl. Peds. (#/hr)	10		14	14		10	22		18	18		22
Confl. Bikes (#/hr)			1			10			11			25
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		13.3			13.3		20.1	20.1		20.1	20.1	
Effective Green, g (s)		13.3			13.3		20.1	20.1		20.1	20.1	
Actuated g/C Ratio		0.31			0.31		0.46	0.46		0.46	0.46	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		522			503		440	844		491	857	
v/s Ratio Prot								0.16			0.20	
v/s Ratio Perm		0.05			0.18		0.01			0.29		
v/c Ratio		0.16			0.58		0.03	0.35		0.63	0.43	
Uniform Delay, d1		11.0			12.7		6.3	7.5		8.9	7.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			1.6		0.0	0.2		2.7	0.3	
Delay (s)		11.1			14.3		6.4	7.7		11.5	8.1	
Level of Service		B			B		A	A		B	A	
Approach Delay (s)		11.1			14.3			7.7			9.7	
Approach LOS		B			B			A			A	
Intersection Summary												
HCM Average Control Delay		10.5			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		43.4			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		67.5%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	140	260	60	180	80	130	1410	40	50	1360	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.91			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1678			1772		1770	5059		1770	5071	
Flt Permitted		0.99			0.73		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1659			1298		1770	5059		1770	5071	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	149	277	64	191	85	138	1500	43	53	1447	21
RTOR Reduction (vph)	0	80	0	0	16	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	357	0	0	324	0	138	1540	0	53	1467	0
Confl. Peds. (#/hr)			6			16			8			10
Confl. Bikes (#/hr)			8			5			2			5
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		21.7			21.7		9.6	33.8		4.0	28.2	
Effective Green, g (s)		21.7			21.7		9.6	33.8		4.0	28.2	
Actuated g/C Ratio		0.29			0.29		0.13	0.46		0.05	0.38	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		486			381		230	2311		96	1932	
v/s Ratio Prot							0.08	c0.30		0.03	c0.29	
v/s Ratio Perm		0.22			c0.25							
v/c Ratio		0.73			0.85		0.60	0.67		0.55	0.76	
Uniform Delay, d1		23.6			24.6		30.4	15.7		34.1	19.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.7			16.5		4.2	0.7		6.7	1.8	
Delay (s)		29.3			41.1		34.6	16.4		40.8	21.7	
Level of Service		C			D		C	B		D	C	
Approach Delay (s)		29.3			41.1			17.9			22.4	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM Average Control Delay		22.9			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.74										
Actuated Cycle Length (s)		74.0			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		93.9%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	290	20	20	430	50	20	130	20	50	160	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3475			1817		1770	1768	
Flt Permitted	0.95	1.00		0.95	1.00			0.93		0.57	1.00	
Satd. Flow (perm)	1770	3498		1770	3475			1705		1068	1768	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	88	319	22	22	473	55	22	143	22	55	176	66
RTOR Reduction (vph)	0	7	0	0	15	0	0	10	0	0	28	0
Lane Group Flow (vph)	88	334	0	22	513	0	0	177	0	55	214	0
Confl. Peds. (#/hr)			11			12			11			32
Confl. Bikes (#/hr)						13			5			10
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	4.7	28.2		1.3	24.8			9.5		9.5	9.5	
Effective Green, g (s)	4.2	28.2		0.8	24.8			9.0		9.0	9.0	
Actuated g/C Ratio	0.08	0.56		0.02	0.50			0.18		0.18	0.18	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	149	1973		28	1724			307		192	318	
v/s Ratio Prot	c0.05	c0.10		0.01	c0.15						c0.12	
v/s Ratio Perm								0.10		0.05		
v/c Ratio	0.59	0.17		0.79	0.30			0.58		0.29	0.67	
Uniform Delay, d1	22.1	5.3		24.5	7.4			18.8		17.7	19.1	
Progression Factor	1.10	1.25		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.1		78.1	0.4			2.6		0.8	5.5	
Delay (s)	26.6	6.6		102.6	7.9			21.4		18.5	24.7	
Level of Service	C	A		F	A			C		B	C	
Approach Delay (s)		10.7			11.7			21.4			23.5	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			15.0			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.44									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			58.1%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	10	80	130	10	0	1050	90	0	720	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3449			3440			3474			3476	
Flt Permitted		0.82			0.98			1.00			1.00	
Satd. Flow (perm)		2848			3440			3474			3476	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	83	10	83	135	10	0	1094	94	0	750	83
RTOR Reduction (vph)	0	6	0	0	4	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	118	0	0	224	0	0	1184	0	0	827	0
Confl. Peds. (#/hr)						25			28			12
Confl. Bikes (#/hr)			2			8			10			11
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		8.9			11.5			73.6			73.6	
Effective Green, g (s)		9.9			12.5			75.6			75.6	
Actuated g/C Ratio		0.09			0.11			0.69			0.69	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		256			391			2388			2389	
v/s Ratio Prot					c0.07			c0.34			0.24	
v/s Ratio Perm		c0.04										
v/c Ratio		0.46			0.57			0.50			0.35	
Uniform Delay, d1		47.5			46.2			8.2			7.1	
Progression Factor		1.00			1.00			0.96			1.00	
Incremental Delay, d2		0.5			1.3			0.5			0.4	
Delay (s)		48.0			47.5			8.4			7.5	
Level of Service		D			D			A			A	
Approach Delay (s)		48.0			47.5			8.4			7.5	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			13.9			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.50									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			56.0%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	260	650	20	420	0	0	760	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3511	1551		3531			5071	
Flt Permitted					0.99	1.00		0.89			1.00	
Satd. Flow (perm)					3511	1551		3167			5071	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	55	286	714	22	462	0	0	835	11
RTOR Reduction (vph)	0	0	0	0	0	330	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	341	384	0	484	0	0	845	0
Confl. Peds. (#/hr)						5			11			23
Confl. Bikes (#/hr)									13			22
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					862	381		2159			3458	
v/s Ratio Prot					0.10						c0.17	
v/s Ratio Perm						c0.25		0.15				
v/c Ratio					0.40	1.01		0.22			0.24	
Uniform Delay, d1					34.7	41.5		6.6			6.7	
Progression Factor					1.00	1.00		0.06			0.85	
Incremental Delay, d2					0.1	48.3		0.2			0.2	
Delay (s)					34.8	89.8		0.6			5.8	
Level of Service					C	F		A			A	
Approach Delay (s)		0.0			72.0			0.6			5.8	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			34.0				HCM Level of Service			C		
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			62.5%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	150	40	0	0	0	0	430	50	220	600	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3414						3462		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3414						3462		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	158	42	0	0	0	0	453	53	232	632	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	187	0	0	0	0	0	496	0	232	632	0
Confl. Peds. (#/hr)			3						22			11
Confl. Bikes (#/hr)									14			23
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		10.4						20.4		64.2	90.6	
Effective Green, g (s)		11.4						21.4		65.2	90.6	
Actuated g/C Ratio		0.10						0.19		0.59	0.82	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		354						674		2035	2915	
v/s Ratio Prot		c0.05						c0.14		0.07	c0.18	
v/s Ratio Perm												
v/c Ratio		0.53						0.74		0.11	0.22	
Uniform Delay, d1		46.7						41.6		9.8	2.1	
Progression Factor		1.00						1.00		0.99	0.84	
Incremental Delay, d2		0.7						3.6		0.1	0.0	
Delay (s)		47.4						45.2		9.8	1.8	
Level of Service		D						D		A	A	
Approach Delay (s)		47.4			0.0			45.2			3.9	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		22.9										
HCM Volume to Capacity ratio		0.36										
Actuated Cycle Length (s)		110.0								8.0		
Intersection Capacity Utilization		37.3%								A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	390	60	40	340	260	50	720	30	140	580	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1814			1733		1753	3512		1762	3493	
Flt Permitted		0.88			0.95		0.29	1.00		0.21	1.00	
Satd. Flow (perm)		1599			1646		529	3512		390	3493	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	424	65	43	370	283	54	783	33	152	630	43
RTOR Reduction (vph)	0	6	0	0	29	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	548	0	0	667	0	54	812	0	152	667	0
Confl. Peds. (#/hr)	29		26	26		29	19		11	11		19
Confl. Bikes (#/hr)			22			3			7			7
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.0			42.0			30.0			30.0		
Effective Green, g (s)	42.0			42.0			30.0			30.0		
Actuated g/C Ratio	0.52			0.52			0.38			0.38		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	839			864			198			146		
v/s Ratio Prot							0.23			0.19		
v/s Ratio Perm	0.34			c0.41			0.10			c0.39		
v/c Ratio	0.65			0.77			0.27			1.04		
Uniform Delay, d1	13.7			15.2			17.4			25.0		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	3.9			6.6			3.4			85.8		
Delay (s)	17.7			21.8			20.8			110.8		
Level of Service	B			C			C			F		
Approach Delay (s)	17.7			21.8			22.4			37.3		
Approach LOS	B			C			C			D		
Intersection Summary												
HCM Average Control Delay	25.5			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.88											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	83.1%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	20	50	10	20	10	40	750	10	10	580	90
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	56	22	56	11	22	11	45	843	11	11	652	101
Pedestrians		6			6			1			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.92	0.92	0.86	0.92	0.92	0.88	0.86			0.88		
vC, conflicting volume	1269	1681	383	1361	1725	438	759			860		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	523	968	0	622	1016	74	401			556		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	84	90	94	96	89	99	95			99		
cM capacity (veh/h)	343	218	930	280	204	844	990			880		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	135	45	466	433	337	427						
Volume Left	56	11	45	0	11	0						
Volume Right	56	11	0	11	0	101						
cSH	412	275	990	1700	880	1700						
Volume to Capacity	0.33	0.16	0.05	0.25	0.01	0.25						
Queue Length 95th (ft)	35	14	4	0	1	0						
Control Delay (s)	17.9	20.7	1.3	0.0	0.4	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	17.9	20.7	0.7		0.2							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.2									
Intersection Capacity Utilization			63.1%	ICU Level of Service						B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	680	740	230	810	100	170	50	110	140	200	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (prot)	3467	3211	1231	1805	3574	1591	1698	1747	1587		1840	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (perm)	3467	3211	1231	1805	3574	1591	1698	1747	1587		1840	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	323	708	771	240	844	104	177	52	115	146	208	760
RTOR Reduction (vph)	0	42	115	0	0	26	0	0	101	0	0	71
Lane Group Flow (vph)	323	982	340	240	844	78	113	116	14	0	354	689
Confl. Peds. (#/hr)			16									49
Confl. Bikes (#/hr)			5			4			3			4
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	34.3	51.5	17.5	33.3	33.3	13.7	13.7	13.7		30.5	48.0
Effective Green, g (s)	17.0	33.8	51.0	17.0	33.8	33.8	13.2	13.2	13.2		30.0	47.0
Actuated g/C Ratio	0.15	0.31	0.46	0.15	0.31	0.31	0.12	0.12	0.12		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	987	571	279	1098	489	204	210	190		502	1134
v/s Ratio Prot	0.09	c0.31	c0.28	0.13	c0.24		0.07	0.07			c0.19	0.26
v/s Ratio Perm						0.05			0.01			
v/c Ratio	0.60	1.00	0.59	0.86	0.77	0.16	0.55	0.55	0.07		0.71	0.61
Uniform Delay, d1	43.4	38.0	21.8	45.3	34.6	27.8	45.6	45.6	43.0		36.0	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.0	27.6	1.4	22.0	5.2	0.7	2.6	2.5	0.1		8.1	2.4
Delay (s)	48.3	65.6	23.2	67.3	39.7	28.5	48.2	48.1	43.1		44.1	26.8
Level of Service	D	E	C	E	D	C	D	D	D		D	C
Approach Delay (s)		51.8			44.3			46.5			32.3	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			44.5			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			84.2%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	630	140	50	460	50	340	360	40	90	280	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3452		1770	3510		1805	1847		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3452		1770	3510		1805	1847		1719	1845	1599
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	677	151	54	495	54	366	387	43	97	301	258
RTOR Reduction (vph)	0	14	0	0	6	0	0	4	0	0	0	185
Lane Group Flow (vph)	140	814	0	54	543	0	366	426	0	97	301	73
Confl. Peds. (#/hr)			5			7			11			6
Confl. Bikes (#/hr)			5			3			12			21
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	14.1	46.7		6.8	39.4		28.6	32.5		19.5	23.4	14.1
Effective Green, g (s)	13.6	47.2		6.3	39.9		28.1	32.0		19.0	22.9	13.6
Actuated g/C Ratio	0.11	0.39		0.05	0.33		0.23	0.27		0.16	0.19	0.11
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	200	1352		93	1162		421	490		271	351	180
v/s Ratio Prot	c0.08	c0.24		0.03	c0.15		0.20	c0.23		0.06	c0.16	0.05
v/s Ratio Perm												
v/c Ratio	0.70	0.60		0.58	0.47		0.87	0.87		0.36	0.86	0.41
Uniform Delay, d1	51.5	29.2		55.8	31.9		44.4	42.3		45.3	47.2	49.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.2	2.0		8.9	1.4		17.1	15.4		0.8	18.3	1.5
Delay (s)	61.7	31.2		64.7	33.2		61.5	57.7		46.1	65.5	51.2
Level of Service	E	C		E	C		E	E		D	E	D
Approach Delay (s)		35.6			36.1			59.5			57.0	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			46.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.72									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			72.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	550	140	100	310	40	130	830	100	90	850	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3447		1770	3533		1736	3492		1805	3485	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3447		1770	3533		1736	3492		1805	3485	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	143	561	143	102	316	41	133	847	102	92	867	92
RTOR Reduction (vph)	0	21	0	0	9	0	0	7	0	0	7	0
Lane Group Flow (vph)	143	683	0	102	348	0	133	942	0	92	952	0
Confl. Peds. (#/hr)			14			17			40			14
Confl. Bikes (#/hr)			7			3			15			3
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	25.6		10.1	24.7		12.4	50.9		8.4	46.9	
Effective Green, g (s)	10.0	26.1		9.1	25.2		11.4	51.4		7.4	47.4	
Actuated g/C Ratio	0.09	0.24		0.08	0.23		0.10	0.47		0.07	0.43	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	818		146	809		180	1632		121	1502	
v/s Ratio Prot	c0.08	c0.20		0.06	0.10		c0.08	c0.27		0.05	c0.27	
v/s Ratio Perm												
v/c Ratio	0.89	0.83		0.70	0.43		0.74	0.58		0.76	0.63	
Uniform Delay, d1	49.4	39.9		49.1	36.3		47.9	21.4		50.4	24.5	
Progression Factor	1.00	1.00		1.00	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.0	7.4		13.6	0.4		14.6	1.5		24.1	2.0	
Delay (s)	89.4	47.2		62.9	36.0		62.5	22.9		74.5	26.6	
Level of Service	F	D		E	D		E	C		E	C	
Approach Delay (s)		54.4			41.9			27.7			30.8	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			37.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			73.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	740	10	0	440	20	0	0	60	0	0	70
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	779	11	0	463	21	0	0	63	0	0	74
Pedestrians								1			15	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type	None			None								
Median storage (veh)												
Upstream signal (ft)	619											
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	499			790			1090	1284	396	941	1279	257
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	451			790			1053	1251	396	901	1246	204
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	90	100	100	91
cM capacity (veh/h)	1072			825			158	166	603	200	167	778
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	519	270	309	175	63	74						
Volume Left	0	0	0	0	0	0						
Volume Right	0	11	0	21	63	74						
cSH	1700	1700	1700	1700	603	778						
Volume to Capacity	0.31	0.16	0.18	0.10	0.10	0.09						
Queue Length 95th (ft)	0	0	0	0	9	8						
Control Delay (s)	0.0	0.0	0.0	0.0	11.7	10.1						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		11.7	10.1						
Approach LOS					B	B						
Intersection Summary												
Average Delay	1.1											
Intersection Capacity Utilization	31.2%			ICU Level of Service			A					
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2015 No Project PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	20	30	770	10	440	10	60	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	32	828	0	473	11	65	11
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.94		0.00			0.94	0.94
vC, conflicting volume	0	484		0			957	242
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	337		0			838	81
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	97		0			77	99
cM capacity (veh/h)	0	1152		0			280	910
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	32	414	414	315	168	75		
Volume Left	32	0	0	0	0	65		
Volume Right	0	0	0	0	11	11		
cSH	1152	1700	1700	1700	1700	311		
Volume to Capacity	0.03	0.24	0.24	0.19	0.10	0.24		
Queue Length 95th (ft)	2	0	0	0	0	23		
Control Delay (s)	8.2	0.0	0.0	0.0	0.0	20.2		
Lane LOS	A					C		
Approach Delay (s)	0.3			0.0		20.2		
Approach LOS						C		
Intersection Summary								
Average Delay			1.3					
Intersection Capacity Utilization			48.0%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	450	240	120	300	30	120	650	20	80	530	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3331		1770	3479		1770	3519		1770	3505	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3331		1770	3479		1770	3519		1770	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	484	258	129	323	32	129	699	22	86	570	32
RTOR Reduction (vph)	0	59	0	0	7	0	0	2	0	0	4	0
Lane Group Flow (vph)	129	683	0	129	348	0	129	719	0	86	598	0
Confl. Peds. (#/hr)			6			20			14			16
Confl. Bikes (#/hr)			2			4			11			4
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	11.0	22.9		11.0	22.9		11.0	27.9		7.4	24.3	
Effective Green, g (s)	11.0	22.9		11.0	22.9		11.0	27.9		7.4	24.3	
Actuated g/C Ratio	0.13	0.27		0.13	0.27		0.13	0.32		0.09	0.28	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	226	885		226	924		226	1139		152	988	
v/s Ratio Prot	c0.07	c0.21		0.07	0.10		c0.07	c0.20		0.05	0.17	
v/s Ratio Perm												
v/c Ratio	0.57	0.77		0.57	0.38		0.57	0.63		0.57	0.61	
Uniform Delay, d1	35.4	29.2		35.4	25.8		35.4	24.8		37.9	26.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	4.1		2.2	0.2		2.2	1.3		2.9	1.2	
Delay (s)	37.5	33.3		37.5	26.0		37.5	26.1		40.7	28.0	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		33.9			29.1			27.8			29.6	
Approach LOS		C			C			C			C	
Intersection Summary												
HCM Average Control Delay			30.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			86.2			Sum of lost time (s)			17.0			
Intersection Capacity Utilization			64.6%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1718					1714				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1609					1605				
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	11	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1				5	5		
Confl. Bikes (#/hr)												
Turn Type	Perm	Perm				Perm	Perm					Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3					1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			130					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			28.1			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			85.9%			ICU Level of Service					E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	↑	↗	↘	↙	↓	↘	↙	↗	↘	↙	↗	↘
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔↔					↔↔				↔↔		
Volume (vph)	620	30	30	10	10	710	150	10	110	110	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				0.95		
Frpb, ped/bikes	0.99					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3468					3387				3401		
Flt Permitted	0.84					0.92				0.79		
Satd. Flow (perm)	2930					3131				2732		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	681	33	33	11	11	780	165	11	121	121	11	11
RTOR Reduction (vph)	3	0	0	0	0	1	0	0	0	2	0	0
Lane Group Flow (vph)	766	0	0	0	0	977	0	0	0	262	0	0
Confl. Peds. (#/hr)							7	7			1	1
Confl. Bikes (#/hr)		23	23				15	15			16	16
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	1042					1114				1039		
v/s Ratio Prot												
v/s Ratio Perm	0.26					c0.31				c0.10		
v/c Ratio	0.74					0.88				0.25		
Uniform Delay, d1	23.0					24.7				17.4		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	2.7					8.0				0.1		
Delay (s)	25.7					32.7				17.5		
Level of Service	C					C				B		
Approach Delay (s)	25.7					32.7				17.5		
Approach LOS	C					C				B		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			←→		
Volume (vph)	10	10	30	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			0.95		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.96		
Flt Protected			0.99		
Satd. Flow (prot)			3314		
Flt Permitted			0.85		
Satd. Flow (perm)			2861		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	11	33	11	11
RTOR Reduction (vph)	0	0	7	0	0
Lane Group Flow (vph)	0	0	70	0	0
Confl. Peds. (#/hr)				5	5
Confl. Bikes (#/hr)				6	6
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			1088		
v/s Ratio Prot					
v/s Ratio Perm			0.02		
v/c Ratio			0.06		
Uniform Delay, d1			16.1		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			16.1		
Level of Service			B		
Approach Delay (s)			16.1		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	100	110	260	180	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	106	117	277	191	32
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	583	115	226			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	583	115	226			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	95	88	91			
cM capacity (veh/h)	403	914	1336			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	128	209	184	128	96	
Volume Left	21	117	0	0	0	
Volume Right	106	0	0	0	32	
cSH	755	1336	1700	1700	1700	
Volume to Capacity	0.17	0.09	0.11	0.08	0.06	
Queue Length 95th (ft)	15	7	0	0	0	
Control Delay (s)	10.7	4.8	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	10.7	2.5		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.2			
Intersection Capacity Utilization			34.3%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	90	10	30	100	230	20	480	50	350	380	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.99			0.91		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1826			1671		1735	1825		1753	1853	
Flt Permitted		0.95			0.96		0.47	1.00		0.35	1.00	
Satd. Flow (perm)		1751			1619		859	1825		646	1853	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	99	11	33	110	253	22	527	55	385	418	11
RTOR Reduction (vph)	0	7	0	0	118	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	114	0	0	278	0	22	577	0	385	428	0
Confl. Peds. (#/hr)	6		7	7		6	28		19	19		28
Confl. Bikes (#/hr)			1			5			28			11
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		14.0			14.0		30.3	30.3		30.3	30.3	
Effective Green, g (s)		14.0			14.0		30.3	30.3		30.3	30.3	
Actuated g/C Ratio		0.26			0.26		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		451			417		479	1018		360	1034	
v/s Ratio Prot								0.32			0.23	
v/s Ratio Perm		0.07			0.17		0.03			0.60		
v/c Ratio		0.25			0.67		0.05	0.57		1.07	0.41	
Uniform Delay, d1		16.0			18.1		5.4	7.8		12.0	6.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			4.0		0.0	0.7		67.1	0.3	
Delay (s)		16.3			22.1		5.5	8.5		79.1	7.2	
Level of Service		B			C		A	A		E	A	
Approach Delay (s)		16.3			22.1			8.4			41.2	
Approach LOS		B			C			A			D	
Intersection Summary												
HCM Average Control Delay		25.5			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.94										
Actuated Cycle Length (s)		54.3			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		87.9%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	230	240	60	150	50	200	1610	100	110	1490	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1712			1783		1770	5017		1770	5070	
Flt Permitted		0.99			0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1699			1130		1770	5017		1770	5070	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	247	258	65	161	54	215	1731	108	118	1602	22
RTOR Reduction (vph)	0	37	0	0	9	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	479	0	0	271	0	215	1833	0	118	1623	0
Confl. Peds. (#/hr)			14			12			25			23
Confl. Bikes (#/hr)			6			13			7			10
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		29.9			29.9		20.1	39.2		10.1	29.2	
Effective Green, g (s)		29.9			29.9		20.1	39.2		10.1	29.2	
Actuated g/C Ratio		0.32			0.32		0.21	0.42		0.11	0.31	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		542			361		380	2099		191	1580	
v/s Ratio Prot							0.12	c0.37		0.07	c0.32	
v/s Ratio Perm		c0.28			0.24							
v/c Ratio		0.88			0.75		0.57	0.87		0.62	1.03	
Uniform Delay, d1		30.2			28.6		32.9	25.0		40.0	32.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		15.6			8.5		1.9	4.3		5.8	29.8	
Delay (s)		45.9			37.1		34.8	29.3		45.8	62.1	
Level of Service		D			D		C	C		D	E	
Approach Delay (s)		45.9			37.1			29.9			61.0	
Approach LOS		D			D			C			E	
Intersection Summary												
HCM Average Control Delay			43.9			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.90									
Actuated Cycle Length (s)			93.7			Sum of lost time (s)				10.0		
Intersection Capacity Utilization			99.2%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	670	30	30	430	50	20	190	40	50	140	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3541		1805	3543			1827		1794	1784	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.42	1.00	
Satd. Flow (perm)	1805	3541		1805	3543			1758		795	1784	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	108	720	32	32	462	54	22	204	43	54	151	75
RTOR Reduction (vph)	0	5	0	0	16	0	0	14	0	0	36	0
Lane Group Flow (vph)	108	747	0	32	500	0	0	255	0	54	190	0
Confl. Peds. (#/hr)			29			21	15		17	17		15
Confl. Bikes (#/hr)			38			4			11			15
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.1	26.4		2.6	22.9			10.0		10.0	10.0	
Effective Green, g (s)	5.6	26.4		2.1	22.9			9.5		9.5	9.5	
Actuated g/C Ratio	0.11	0.53		0.04	0.46			0.19		0.19	0.19	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	202	1870		76	1623			334		151	339	
v/s Ratio Prot	c0.06	c0.21		0.02	0.14						0.11	
v/s Ratio Perm								c0.15		0.07		
v/c Ratio	0.53	0.40		0.42	0.31			0.76		0.36	0.56	
Uniform Delay, d1	21.0	7.1		23.4	8.5			19.2		17.6	18.4	
Progression Factor	1.12	1.16		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.4		1.4	0.5			10.0		1.5	2.0	
Delay (s)	24.3	8.6		24.7	9.0			29.1		19.1	20.4	
Level of Service	C	A		C	A			C		B	C	
Approach Delay (s)		10.6			10.0			29.1			20.1	
Approach LOS		B			A			C			C	
Intersection Summary												
HCM Average Control Delay			14.3			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.52									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			63.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	140	10	60	130	10	0	1150	100	0	1240	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			1.00			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.98			0.99			1.00			1.00	
Satd. Flow (prot)		3526			3516			3515			3483	
Flt Permitted		0.79			0.99			1.00			1.00	
Satd. Flow (perm)		2828			3516			3515			3483	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	144	10	62	134	10	0	1186	103	0	1278	113
RTOR Reduction (vph)	0	3	0	0	4	0	0	4	0	0	5	0
Lane Group Flow (vph)	0	223	0	0	202	0	0	1285	0	0	1386	0
Confl. Peds. (#/hr)						20			11			19
Confl. Bikes (#/hr)			7			12			25			31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		13.0			10.7			70.3			70.3	
Effective Green, g (s)		14.0			11.7			72.3			72.3	
Actuated g/C Ratio		0.13			0.11			0.66			0.66	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		360			374			2310			2289	
v/s Ratio Prot					c0.06			0.37			c0.40	
v/s Ratio Perm		c0.08										
v/c Ratio		0.62			0.54			0.56			0.61	
Uniform Delay, d1		45.5			46.6			10.2			10.7	
Progression Factor		1.00			1.00			0.59			1.00	
Incremental Delay, d2		2.2			0.9			0.9			1.2	
Delay (s)		47.7			47.5			6.9			11.9	
Level of Service		D			D			A			B	
Approach Delay (s)		47.7			47.5			6.9			11.9	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM Average Control Delay		14.8			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.60										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		62.4%			ICU Level of Service			B				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	230	440	20	760	0	0	1220	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3520	1563		3537			5069	
Flt Permitted					0.99	1.00		0.90			1.00	
Satd. Flow (perm)					3520	1563		3178			5069	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	51	235	449	20	776	0	0	1245	20
RTOR Reduction (vph)	0	0	0	0	0	190	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	286	259	0	796	0	0	1264	0
Confl. Peds. (#/hr)						6			13			29
Confl. Bikes (#/hr)									26			29
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					21.0	21.0		80.0			80.0	
Effective Green, g (s)					21.0	21.0		81.0			81.0	
Actuated g/C Ratio					0.19	0.19		0.74			0.74	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					672	298		2340			3733	
v/s Ratio Prot					0.08						0.25	
v/s Ratio Perm						c0.17		c0.25				
v/c Ratio					0.43	0.87		0.34			0.34	
Uniform Delay, d1					39.2	43.2		5.1			5.1	
Progression Factor					1.00	1.00		0.01			0.90	
Incremental Delay, d2					0.2	21.8		0.3			0.2	
Delay (s)					39.3	65.0		0.3			4.8	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			55.0			0.3			4.8	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			16.7				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			56.1%				ICU Level of Service		B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	410	90	0	0	0	0	760	80	680	600	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		0.99						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3491						3481		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3491						3481		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	441	97	0	0	0	0	817	86	731	645	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	542	0	0	0	0	0	895	0	731	645	0
Confl. Peds. (#/hr)			14						14			31
Confl. Bikes (#/hr)			1						23			29
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		21.4						32.9		40.7	79.6	
Effective Green, g (s)		22.4						33.9		41.7	79.6	
Actuated g/C Ratio		0.20						0.31		0.38	0.72	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		711						1073		1301	2536	
v/s Ratio Prot		c0.16						c0.26		c0.21	0.18	
v/s Ratio Perm												
v/c Ratio		0.76						0.83		0.56	0.25	
Uniform Delay, d1		41.3						35.4		26.9	5.1	
Progression Factor		1.00						1.00		1.05	0.96	
Incremental Delay, d2		4.4						5.5		1.7	0.0	
Delay (s)		45.7						40.9		30.0	4.9	
Level of Service		D						D		C	A	
Approach Delay (s)		45.7			0.0			40.9			18.2	
Approach LOS		D			A			D			B	
Intersection Summary												
HCM Average Control Delay		30.9										
HCM Volume to Capacity ratio		0.70										
Actuated Cycle Length (s)		110.0										
Intersection Capacity Utilization		70.9%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	240	52	31	430	170	65	323	33	150	525	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1803			1769		1758	3472		1739	3501	
Flt Permitted		0.89			0.97		0.33	1.00		0.49	1.00	
Satd. Flow (perm)		1611			1724		620	3472		898	3501	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	43	261	57	34	467	185	71	351	36	163	571	33
RTOR Reduction (vph)	0	10	0	0	19	0	0	11	0	0	6	0
Lane Group Flow (vph)	0	351	0	0	667	0	71	376	0	163	598	0
Confl. Peds. (#/hr)	44		21	21		44	13		23	23		13
Confl. Bikes (#/hr)			3			13			6			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0			36.0			26.0			26.0		
Effective Green, g (s)	36.0			36.0			26.0			26.0		
Actuated g/C Ratio	0.51			0.51			0.37			0.37		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	829			887			230			334		
v/s Ratio Prot							0.11			0.17		
v/s Ratio Perm	0.22			c0.39			0.11			c0.18		
v/c Ratio	0.42			0.75			0.31			0.49		
Uniform Delay, d1	10.6			13.5			15.6			16.9		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	1.6			5.8			3.5			5.0		
Delay (s)	12.1			19.3			19.1			21.9		
Level of Service	B			B			B			C		
Approach Delay (s)	12.1			19.3			16.5			18.7		
Approach LOS	B			B			B			B		
Intersection Summary												
HCM Average Control Delay			17.4		HCM Level of Service				B			
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			70.0		Sum of lost time (s)				8.0			
Intersection Capacity Utilization			79.8%		ICU Level of Service				D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	55	20	97	10	20	10	50	346	10	10	522	66
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	60	22	105	11	22	11	54	376	11	11	567	72
Pedestrians		1			16			9			2	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			1			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.89	0.89	0.89	0.89	0.89		0.89					
vC, conflicting volume	946	1138	330	937	1168	211	640			403		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	681	897	0	670	931	211	335			403		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	90	89	95	90	99	95			99		
cM capacity (veh/h)	256	228	952	232	218	782	1080			1137		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	187	43	242	199	295	355						
Volume Left	60	11	54	0	11	0						
Volume Right	105	11	0	11	0	72						
cSH	425	271	1080	1700	1137	1700						
Volume to Capacity	0.44	0.16	0.05	0.12	0.01	0.21						
Queue Length 95th (ft)	55	14	4	0	1	0						
Control Delay (s)	19.9	20.8	2.3	0.0	0.4	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	19.9	20.8	1.3		0.2							
Approach LOS	C	C										
Intersection Summary												
Average Delay			4.0									
Intersection Capacity Utilization			54.3%	ICU Level of Service					A			
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	340	903	320	64	591	82	90	20	61	91	60	410
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3370	1219	1770	3539	1561	1681	1714	1583		1808	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3370	1219	1770	3539	1561	1681	1714	1583		1808	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	362	961	340	68	629	87	96	21	65	97	64	436
RTOR Reduction (vph)	0	2	154	0	0	27	0	0	60	0	0	172
Lane Group Flow (vph)	362	993	152	68	629	60	58	59	5	0	161	264
Confl. Peds. (#/hr)			11									14
Confl. Bikes (#/hr)						3						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	42.4	55.0	14.0	37.9	37.9	9.1	9.1	9.1		30.5	48.0
Effective Green, g (s)	17.0	41.9	54.5	13.5	38.4	38.4	8.6	8.6	8.6		30.0	47.0
Actuated g/C Ratio	0.15	0.38	0.50	0.12	0.35	0.35	0.08	0.08	0.08		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1284	604	217	1235	545	131	134	124		493	1123
v/s Ratio Prot	0.11	c0.29	0.12	0.04	c0.18		c0.03	0.03			c0.09	0.10
v/s Ratio Perm						0.04			0.00			
v/c Ratio	0.68	0.77	0.25	0.31	0.51	0.11	0.44	0.44	0.04		0.33	0.23
Uniform Delay, d1	43.9	29.9	16.0	44.0	28.3	24.2	48.4	48.4	46.9		31.9	20.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	6.9	4.6	0.2	0.3	1.5	0.4	1.7	1.7	0.1		1.8	0.5
Delay (s)	50.9	34.5	16.1	44.3	29.8	24.6	50.1	50.1	47.0		33.7	20.5
Level of Service	D	C	B	D	C	C	D	D	D		C	C
Approach Delay (s)		34.7			30.5			49.0			24.1	
Approach LOS		C			C			D			C	
Intersection Summary												
HCM Average Control Delay			32.5			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.55									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			67.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	190	305	230	40	427	40	180	150	20	50	150	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3274		1770	3480		1770	1824		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3274		1770	3480		1770	1824		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	216	347	261	45	485	45	205	170	23	57	170	148
RTOR Reduction (vph)	0	89	0	0	5	0	0	4	0	0	0	124
Lane Group Flow (vph)	216	519	0	45	525	0	205	189	0	57	170	24
Confl. Peds. (#/hr)			2			10			3			36
Confl. Bikes (#/hr)			1			1			5			6
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	19.8	62.2		6.8	49.2		19.1	20.3		15.7	16.9	19.8
Effective Green, g (s)	19.3	62.7		6.3	49.7		18.6	19.8		15.2	16.4	19.3
Actuated g/C Ratio	0.16	0.52		0.05	0.41		0.16	0.17		0.13	0.14	0.16
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	285	1711		93	1441		274	301		224	255	255
v/s Ratio Prot	c0.12	0.16		0.03	c0.15		c0.12	0.10		0.03	c0.09	0.02
v/s Ratio Perm												
v/c Ratio	0.76	0.30		0.48	0.36		0.75	0.63		0.25	0.67	0.09
Uniform Delay, d1	48.1	16.3		55.3	24.3		48.5	46.7		47.3	49.2	42.9
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	11.0	0.5		3.9	0.7		10.6	4.0		0.6	6.4	0.2
Delay (s)	59.1	16.7		59.2	25.0		59.1	50.7		47.9	55.6	43.1
Level of Service	E	B		E	C		E	D		D	E	D
Approach Delay (s)		27.8			27.6			55.0			49.5	
Approach LOS		C			C			E			D	
Intersection Summary												
HCM Average Control Delay			36.5			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.53									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			66.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	50	195	70	107	367	24	150	590	50	51	650	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3365		1770	3502		1770	3483		1770	3496	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3365		1770	3502		1770	3483		1770	3496	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	57	224	80	123	422	28	172	678	57	59	747	46
RTOR Reduction (vph)	0	0	0	0	0	0	0	5	0	0	4	0
Lane Group Flow (vph)	57	304	0	123	450	0	172	730	0	59	789	0
Confl. Peds. (#/hr)			19			4			30			34
Confl. Bikes (#/hr)			2			1			22			14
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	7.5	18.1		10.6	21.2		13.5	58.7		7.6	52.8	
Effective Green, g (s)	6.5	18.6		9.6	21.7		12.5	59.2		6.6	53.3	
Actuated g/C Ratio	0.06	0.17		0.09	0.20		0.11	0.54		0.06	0.48	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	105	569		154	691		201	1874		106	1694	
v/s Ratio Prot	0.03	0.09		c0.07	c0.13		c0.10	0.21		0.03	c0.23	
v/s Ratio Perm												
v/c Ratio	0.54	0.53		0.80	0.65		0.86	0.39		0.56	0.47	
Uniform Delay, d1	50.3	41.7		49.3	40.7		47.9	14.8		50.3	18.9	
Progression Factor	1.00	1.00		0.98	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	5.6	1.0		24.3	2.2		28.2	0.6		6.2	0.9	
Delay (s)	55.9	42.7		72.6	42.0		76.0	15.5		56.5	19.8	
Level of Service	E	D		E	D		E	B		E	B	
Approach Delay (s)		44.8			48.6			26.9			22.3	
Approach LOS		D			D			C			C	
Intersection Summary												
HCM Average Control Delay			32.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			64.5%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	298	28	0	441	24	0	0	72	0	0	107
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	363	34	0	538	29	0	0	88	0	0	130
Pedestrians		5						5			5	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		0						0			0	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					619							
pX, platoon unblocked												
vC, conflicting volume	572			403			790	958	204	827	960	294
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	572			403			790	958	204	827	960	294
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	89	100	100	81
cM capacity (veh/h)	993			1148			225	254	800	232	253	697
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	242	155	359	209	88	130						
Volume Left	0	0	0	0	0	0						
Volume Right	0	34	0	29	88	130						
cSH	1700	1700	1700	1700	800	697						
Volume to Capacity	0.14	0.09	0.21	0.12	0.11	0.19						
Queue Length 95th (ft)	0	0	0	0	9	17						
Control Delay (s)	0.0	0.0	0.0	0.0	10.1	11.4						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		10.1	11.4						
Approach LOS					B	B						
Intersection Summary												
Average Delay			2.0									
Intersection Capacity Utilization			27.8%		ICU Level of Service			A				
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	41	28	301	10	424	10	39	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	34	367	0	517	12	48	12
Pedestrians					4		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					0		0	
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.96		0.00			0.96	0.96
vC, conflicting volume	0	530		0			780	266
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	436		0			695	161
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	97		0			86	99
cM capacity (veh/h)	0	1078		0			349	823
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	34	184	184	345	185	60		
Volume Left	34	0	0	0	0	48		
Volume Right	0	0	0	0	12	12		
cSH	1078	1700	1700	1700	1700	396		
Volume to Capacity	0.03	0.11	0.11	0.20	0.11	0.15		
Queue Length 95th (ft)	2	0	0	0	0	13		
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	15.7		
Lane LOS	A					C		
Approach Delay (s)	0.7			0.0		15.7		
Approach LOS						C		
Intersection Summary								
Average Delay			1.2					
Intersection Capacity Utilization			34.0%		ICU Level of Service			A
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	46	186	108	72	291	10	123	340	10	40	569	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.94		1.00	1.00		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3302		1770	3519		1770	3522		1770	3505	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3302		1770	3519		1770	3522		1770	3505	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	47	190	110	73	297	10	126	347	10	41	581	31
RTOR Reduction (vph)	0	78	0	0	2	0	0	1	0	0	3	0
Lane Group Flow (vph)	47	222	0	73	305	0	126	356	0	41	609	0
Confl. Peds. (#/hr)			18			11			10			19
Confl. Bikes (#/hr)			6			2			12			18
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	3.8	11.6		5.9	13.7		7.6	25.5		3.7	21.6	
Effective Green, g (s)	3.8	11.6		5.9	13.7		7.6	25.5		3.7	21.6	
Actuated g/C Ratio	0.06	0.18		0.09	0.22		0.12	0.40		0.06	0.34	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	106	601		164	757		211	1410		103	1189	
v/s Ratio Prot	0.03	0.07		c0.04	c0.09		c0.07	c0.10		0.02	c0.17	
v/s Ratio Perm												
v/c Ratio	0.44	0.37		0.45	0.40		0.60	0.25		0.40	0.51	
Uniform Delay, d1	28.9	22.8		27.4	21.5		26.6	12.7		28.9	16.8	
Progression Factor	1.00	1.02		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.1	0.3		0.7	0.3		3.0	0.1		0.9	0.5	
Delay (s)	30.1	23.5		28.1	21.7		29.6	12.9		29.8	17.3	
Level of Service	C	C		C	C		C	B		C	B	
Approach Delay (s)		24.4			23.0			17.2			18.1	
Approach LOS		C			C			B			B	
Intersection Summary												
HCM Average Control Delay			20.1			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.49									
Actuated Cycle Length (s)			63.7			Sum of lost time (s)			18.0			
Intersection Capacity Utilization			55.8%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	14	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1712					1707				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1604					1599				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	16	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1							
Confl. Bikes (#/hr)									1	1		
Turn Type	Perm	Perm				Perm	Perm				Perm	Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3				1	1
Actuated Green, G (s)			6.5					6.5				
Effective Green, g (s)			6.5					6.5				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			129					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.1					35.1				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			36.8					36.8				
Level of Service			D					D				
Approach Delay (s)			36.8					36.8				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			23.9			HCM Level of Service		C				
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			80.8			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			79.1%			ICU Level of Service		D				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	↑	↗	↘	↙	↓	↘	↙	↗	↘	↙	↗	↘
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔↔					↔↔				↔↔		
Volume (vph)	356	30	10	10	10	595	124	10	77	120	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				1.00		
Frpb, ped/bikes	1.00					0.99				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3467					3390				1799		
Flt Permitted	0.85					0.93				0.87		
Satd. Flow (perm)	2944					3167				1587		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	396	33	11	11	11	661	138	11	86	133	11	11
RTOR Reduction (vph)	1	0	0	0	0	1	0	0	0	1	0	0
Lane Group Flow (vph)	466	0	0	0	0	831	0	0	0	240	0	0
Confl. Peds. (#/hr)		2	2				1	1			1	1
Confl. Bikes (#/hr)		4	4				26	26			14	14
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	28.1					28.1				31.2		
Effective Green, g (s)	28.1					28.1				31.2		
Actuated g/C Ratio	0.35					0.35				0.39		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	1024					1101				613		
v/s Ratio Prot												
v/s Ratio Perm	0.16					0.26				0.15		
v/c Ratio	0.45					0.76				0.39		
Uniform Delay, d1	20.4					23.3				17.9		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	0.3					3.0				0.4		
Delay (s)	20.7					26.3				18.3		
Level of Service	C					C				B		
Approach Delay (s)	20.7					26.3				18.3		
Approach LOS	C					C				B		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	10	20	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			1.00		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.95		
Flt Protected			0.98		
Satd. Flow (prot)			1735		
Flt Permitted			0.87		
Satd. Flow (perm)			1541		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	22	11	11
RTOR Reduction (vph)	0	0	6	0	0
Lane Group Flow (vph)	0	0	60	0	0
Confl. Peds. (#/hr)				2	2
Confl. Bikes (#/hr)				9	9
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.2		
Effective Green, g (s)			31.2		
Actuated g/C Ratio			0.39		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			595		
v/s Ratio Prot					
v/s Ratio Perm			0.04		
v/c Ratio			0.10		
Uniform Delay, d1			15.8		
Progression Factor			1.00		
Incremental Delay, d2			0.1		
Delay (s)			15.9		
Level of Service			B		
Approach Delay (s)			15.9		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	94	66	207	180	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	40	125	88	276	240	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	717	265	291			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	717	265	291			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	84	93			
cM capacity (veh/h)	369	773	1271			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	165	364	291			
Volume Left	40	88	0			
Volume Right	125	0	51			
cSH	611	1271	1700			
Volume to Capacity	0.27	0.07	0.17			
Queue Length 95th (ft)	27	6	0			
Control Delay (s)	13.1	2.4	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.1	2.4	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		3.7				
Intersection Capacity Utilization		43.8%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	60	10	30	120	190	10	240	30	305	320	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.99	1.00	
Frt		0.98			0.92		1.00	0.98		1.00	1.00	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1811			1688		1744	1822		1746	1851	
Flt Permitted		0.94			0.97		0.52	1.00		0.58	1.00	
Satd. Flow (perm)		1714			1640		948	1822		1060	1851	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	67	11	33	133	211	11	267	33	339	356	11
RTOR Reduction (vph)	0	8	0	0	80	0	0	7	0	0	2	0
Lane Group Flow (vph)	0	81	0	0	297	0	11	293	0	339	365	0
Confl. Peds. (#/hr)	10		14	14		10	22		18	18		22
Confl. Bikes (#/hr)			1			10			11			25
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		13.6			13.6		21.6	21.6		21.6	21.6	
Effective Green, g (s)		13.6			13.6		21.6	21.6		21.6	21.6	
Actuated g/C Ratio		0.30			0.30		0.48	0.48		0.48	0.48	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		516			493		453	871		507	885	
v/s Ratio Prot								0.16			0.20	
v/s Ratio Perm		0.05			0.18		0.01			0.32		
v/c Ratio		0.16			0.60		0.02	0.34		0.67	0.41	
Uniform Delay, d1		11.6			13.5		6.2	7.3		9.1	7.7	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.1			2.1		0.0	0.2		3.3	0.3	
Delay (s)		11.7			15.6		6.3	7.6		12.4	8.0	
Level of Service		B			B		A	A		B	A	
Approach Delay (s)		11.7			15.6			7.5			10.1	
Approach LOS		B			B			A			B	
Intersection Summary												
HCM Average Control Delay		11.1					HCM Level of Service			B		
HCM Volume to Capacity ratio		0.64										
Actuated Cycle Length (s)		45.2					Sum of lost time (s)			10.0		
Intersection Capacity Utilization		69.5%					ICU Level of Service			C		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Volume (vph)	10	154	271	60	185	80	135	1410	40	50	1360	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1681			1773		1770	5059		1770	5071	
Flt Permitted		0.99			0.69		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1663			1241		1770	5059		1770	5071	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	11	164	288	64	197	85	144	1500	43	53	1447	21
RTOR Reduction (vph)	0	77	0	0	15	0	0	3	0	0	1	0
Lane Group Flow (vph)	0	386	0	0	331	0	144	1540	0	53	1467	0
Confl. Peds. (#/hr)			6			16			8			10
Confl. Bikes (#/hr)			8			5			2			5
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		22.6			22.6		12.8	36.4		4.1	27.7	
Effective Green, g (s)		22.6			22.6		12.8	36.4		4.1	27.7	
Actuated g/C Ratio		0.29			0.29		0.16	0.47		0.05	0.36	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		484			361		292	2373		94	1810	
v/s Ratio Prot							0.08	c0.30		0.03	c0.29	
v/s Ratio Perm		0.23			c0.27							
v/c Ratio		0.80			0.92		0.49	0.65		0.56	0.81	
Uniform Delay, d1		25.4			26.6		29.5	15.7		35.9	22.6	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		8.9			27.3		1.3	0.6		7.5	2.9	
Delay (s)		34.3			53.9		30.8	16.3		43.4	25.4	
Level of Service		C			D		C	B		D	C	
Approach Delay (s)		34.3			53.9			17.6			26.1	
Approach LOS		C			D			B			C	
Intersection Summary												
HCM Average Control Delay		25.8			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.78										
Actuated Cycle Length (s)		77.6			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		95.1%			ICU Level of Service			F				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	83	290	20	20	430	50	20	140	20	50	171	63
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3498		1770	3468			1820		1770	1769	
Flt Permitted	0.95	1.00		0.95	1.00			0.91		0.55	1.00	
Satd. Flow (perm)	1770	3498		1770	3468			1657		1025	1769	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	91	319	22	22	473	55	22	154	22	55	188	69
RTOR Reduction (vph)	0	7	0	0	15	0	0	9	0	0	27	0
Lane Group Flow (vph)	91	334	0	22	513	0	0	189	0	55	230	0
Confl. Peds. (#/hr)			11			12			11			32
Confl. Bikes (#/hr)						13			5			10
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	4.7	28.0		1.3	24.6			9.7		9.7	9.7	
Effective Green, g (s)	4.2	28.0		0.8	24.6			9.2		9.2	9.2	
Actuated g/C Ratio	0.08	0.56		0.02	0.49			0.18		0.18	0.18	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	149	1959		28	1706			305		189	325	
v/s Ratio Prot	c0.05	c0.10		0.01	c0.15						c0.13	
v/s Ratio Perm								0.11		0.05		
v/c Ratio	0.61	0.17		0.79	0.30			0.62		0.29	0.71	
Uniform Delay, d1	22.1	5.4		24.5	7.6			18.8		17.6	19.1	
Progression Factor	1.11	1.24		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	2.8	0.1		78.1	0.5			3.7		0.9	6.9	
Delay (s)	27.4	6.8		102.6	8.0			22.5		18.4	26.0	
Level of Service	C	A		F	A			C		B	C	
Approach Delay (s)		11.1			11.8			22.5			24.7	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			15.7			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.45									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			58.7%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	80	10	91	130	10	0	1050	100	0	733	80
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3449			3436			3467			3477	
Flt Permitted		0.81			0.98			1.00			1.00	
Satd. Flow (perm)		2836			3436			3467			3477	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	83	10	95	135	10	0	1094	104	0	764	83
RTOR Reduction (vph)	0	6	0	0	3	0	0	5	0	0	5	0
Lane Group Flow (vph)	0	118	0	0	237	0	0	1193	0	0	842	0
Confl. Peds. (#/hr)						25			28			12
Confl. Bikes (#/hr)			2			8			10			11
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		8.9			11.9			73.2			73.2	
Effective Green, g (s)		9.9			12.9			75.2			75.2	
Actuated g/C Ratio		0.09			0.12			0.68			0.68	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		255			403			2370			2377	
v/s Ratio Prot					c0.07			c0.34			0.24	
v/s Ratio Perm		c0.04										
v/c Ratio		0.46			0.59			0.50			0.35	
Uniform Delay, d1		47.5			46.0			8.4			7.3	
Progression Factor		1.00			1.00			0.96			1.00	
Incremental Delay, d2		0.5			1.4			0.5			0.4	
Delay (s)		48.0			47.5			8.6			7.7	
Level of Service		D			D			A			A	
Approach Delay (s)		48.0			47.5			8.6			7.7	
Approach LOS		D			D			A			A	
Intersection Summary												
HCM Average Control Delay			14.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.51									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			56.5%			ICU Level of Service				B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	260	653	20	427	0	0	784	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3511	1551		3531			5072	
Flt Permitted					0.99	1.00		0.89			1.00	
Satd. Flow (perm)					3511	1551		3163			5072	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	0	0	0	55	286	718	22	469	0	0	862	11
RTOR Reduction (vph)	0	0	0	0	0	325	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	341	393	0	491	0	0	872	0
Confl. Peds. (#/hr)						5			11			23
Confl. Bikes (#/hr)									13			22
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					862	381		2157			3458	
v/s Ratio Prot					0.10						c0.17	
v/s Ratio Perm						c0.25		0.16				
v/c Ratio					0.40	1.03		0.23			0.25	
Uniform Delay, d1					34.7	41.5		6.6			6.7	
Progression Factor					1.00	1.00		0.06			0.84	
Incremental Delay, d2					0.1	54.3		0.2			0.2	
Delay (s)					34.8	95.8		0.6			5.8	
Level of Service					C	F		A			A	
Approach Delay (s)		0.0			76.2			0.6			5.8	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			35.5				HCM Level of Service				D	
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			62.6%				ICU Level of Service			B		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	150	40	0	0	0	0	437	50	226	618	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.98		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3414						3463		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3414						3463		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	158	42	0	0	0	0	460	53	238	651	0
RTOR Reduction (vph)	0	24	0	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	187	0	0	0	0	0	503	0	238	651	0
Confl. Peds. (#/hr)			3						22			11
Confl. Bikes (#/hr)									14			23
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		10.4						20.6		64.0	90.6	
Effective Green, g (s)		11.4						21.6		65.0	90.6	
Actuated g/C Ratio		0.10						0.20		0.59	0.82	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		354						680		2029	2915	
v/s Ratio Prot		c0.05						c0.15		0.07	c0.18	
v/s Ratio Perm												
v/c Ratio		0.53						0.74		0.12	0.22	
Uniform Delay, d1		46.7						41.6		9.9	2.1	
Progression Factor		1.00						1.00		1.00	0.86	
Incremental Delay, d2		0.7						3.8		0.1	0.0	
Delay (s)		47.4						45.4		10.0	1.8	
Level of Service		D						D		A	A	
Approach Delay (s)		47.4			0.0			45.4			4.0	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		22.8										
HCM Volume to Capacity ratio		0.36										
Actuated Cycle Length (s)		110.0								8.0		
Intersection Capacity Utilization		37.7%								A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	390	65	42	340	260	54	729	32	140	590	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.95		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1811			1734		1753	3510		1762	3494	
Flt Permitted		0.88			0.94		0.28	1.00		0.20	1.00	
Satd. Flow (perm)		1597			1637		518	3510		380	3494	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	65	424	71	46	370	283	59	792	35	152	641	43
RTOR Reduction (vph)	0	7	0	0	29	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	553	0	0	671	0	59	823	0	152	678	0
Confl. Peds. (#/hr)	29		26	26		29	19		11	11		19
Confl. Bikes (#/hr)			22			3			7			7
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	42.0			42.0			30.0			30.0		
Effective Green, g (s)	42.0			42.0			30.0			30.0		
Actuated g/C Ratio	0.52			0.52			0.38			0.38		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	838			859			194			143		
v/s Ratio Prot							0.23			0.19		
v/s Ratio Perm	0.35			c0.41			0.11			c0.40		
v/c Ratio	0.66			0.78			0.30			1.06		
Uniform Delay, d1	13.8			15.3			17.6			25.0		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	4.1			7.0			4.0			93.0		
Delay (s)	17.9			22.3			21.6			118.0		
Level of Service	B			C			C			F		
Approach Delay (s)	17.9			22.3			22.6			38.5		
Approach LOS	B			C			C			D		
Intersection Summary												
HCM Average Control Delay	26.1			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.90											
Actuated Cycle Length (s)	80.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	82.9%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	61	20	55	10	20	10	40	754	10	10	585	102
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	69	22	62	11	22	11	45	847	11	11	657	115
Pedestrians		6			6			1			5	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.92	0.92	0.86	0.92	0.92	0.88	0.86			0.88		
vC, conflicting volume	1284	1697	393	1374	1749	440	778			864		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	528	977	0	626	1033	75	414			560		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	80	90	93	96	89	99	95			99		
cM capacity (veh/h)	338	214	926	275	199	842	976			877		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	153	45	469	435	340	443						
Volume Left	69	11	45	0	11	0						
Volume Right	62	11	0	11	0	115						
cSH	408	269	976	1700	877	1700						
Volume to Capacity	0.37	0.17	0.05	0.26	0.01	0.26						
Queue Length 95th (ft)	43	15	4	0	1	0						
Control Delay (s)	19.0	21.1	1.3	0.0	0.4	0.0						
Lane LOS	C	C	A		A							
Approach Delay (s)	19.0	21.1	0.7		0.2							
Approach LOS	C	C										
Intersection Summary												
Average Delay			2.5									
Intersection Capacity Utilization			65.8%	ICU Level of Service						C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	310	706	740	232	832	102	170	50	112	143	200	730
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.99	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.96	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (prot)	3467	3219	1231	1805	3574	1591	1698	1747	1587		1840	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.98	1.00
Satd. Flow (perm)	3467	3219	1231	1805	3574	1591	1698	1747	1587		1840	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	323	735	771	242	867	106	177	52	117	149	208	760
RTOR Reduction (vph)	0	37	115	0	0	26	0	0	103	0	0	69
Lane Group Flow (vph)	323	1006	348	242	867	80	113	116	14	0	357	691
Confl. Peds. (#/hr)			16									49
Confl. Bikes (#/hr)			5			4			3			4
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	34.3	51.5	17.5	33.3	33.3	13.7	13.7	13.7		30.5	48.0
Effective Green, g (s)	17.0	33.8	51.0	17.0	33.8	33.8	13.2	13.2	13.2		30.0	47.0
Actuated g/C Ratio	0.15	0.31	0.46	0.15	0.31	0.31	0.12	0.12	0.12		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	989	571	279	1098	489	204	210	190		502	1134
v/s Ratio Prot	0.09	c0.31	c0.28	0.13	c0.24		0.07	0.07			c0.19	0.26
v/s Ratio Perm						0.05			0.01			
v/c Ratio	0.60	1.02	0.61	0.87	0.79	0.16	0.55	0.55	0.07		0.71	0.61
Uniform Delay, d1	43.4	38.1	22.1	45.4	34.8	27.8	45.6	45.6	43.0		36.1	24.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.0	32.9	1.6	22.8	5.8	0.7	2.6	2.5	0.1		8.3	2.4
Delay (s)	48.3	71.0	23.6	68.2	40.6	28.5	48.2	48.1	43.1		44.4	26.8
Level of Service	D	E	C	E	D	C	D	D	D		D	C
Approach Delay (s)		55.0			45.1			46.5			32.4	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			46.1			HCM Level of Service			D			
HCM Volume to Capacity ratio			0.82									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			85.0%			ICU Level of Service			E			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	661	140	50	486	50	340	360	40	90	280	240
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.97		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3457		1770	3513		1805	1847		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3457		1770	3513		1805	1847		1719	1845	1599
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	140	711	151	54	523	54	366	387	43	97	301	258
RTOR Reduction (vph)	0	13	0	0	5	0	0	4	0	0	0	185
Lane Group Flow (vph)	140	849	0	54	572	0	366	426	0	97	301	73
Confl. Peds. (#/hr)			5			7			11			6
Confl. Bikes (#/hr)			5			3			12			21
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	14.1	46.7		6.8	39.4		28.6	32.5		19.5	23.4	14.1
Effective Green, g (s)	13.6	47.2		6.3	39.9		28.1	32.0		19.0	22.9	13.6
Actuated g/C Ratio	0.11	0.39		0.05	0.33		0.23	0.27		0.16	0.19	0.11
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	200	1354		93	1163		421	490		271	351	180
v/s Ratio Prot	c0.08	c0.25		0.03	c0.16		0.20	c0.23		0.06	c0.16	0.05
v/s Ratio Perm												
v/c Ratio	0.70	0.63		0.58	0.49		0.87	0.87		0.36	0.86	0.41
Uniform Delay, d1	51.5	29.6		55.8	32.2		44.4	42.3		45.3	47.2	49.7
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	10.2	2.2		8.9	1.5		17.1	15.4		0.8	18.3	1.5
Delay (s)	61.7	31.8		64.7	33.7		61.5	57.7		46.1	65.5	51.2
Level of Service	E	C		E	C		E	E		D	E	D
Approach Delay (s)		35.9			36.3			59.5			57.0	
Approach LOS		D			D			E			E	
Intersection Summary												
HCM Average Control Delay			46.6			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			73.6%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	140	581	140	112	336	43	130	830	100	93	850	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.98		1.00	0.98		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3453		1770	3534		1736	3491		1805	3485	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3453		1770	3534		1736	3491		1805	3485	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	143	593	143	114	343	44	133	847	102	95	867	92
RTOR Reduction (vph)	0	20	0	0	9	0	0	8	0	0	7	0
Lane Group Flow (vph)	143	716	0	114	378	0	133	941	0	95	952	0
Confl. Peds. (#/hr)			14			17			40			14
Confl. Bikes (#/hr)			7			3			15			3
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	26.1		10.4	25.5		12.4	48.6		9.9	46.1	
Effective Green, g (s)	10.0	26.6		9.4	26.0		11.4	49.1		8.9	46.6	
Actuated g/C Ratio	0.09	0.24		0.09	0.24		0.10	0.45		0.08	0.42	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	835		151	835		180	1558		146	1476	
v/s Ratio Prot	c0.08	c0.21		0.06	0.11		c0.08	0.27		0.05	c0.27	
v/s Ratio Perm												
v/c Ratio	0.89	0.86		0.75	0.45		0.74	0.60		0.65	0.65	
Uniform Delay, d1	49.4	39.9		49.2	35.9		47.9	23.1		49.0	25.1	
Progression Factor	1.00	1.00		1.01	0.97		1.00	1.00		1.00	1.00	
Incremental Delay, d2	40.0	8.7		19.1	0.4		14.6	1.7		9.9	2.2	
Delay (s)	89.4	48.6		68.5	35.4		62.5	24.8		59.0	27.3	
Level of Service	F	D		E	D		E	C		E	C	
Approach Delay (s)		55.2			42.9			29.5			30.2	
Approach LOS		E			D			C			C	
Intersection Summary												
HCM Average Control Delay			38.0			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			74.4%			ICU Level of Service			D			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis 6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	757	27	0	455	48	0	0	90	0	0	96
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	797	28	0	479	51	0	0	95	0	0	101
Pedestrians								1			15	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			1	
Right turn flare (veh)												
Median type	None				None							
Median storage veh												
Upstream signal (ft)	619											
pX, platoon unblocked	0.98						0.98	0.98		0.98	0.98	0.98
vC, conflicting volume	544			826			1153	1357	414	1012	1345	280
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	484			826			1107	1316	414	963	1305	213
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	84	100	100	87
cM capacity (veh/h)	1036			800			138	151	587	168	153	764
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	531	294	319	210	95	101						
Volume Left	0	0	0	0	0	0						
Volume Right	0	28	0	51	95	101						
cSH	1700	1700	1700	1700	587	764						
Volume to Capacity	0.31	0.17	0.19	0.12	0.16	0.13						
Queue Length 95th (ft)	0	0	0	0	14	11						
Control Delay (s)	0.0	0.0	0.0	0.0	12.3	10.4						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		12.3	10.4						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.4									
Intersection Capacity Utilization			34.0%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	35	47	785	10	468	10	66	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	51	844	0	503	11	71	11
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.94		0.00			0.94	0.94
vC, conflicting volume	0	514		0			1032	257
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	363		0			912	90
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	96		0			71	99
cM capacity (veh/h)	0	1124		0			246	895
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	51	422	422	335	178	82		
Volume Left	51	0	0	0	0	71		
Volume Right	0	0	0	0	11	11		
cSH	1124	1700	1700	1700	1700	272		
Volume to Capacity	0.04	0.25	0.25	0.20	0.10	0.30		
Queue Length 95th (ft)	4	0	0	0	0	31		
Control Delay (s)	8.4	0.0	0.0	0.0	0.0	23.8		
Lane LOS	A					C		
Approach Delay (s)	0.5			0.0		23.8		
Approach LOS						C		
Intersection Summary								
Average Delay			1.6					
Intersection Capacity Utilization			49.5%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	124	454	253	123	302	30	146	650	20	80	540	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3324		1770	3479		1770	3519		1770	3505	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3324		1770	3479		1770	3519		1770	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	133	488	272	132	325	32	157	699	22	86	581	32
RTOR Reduction (vph)	0	65	0	0	6	0	0	2	0	0	4	0
Lane Group Flow (vph)	133	695	0	132	351	0	157	719	0	86	609	0
Confl. Peds. (#/hr)			6			20			14			16
Confl. Bikes (#/hr)			2			4			11			4
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	11.4	23.5		11.3	23.4		12.6	29.3		7.5	24.2	
Effective Green, g (s)	11.4	23.5		11.3	23.4		12.6	29.3		7.5	24.2	
Actuated g/C Ratio	0.13	0.27		0.13	0.26		0.14	0.33		0.08	0.27	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	228	882		226	919		252	1164		150	957	
v/s Ratio Prot	c0.08	c0.21		0.07	0.10		c0.09	c0.20		0.05	0.17	
v/s Ratio Perm												
v/c Ratio	0.58	0.79		0.58	0.38		0.62	0.62		0.57	0.64	
Uniform Delay, d1	36.4	30.2		36.4	26.7		35.8	24.9		39.0	28.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.4	4.6		2.5	0.2		3.4	1.1		3.3	1.6	
Delay (s)	38.8	34.8		38.9	26.9		39.2	26.1		42.3	29.9	
Level of Service	D	C		D	C		D	C		D	C	
Approach Delay (s)		35.4			30.1			28.4			31.4	
Approach LOS		D			C			C			C	
Intersection Summary												
HCM Average Control Delay			31.5			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.61									
Actuated Cycle Length (s)			88.6			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			66.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1712					1705				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1603					1596				
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	21	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1				5	5		
Confl. Bikes (#/hr)												
Turn Type	Perm	Perm				Perm	Perm					Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3					1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			129					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			31.2			HCM Level of Service					C	
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			87.2%			ICU Level of Service					E	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↑	↗	↘	↙	↓	↘	↙	↗	↘	↙	↗	↘
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔					↔				↔		
Volume (vph)	632	30	30	10	10	728	158	10	124	110	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				1.00		
Frpb, ped/bikes	0.99					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3468					3384				1791		
Flt Permitted	0.77					0.92				0.81		
Satd. Flow (perm)	2670					3128				1480		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	695	33	33	11	11	800	174	11	136	121	11	11
RTOR Reduction (vph)	3	0	0	0	0	1	0	0	0	1	0	0
Lane Group Flow (vph)	790	0	0	0	0	1006	0	0	0	278	0	0
Confl. Peds. (#/hr)							7	7			1	1
Confl. Bikes (#/hr)		23	23				15	15			16	16
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	950					1113				563		
v/s Ratio Prot												
v/s Ratio Perm	0.30					0.32				0.19		
v/c Ratio	0.83					0.90				0.49		
Uniform Delay, d1	24.1					25.0				19.3		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	6.3					10.3				0.7		
Delay (s)	30.4					35.4				20.0		
Level of Service	C					D				C		
Approach Delay (s)	30.4					35.4				20.0		
Approach LOS	C					D				C		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	10	30	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			1.00		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.96		
Flt Protected			0.99		
Satd. Flow (prot)			1752		
Flt Permitted			0.88		
Satd. Flow (perm)			1564		
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	11	33	11	11
RTOR Reduction (vph)	0	0	5	0	0
Lane Group Flow (vph)	0	0	72	0	0
Confl. Peds. (#/hr)				5	5
Confl. Bikes (#/hr)				6	6
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			595		
v/s Ratio Prot					
v/s Ratio Perm			0.05		
v/c Ratio			0.12		
Uniform Delay, d1			16.5		
Progression Factor			1.00		
Incremental Delay, d2			0.1		
Delay (s)			16.6		
Level of Service			B		
Approach Delay (s)			16.6		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	20	110	122	274	180	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	21	117	130	291	191	50
Pedestrians	3					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	771	219	244			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	771	219	244			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	94	86	90			
cM capacity (veh/h)	331	818	1318			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	138	421	241			
Volume Left	21	130	0			
Volume Right	117	0	50			
cSH	667	1318	1700			
Volume to Capacity	0.21	0.10	0.14			
Queue Length 95th (ft)	19	8	0			
Control Delay (s)	11.8	3.1	0.0			
Lane LOS	B	A				
Approach Delay (s)	11.8	3.1	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		3.7				
Intersection Capacity Utilization		51.6%		ICU Level of Service	A	
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	90	10	30	100	251	20	480	50	368	380	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.99			0.91		1.00	0.99		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1826			1666		1735	1825		1753	1853	
Flt Permitted		0.95			0.97		0.47	1.00		0.35	1.00	
Satd. Flow (perm)		1744			1617		856	1825		642	1853	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	11	99	11	33	110	276	22	527	55	404	418	11
RTOR Reduction (vph)	0	7	0	0	128	0	0	5	0	0	1	0
Lane Group Flow (vph)	0	114	0	0	291	0	22	577	0	404	428	0
Confl. Peds. (#/hr)	6		7	7		6	28		19	19		28
Confl. Bikes (#/hr)			1			5			28			11
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		14.3			14.3		30.3	30.3		30.3	30.3	
Effective Green, g (s)		14.3			14.3		30.3	30.3		30.3	30.3	
Actuated g/C Ratio		0.26			0.26		0.55	0.55		0.55	0.55	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		457			424		475	1013		356	1028	
v/s Ratio Prot								0.32			0.23	
v/s Ratio Perm		0.07			0.18		0.03			0.63		
v/c Ratio		0.25			0.69		0.05	0.57		1.13	0.42	
Uniform Delay, d1		15.9			18.1		5.6	7.9		12.2	7.0	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			4.6		0.0	0.7		89.5	0.3	
Delay (s)		16.2			22.7		5.6	8.6		101.7	7.3	
Level of Service		B			C		A	A		F	A	
Approach Delay (s)		16.2			22.7			8.5			53.1	
Approach LOS		B			C			A			D	
Intersection Summary												
HCM Average Control Delay		30.8					HCM Level of Service			C		
HCM Volume to Capacity ratio		0.99										
Actuated Cycle Length (s)		54.6					Sum of lost time (s)			10.0		
Intersection Capacity Utilization		90.1%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	240	248	60	161	50	210	1610	100	110	1490	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.98		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1712			1786		1770	5017		1770	5069	
Flt Permitted		0.99			0.63		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1699			1135		1770	5017		1770	5069	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	258	267	65	173	54	226	1731	108	118	1602	22
RTOR Reduction (vph)	0	37	0	0	9	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	499	0	0	283	0	226	1833	0	118	1623	0
Confl. Peds. (#/hr)			14			12			25			23
Confl. Bikes (#/hr)			6			13			7			10
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		30.8			30.8		20.2	39.2		10.2	29.2	
Effective Green, g (s)		30.8			30.8		20.2	39.2		10.2	29.2	
Actuated g/C Ratio		0.33			0.33		0.21	0.41		0.11	0.31	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		553			369		378	2077		191	1563	
v/s Ratio Prot							0.13	c0.37		0.07	c0.32	
v/s Ratio Perm		c0.29			0.25							
v/c Ratio		0.90			0.77		0.60	0.88		0.62	1.04	
Uniform Delay, d1		30.5			28.7		33.6	25.6		40.4	32.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		17.9			9.2		2.5	4.8		5.8	33.3	
Delay (s)		48.4			38.0		36.1	30.4		46.2	66.1	
Level of Service		D			D		D	C		D	E	
Approach Delay (s)		48.4			38.0			31.1			64.7	
Approach LOS		D			D			C			E	
Intersection Summary												
HCM Average Control Delay		46.2			HCM Level of Service			D				
HCM Volume to Capacity ratio		0.92										
Actuated Cycle Length (s)		94.7			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		100.5%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	106	670	30	30	430	50	20	210	40	50	148	72
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3541		1805	3536			1831		1795	1786	
Flt Permitted	0.95	1.00		0.95	1.00			0.96		0.41	1.00	
Satd. Flow (perm)	1805	3541		1805	3536			1766		779	1786	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	114	720	32	32	462	54	22	226	43	54	159	77
RTOR Reduction (vph)	0	5	0	0	16	0	0	13	0	0	35	0
Lane Group Flow (vph)	114	747	0	32	500	0	0	278	0	54	201	0
Confl. Peds. (#/hr)			29			21	15		17	17		15
Confl. Bikes (#/hr)			38			4			11			15
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.1	26.2		2.6	22.7			10.2		10.2	10.2	
Effective Green, g (s)	5.6	26.2		2.1	22.7			9.7		9.7	9.7	
Actuated g/C Ratio	0.11	0.52		0.04	0.45			0.19		0.19	0.19	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	202	1855		76	1605			343		151	346	
v/s Ratio Prot	c0.06	c0.21		0.02	0.14						0.11	
v/s Ratio Perm								c0.16		0.07		
v/c Ratio	0.56	0.40		0.42	0.31			0.81		0.36	0.58	
Uniform Delay, d1	21.0	7.2		23.4	8.7			19.3		17.5	18.3	
Progression Factor	1.11	1.16		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	1.5	0.4		1.4	0.5			13.5		1.5	2.4	
Delay (s)	24.9	8.8		24.7	9.2			32.8		18.9	20.7	
Level of Service	C	A		C	A			C		B	C	
Approach Delay (s)		10.9			10.1			32.8			20.3	
Approach LOS		B			B			C			C	
Intersection Summary												
HCM Average Control Delay			15.2			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.54									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			64.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	140	10	68	130	10	0	1150	120	0	1249	110
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.98			0.98			1.00			1.00	
Satd. Flow (prot)		3526			3513			3504			3484	
Flt Permitted		0.79			0.98			1.00			1.00	
Satd. Flow (perm)		2819			3513			3504			3484	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	72	144	10	70	134	10	0	1186	124	0	1288	113
RTOR Reduction (vph)	0	3	0	0	4	0	0	6	0	0	5	0
Lane Group Flow (vph)	0	223	0	0	210	0	0	1304	0	0	1396	0
Confl. Peds. (#/hr)						20			11			19
Confl. Bikes (#/hr)			7			12			25			31
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		13.0			10.9			70.1			70.1	
Effective Green, g (s)		14.0			11.9			72.1			72.1	
Actuated g/C Ratio		0.13			0.11			0.66			0.66	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		359			380			2297			2284	
v/s Ratio Prot					c0.06			0.37			c0.40	
v/s Ratio Perm		c0.08										
v/c Ratio		0.62			0.55			0.57			0.61	
Uniform Delay, d1		45.5			46.5			10.4			10.9	
Progression Factor		1.00			1.00			0.59			1.00	
Incremental Delay, d2		2.2			1.0			0.9			1.2	
Delay (s)		47.7			47.5			7.1			12.1	
Level of Service		D			D			A			B	
Approach Delay (s)		47.7			47.5			7.1			12.1	
Approach LOS		D			D			A			B	
Intersection Summary												
HCM Average Control Delay		15.0			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.61										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		62.7%			ICU Level of Service			B				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	50	230	446	20	774	0	0	1237	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3520	1563		3537			5069	
Flt Permitted					0.99	1.00		0.90			1.00	
Satd. Flow (perm)					3520	1563		3177			5069	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	51	235	455	20	790	0	0	1262	20
RTOR Reduction (vph)	0	0	0	0	0	184	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	286	271	0	810	0	0	1281	0
Confl. Peds. (#/hr)						6			13			29
Confl. Bikes (#/hr)									26			29
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					21.6	21.6		79.4			79.4	
Effective Green, g (s)					21.6	21.6		80.4			80.4	
Actuated g/C Ratio					0.20	0.20		0.73			0.73	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					691	307		2322			3705	
v/s Ratio Prot					0.08						0.25	
v/s Ratio Perm						c0.17		c0.25				
v/c Ratio					0.41	0.88		0.35			0.35	
Uniform Delay, d1					38.7	43.0		5.3			5.3	
Progression Factor					1.00	1.00		0.01			0.91	
Incremental Delay, d2					0.1	23.8		0.3			0.2	
Delay (s)					38.8	66.8		0.3			5.0	
Level of Service					D	E		A			A	
Approach Delay (s)		0.0			56.0			0.3			5.0	
Approach LOS		A			E			A			A	
Intersection Summary												
HCM Average Control Delay			17.0				HCM Level of Service			B		
HCM Volume to Capacity ratio			0.46									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			56.9%				ICU Level of Service		B			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	410	90	0	0	0	0	774	80	684	613	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		0.99						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3491						3482		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3491						3482		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	22	441	97	0	0	0	0	832	86	735	659	0
RTOR Reduction (vph)	0	18	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	542	0	0	0	0	0	910	0	735	659	0
Confl. Peds. (#/hr)			14						14			31
Confl. Bikes (#/hr)			1						23			29
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		21.4						33.3		40.3	79.6	
Effective Green, g (s)		22.4						34.3		41.3	79.6	
Actuated g/C Ratio		0.20						0.31		0.38	0.72	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		711						1086		1289	2536	
v/s Ratio Prot		c0.16						c0.26		c0.21	0.19	
v/s Ratio Perm												
v/c Ratio		0.76						0.84		0.57	0.26	
Uniform Delay, d1		41.3						35.3		27.3	5.2	
Progression Factor		1.00						1.00		1.07	0.98	
Incremental Delay, d2		4.4						5.5		1.8	0.0	
Delay (s)		45.7						40.8		30.8	5.1	
Level of Service		D						D		C	A	
Approach Delay (s)		45.7			0.0			40.8			18.7	
Approach LOS		D			A			D			B	
Intersection Summary												
HCM Average Control Delay		31.0										
HCM Volume to Capacity ratio		0.71										
Actuated Cycle Length (s)		110.0								12.0		
Intersection Capacity Utilization		71.4%										
Analysis Period (min)		15										
c Critical Lane Group												

Appendix E-7
LOS Calculation Worksheets
2035 Conditions

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area

2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	290	70	40	500	200	80	430	50	170	650	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.98		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1796			1764		1758	3460		1738	3488	
Flt Permitted		0.80			0.96		0.24	1.00		0.39	1.00	
Satd. Flow (perm)		1452			1698		450	3460		714	3488	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	315	76	43	543	217	87	467	54	185	707	54
RTOR Reduction (vph)	0	10	0	0	19	0	0	13	0	0	8	0
Lane Group Flow (vph)	0	457	0	0	784	0	87	508	0	185	753	0
Confl. Peds. (#/hr)	58		27	27		58	17		30	30		17
Confl. Bikes (#/hr)			4			17			8			11
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		36.0			36.0			26.0	26.0		26.0	26.0
Effective Green, g (s)		36.0			36.0			26.0	26.0		26.0	26.0
Actuated g/C Ratio		0.51			0.51			0.37	0.37		0.37	0.37
Clearance Time (s)		4.0			4.0			4.0	4.0		4.0	4.0
Lane Grp Cap (vph)		747			873			167	1285		265	1296
v/s Ratio Prot								0.15			0.22	
v/s Ratio Perm		0.31			c0.46			0.19			c0.26	
v/c Ratio		0.61			0.90			0.52	0.40		0.70	0.58
Uniform Delay, d1		12.0			15.3			17.1	16.2		18.7	17.6
Progression Factor		1.00			1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2		3.7			13.9			11.1	0.9		14.2	1.9
Delay (s)		15.8			29.3			28.3	17.1		32.9	19.5
Level of Service		B			C			C	B		C	B
Approach Delay (s)		15.8			29.3			18.7			22.1	
Approach LOS		B			C			B			C	
Intersection Summary												
HCM Average Control Delay		22.4			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		70.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		86.8%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	50	20	100	10	20	10	60	500	10	10	670	80
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	54	22	109	11	22	11	65	543	11	11	728	87
Pedestrians		1			21			11			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1221	1500	420	1217	1538	301	816			575		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	877	1210	0	871	1255	301	393			575		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	66	84	88	92	83	98	93			99		
cM capacity (veh/h)	162	138	899	144	129	681	973			977		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	185	43	337	283	375	451						
Volume Left	54	11	65	0	11	0						
Volume Right	109	11	0	11	0	87						
cSH	300	167	973	1700	977	1700						
Volume to Capacity	0.62	0.26	0.07	0.17	0.01	0.27						
Queue Length 95th (ft)	95	25	5	0	1	0						
Control Delay (s)	34.4	33.9	2.3	0.0	0.4	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	34.4	33.9	1.3		0.2							
Approach LOS	D	D										
Intersection Summary												
Average Delay			5.2									
Intersection Capacity Utilization			62.1%	ICU Level of Service						B		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	970	420	70	700	90	110	30	70	140	70	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3365	1219	1770	3539	1560	1681	1720	1583		1803	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3365	1219	1770	3539	1560	1681	1720	1583		1803	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	383	1032	447	74	745	96	117	32	74	149	74	617
RTOR Reduction (vph)	0	3	203	0	0	26	0	0	68	0	0	129
Lane Group Flow (vph)	383	1074	199	74	745	70	74	75	6	0	223	488
Confl. Peds. (#/hr)			14									18
Confl. Bikes (#/hr)						4						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	41.5	55.0	14.0	37.0	37.0	10.0	10.0	10.0		30.5	48.0
Effective Green, g (s)	17.0	41.0	54.5	13.5	37.5	37.5	9.5	9.5	9.5		30.0	47.0
Actuated g/C Ratio	0.15	0.37	0.50	0.12	0.34	0.34	0.09	0.09	0.09		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1254	604	217	1206	532	145	149	137		492	1123
v/s Ratio Prot	0.11	c0.32	0.16	0.04	c0.21		c0.04	0.04			c0.12	0.19
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.72	0.86	0.33	0.34	0.62	0.13	0.51	0.50	0.05		0.45	0.43
Uniform Delay, d1	44.2	31.8	16.7	44.2	30.3	25.0	48.0	48.0	46.1		33.2	22.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.2	7.7	0.2	0.3	2.4	0.5	2.3	1.9	0.1		3.0	1.2
Delay (s)	52.5	39.5	17.0	44.5	32.6	25.5	50.3	49.9	46.2		36.2	23.4
Level of Service	D	D	B	D	C	C	D	D	D		D	C
Approach Delay (s)		37.3			32.9			48.8			26.8	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			34.6			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			70.8%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	350	260	50	520	60	210	230	40	150	230	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.98		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3272		1770	3464		1770	1814		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3272		1770	3464		1770	1814		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	284	398	295	57	591	68	239	261	45	170	261	170
RTOR Reduction (vph)	0	97	0	0	7	0	0	5	0	0	0	138
Lane Group Flow (vph)	284	596	0	57	652	0	239	301	0	170	261	32
Confl. Peds. (#/hr)			3			13			4			47
Confl. Bikes (#/hr)			1			1			7			8
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	23.2	56.3		6.8	39.9		21.0	21.9		20.0	20.9	23.2
Effective Green, g (s)	22.7	56.8		6.3	40.4		20.5	21.4		19.5	20.4	22.7
Actuated g/C Ratio	0.19	0.47		0.05	0.34		0.17	0.18		0.16	0.17	0.19
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	335	1549		93	1166		302	323		288	317	299
v/s Ratio Prot	c0.16	0.18		0.03	c0.19		0.14	c0.17		0.10	c0.14	0.02
v/s Ratio Perm												
v/c Ratio	0.85	0.38		0.61	0.56		0.79	0.93		0.59	0.82	0.11
Uniform Delay, d1	47.0	20.3		55.7	32.5		47.7	48.6		46.5	48.1	40.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.7	0.7		11.4	1.9		13.2	32.8		3.2	15.7	0.2
Delay (s)	64.7	21.1		67.0	34.5		60.9	81.4		49.8	63.8	40.4
Level of Service	E	C		E	C		E	F		D	E	D
Approach Delay (s)		33.7			37.1			72.4			53.2	
Approach LOS		C			D			E			D	
Intersection Summary												
HCM Average Control Delay			46.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			73.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	300	100	100	410	30	180	820	60	70	860	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3367		1770	3499		1770	3486		1770	3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3367		1770	3499		1770	3486		1770	3488	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	115	345	115	115	471	34	207	943	69	80	989	69
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	4	0
Lane Group Flow (vph)	115	460	0	115	505	0	207	1008	0	80	1054	0
Confl. Peds. (#/hr)			25			6			40			44
Confl. Bikes (#/hr)			3			1			28			18
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.4	21.2		10.4	21.2		14.0	55.2		8.2	49.4	
Effective Green, g (s)	9.4	21.7		9.4	21.7		13.0	55.7		7.2	49.9	
Actuated g/C Ratio	0.09	0.20		0.09	0.20		0.12	0.51		0.07	0.45	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	664		151	690		209	1765		116	1582	
v/s Ratio Prot	c0.06	0.14		0.06	c0.14		c0.12	0.29		0.05	c0.30	
v/s Ratio Perm												
v/c Ratio	0.76	0.69		0.76	0.73		0.99	0.57		0.69	0.67	
Uniform Delay, d1	49.2	41.1		49.2	41.4		48.4	18.9		50.3	23.5	
Progression Factor	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.0	3.1		20.0	4.0		59.3	1.3		15.7	2.2	
Delay (s)	69.2	44.2		69.0	44.9		107.8	20.2		66.0	25.8	
Level of Service	E	D		E	D		F	C		E	C	
Approach Delay (s)		49.2			49.4			35.1			28.6	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			37.8			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			72.3%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	390	20	0	500	20	0	0	40	0	0	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	476	24	0	610	24	0	0	49	0	0	98
Pedestrians		7						7			7	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		1						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					619							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	641			507			904	1136	257	916	1136	331
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	519			507			796	1040	257	808	1040	193
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	93	100	100	87
cM capacity (veh/h)	986			1048			226	215	738	238	215	767
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	317	183	407	228	49	98						
Volume Left	0	0	0	0	0	0						
Volume Right	0	24	0	24	49	98						
cSH	1700	1700	1700	1700	738	767						
Volume to Capacity	0.19	0.11	0.24	0.13	0.07	0.13						
Queue Length 95th (ft)	0	0	0	0	5	11						
Control Delay (s)	0.0	0.0	0.0	0.0	10.2	10.4						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		10.2	10.4						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.2									
Intersection Capacity Utilization			28.4%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2035 No Project AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	20	30	380	10	490	10	30	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	37	463	0	598	12	37	12
Pedestrians					6		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					1		0	
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.92		0.00			0.92	0.92
vC, conflicting volume	0	611		0			916	306
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	416		0			746	86
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	97		0			88	99
cM capacity (veh/h)	0	1053		0			310	883
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	37	232	232	398	211	49		
Volume Left	37	0	0	0	0	37		
Volume Right	0	0	0	0	12	12		
cSH	1053	1700	1700	1700	1700	370		
Volume to Capacity	0.03	0.14	0.14	0.23	0.12	0.13		
Queue Length 95th (ft)	3	0	0	0	0	11		
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	16.2		
Lane LOS	A					C		
Approach Delay (s)	0.6			0.0		16.2		
Approach LOS						C		
Intersection Summary								
Average Delay			1.0					
Intersection Capacity Utilization			38.0%		ICU Level of Service		A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	250	120	110	360	20	130	490	20	60	700	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3317		1770	3506		1770	3514		1770	3501	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3317		1770	3506		1770	3514		1770	3501	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	71	255	122	112	367	20	133	500	20	61	714	41
RTOR Reduction (vph)	0	55	0	0	3	0	0	2	0	0	3	0
Lane Group Flow (vph)	71	322	0	112	384	0	133	518	0	61	752	0
Confl. Peds. (#/hr)			24			14			13			25
Confl. Bikes (#/hr)			8			3			16			24
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.3	13.1		7.9	14.7		10.7	31.3		5.9	26.5	
Effective Green, g (s)	6.3	13.1		7.9	14.7		10.7	31.3		5.9	26.5	
Actuated g/C Ratio	0.08	0.17		0.11	0.20		0.14	0.42		0.08	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	148	578		186	685		252	1463		139	1234	
v/s Ratio Prot	0.04	0.10		c0.06	c0.11		c0.08	0.15		0.03	c0.21	
v/s Ratio Perm												
v/c Ratio	0.48	0.56		0.60	0.56		0.53	0.35		0.44	0.61	
Uniform Delay, d1	32.9	28.4		32.1	27.3		29.9	15.0		33.1	20.1	
Progression Factor	1.00	1.01		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.9	0.9		3.7	0.9		0.9	0.2		0.8	1.0	
Delay (s)	33.9	29.8		35.9	28.2		30.8	15.2		33.9	21.1	
Level of Service	C	C		D	C		C	B		C	C	
Approach Delay (s)		30.4			29.9			18.4			22.0	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay			24.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.56									
Actuated Cycle Length (s)			75.2			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			63.5%			ICU Level of Service			B			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1718					1716				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1609					1606				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	11	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1							
Confl. Bikes (#/hr)									1	1		
Turn Type	Perm	Perm				Perm	Perm				Perm	Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3				1	1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			130					130				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			27.2			HCM Level of Service		C				
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			83.8%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations												
Volume (vph)	470	40	10	10	10	680	180	10	120	240	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				0.95		
Frpb, ped/bikes	1.00					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3469					3352				3447		
Flt Permitted	0.83					0.93				0.82		
Satd. Flow (perm)	2882					3125				2872		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	522	44	11	11	11	756	200	11	133	267	11	11
RTOR Reduction (vph)	1	0	0	0	0	1	0	0	0	2	0	0
Lane Group Flow (vph)	598	0	0	0	0	988	0	0	0	420	0	0
Confl. Peds. (#/hr)		3	3				1	1			1	1
Confl. Bikes (#/hr)		6	6				34	34			18	18
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	1025					1112				1092		
v/s Ratio Prot												
v/s Ratio Perm	0.21					0.32				0.15		
v/c Ratio	0.58					0.89				0.38		
Uniform Delay, d1	21.4					24.8				18.4		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	0.9					8.9				0.2		
Delay (s)	22.3					33.7				18.6		
Level of Service	C					C				B		
Approach Delay (s)	22.3					33.7				18.6		
Approach LOS	C					C				B		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	20	30	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			0.95		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.96		
Flt Protected			0.98		
Satd. Flow (prot)			3319		
Flt Permitted			0.78		
Satd. Flow (perm)			2626		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	22	33	11	11
RTOR Reduction (vph)	0	0	7	0	0
Lane Group Flow (vph)	0	0	81	0	0
Confl. Peds. (#/hr)				3	3
Confl. Bikes (#/hr)				11	11
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			998		
v/s Ratio Prot					
v/s Ratio Perm			0.03		
v/c Ratio			0.08		
Uniform Delay, d1			16.2		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			16.2		
Level of Service			B		
Approach Delay (s)			16.2		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	100	80	300	260	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	53	133	107	400	347	40
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	780	193	387			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	780	193	387			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	82	84	91			
cM capacity (veh/h)	302	816	1168			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	187	240	267	231	156	
Volume Left	53	107	0	0	0	
Volume Right	133	0	0	0	40	
cSH	549	1168	1700	1700	1700	
Volume to Capacity	0.34	0.09	0.16	0.14	0.09	
Queue Length 95th (ft)	37	8	0	0	0	
Control Delay (s)	14.9	4.2	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	14.9	2.0		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.5			
Intersection Capacity Utilization			37.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	70	20	40	140	240	20	320	40	330	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.98	1.00	
Frt		0.97			0.92		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787			1677		1739	1820		1738	1853	
Flt Permitted		0.95			0.96		0.41	1.00		0.48	1.00	
Satd. Flow (perm)		1714			1620		745	1820		871	1853	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	78	22	44	156	267	22	356	44	367	467	11
RTOR Reduction (vph)	0	15	0	0	83	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	96	0	0	384	0	22	393	0	367	477	0
Confl. Peds. (#/hr)	13		18	18		13	28		24	24		28
Confl. Bikes (#/hr)			1			13			14			32
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.9			16.9		27.9	27.9		27.9	27.9	
Effective Green, g (s)		16.9			16.9		27.9	27.9		27.9	27.9	
Actuated g/C Ratio		0.31			0.31		0.51	0.51		0.51	0.51	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		529			500		379	927		443	943	
v/s Ratio Prot								0.22			0.26	
v/s Ratio Perm		0.06			0.24		0.03			0.42		
v/c Ratio		0.18			0.77		0.06	0.42		0.83	0.51	
Uniform Delay, d1		13.9			17.2		6.8	8.4		11.4	8.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			7.0		0.1	0.3		12.1	0.4	
Delay (s)		14.0			24.1		6.9	8.7		23.5	9.3	
Level of Service		B			C		A	A		C	A	
Approach Delay (s)		14.0			24.1			8.6			15.5	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay		16.0			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.81										
Actuated Cycle Length (s)		54.8			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		82.0%			ICU Level of Service			E				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations								  			  	
Volume (vph)	20	150	280	70	230	90	140	1560	50	70	1550	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1677			1776		1770	5055		1770	5066	
Flt Permitted		0.98			0.73		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1639			1305		1770	5055		1770	5066	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	160	298	74	245	96	149	1660	53	74	1649	32
RTOR Reduction (vph)	0	72	0	0	13	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	407	0	0	402	0	149	1710	0	74	1679	0
Confl. Peds. (#/hr)			8			21			10			13
Confl. Bikes (#/hr)			10			7			3			7
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		27.2			27.2		12.4	35.1		5.7	28.4	
Effective Green, g (s)		27.2			27.2		12.4	35.1		5.7	28.4	
Actuated g/C Ratio		0.33			0.33		0.15	0.43		0.07	0.34	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		540			430		266	2151		122	1744	
v/s Ratio Prot							0.08	c0.34		0.04	c0.33	
v/s Ratio Perm		0.25			c0.31							
v/c Ratio		0.75			0.93		0.56	0.79		0.61	0.96	
Uniform Delay, d1		24.7			26.8		32.5	20.6		37.3	26.5	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		5.9			27.4		2.7	2.1		8.3	13.7	
Delay (s)		30.5			54.1		35.2	22.7		45.6	40.3	
Level of Service		C			D		D	C		D	D	
Approach Delay (s)		30.5			54.1			23.7			40.5	
Approach LOS		C			D			C			D	
Intersection Summary												
HCM Average Control Delay			33.8			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			82.5			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			97.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	130	490	30	30	670	90	30	170	30	60	220	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3501		1770	3463			1811		1770	1776	
Flt Permitted	0.95	1.00		0.95	1.00			0.70		0.46	1.00	
Satd. Flow (perm)	1770	3501		1770	3463			1278		858	1776	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	143	538	33	33	736	99	33	187	33	66	242	77
RTOR Reduction (vph)	0	7	0	0	20	0	0	11	0	0	23	0
Lane Group Flow (vph)	143	564	0	33	815	0	0	242	0	66	296	0
Confl. Peds. (#/hr)			14			16			14			42
Confl. Bikes (#/hr)						17			7			13
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.4	25.9		2.6	22.1			10.5		10.5	10.5	
Effective Green, g (s)	5.9	25.9		2.1	22.1			10.0		10.0	10.0	
Actuated g/C Ratio	0.12	0.52		0.04	0.44			0.20		0.20	0.20	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	209	1814		74	1531			256		172	355	
v/s Ratio Prot	c0.08	c0.16		0.02	c0.24						0.17	
v/s Ratio Perm								c0.19		0.08		
v/c Ratio	0.68	0.31		0.45	0.53			0.94		0.38	0.83	
Uniform Delay, d1	21.2	6.9		23.4	10.2			19.7		17.3	19.2	
Progression Factor	1.21	1.18		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.9	0.2		1.6	1.3			41.0		1.4	15.3	
Delay (s)	29.6	8.4		24.9	11.5			60.7		18.8	34.5	
Level of Service	C	A		C	B			E		B	C	
Approach Delay (s)		12.7			12.0			60.7			31.8	
Approach LOS		B			B			E			C	
Intersection Summary												
HCM Average Control Delay			21.2			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.71									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			75.5%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	20	90	170	10	0	1320	120	0	1020	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.99			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3425			3449			3464			3481	
Flt Permitted		0.83			0.98			1.00			1.00	
Satd. Flow (perm)		2854			3449			3464			3481	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	104	21	94	177	10	0	1375	125	0	1062	104
RTOR Reduction (vph)	0	12	0	0	3	0	0	5	0	0	5	0
Lane Group Flow (vph)	0	144	0	0	278	0	0	1495	0	0	1161	0
Confl. Peds. (#/hr)						32			37			16
Confl. Bikes (#/hr)			3			10			13			14
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		9.8			13.2			71.0			71.0	
Effective Green, g (s)		10.8			14.2			73.0			73.0	
Actuated g/C Ratio		0.10			0.13			0.66			0.66	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		280			445			2299			2310	
v/s Ratio Prot					c0.08			c0.43			0.33	
v/s Ratio Perm	c0.05											
v/c Ratio	0.52				0.63			0.65			0.50	
Uniform Delay, d1	47.1				45.4			10.9			9.3	
Progression Factor	1.00				1.00			0.93			1.00	
Incremental Delay, d2	0.7				2.0			0.8			0.8	
Delay (s)	47.8				47.4			11.0			10.1	
Level of Service	D				D			B			B	
Approach Delay (s)	47.8				47.4			11.0			10.1	
Approach LOS	D				D			B			B	
Intersection Summary												
HCM Average Control Delay		15.8			HCM Level of Service			B				
HCM Volume to Capacity ratio		0.63										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		65.3%			ICU Level of Service			C				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	60	280	730	40	630	0	0	1080	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3508	1545		3529			5074	
Flt Permitted					0.99	1.00		0.81			1.00	
Satd. Flow (perm)					3508	1545		2871			5074	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	63	295	768	42	663	0	0	1137	11
RTOR Reduction (vph)	0	0	0	0	0	220	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	358	548	0	705	0	0	1147	0
Confl. Peds. (#/hr)						7			14			30
Confl. Bikes (#/hr)									17			28
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					861	379		1958			3460	
v/s Ratio Prot					0.10						0.23	
v/s Ratio Perm						c0.35		c0.25				
v/c Ratio					0.42	1.45		0.36			0.33	
Uniform Delay, d1					34.9	41.5		7.4			7.2	
Progression Factor					1.00	1.00		0.17			0.82	
Incremental Delay, d2					0.1	214.7		0.4			0.2	
Delay (s)					35.0	256.2		1.7			6.1	
Level of Service					C	F		A			A	
Approach Delay (s)		0.0			185.8			1.7			6.1	
Approach LOS		A			F			A			A	
Intersection Summary												
HCM Average Control Delay			73.0				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.65									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			71.2%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	160	50	0	0	0	0	650	60	280	860	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3396						3478		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3396						3478		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	168	53	0	0	0	0	684	63	295	905	0
RTOR Reduction (vph)	0	28	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	214	0	0	0	0	0	740	0	295	905	0
Confl. Peds. (#/hr)			4						28			14
Confl. Bikes (#/hr)									18			30
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		11.3						28.4		55.3	89.7	
Effective Green, g (s)		12.3						29.4		56.3	89.7	
Actuated g/C Ratio		0.11						0.27		0.51	0.82	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		380						930		1757	2886	
v/s Ratio Prot		c0.06						c0.21		0.09	c0.26	
v/s Ratio Perm												
v/c Ratio		0.56						0.80		0.17	0.31	
Uniform Delay, d1		46.3						37.5		14.3	2.5	
Progression Factor		1.00						1.00		0.94	0.79	
Incremental Delay, d2		1.1						4.4		0.2	0.0	
Delay (s)		47.5						41.9		13.7	2.0	
Level of Service		D						D		B	A	
Approach Delay (s)		47.5			0.0			41.9			4.9	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		22.2										
HCM Volume to Capacity ratio		0.48										
Actuated Cycle Length (s)		110.0								8.0		
Intersection Capacity Utilization		46.8%								A		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area

2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	590	140	60	420	340	60	880	40	150	780	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1795			1727		1756	3509		1764	3485	
Flt Permitted		0.72			0.89		0.16	1.00		0.13	1.00	
Satd. Flow (perm)		1310			1536		304	3509		248	3485	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	641	152	65	457	370	65	957	43	163	848	65
RTOR Reduction (vph)	0	9	0	0	15	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	914	0	0	877	0	65	996	0	163	906	0
Confl. Peds. (#/hr)	36		32	32		36	24		13	13		24
Confl. Bikes (#/hr)			28			4			9			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.52			0.52		0.38	0.38		0.38	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		688			806		114	1316		93	1307	
v/s Ratio Prot								0.28			0.26	
v/s Ratio Perm		c0.70			0.57		0.21			c0.66		
v/c Ratio		1.33			1.09		0.57	0.76		1.75	0.69	
Uniform Delay, d1		19.0			19.0		19.9	21.8		25.0	21.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		157.7			58.3		19.1	4.1		379.0	3.0	
Delay (s)		176.7			77.3		38.9	25.9		404.0	24.2	
Level of Service		F			E		D	C		F	C	
Approach Delay (s)		176.7			77.3			26.7			81.7	
Approach LOS		F			E			C			F	
Intersection Summary												
HCM Average Control Delay		88.1			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.51										
Actuated Cycle Length (s)		80.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		119.7%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	60	20	50	10	20	10	40	930	10	10	870	100
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	67	22	56	11	22	11	45	1045	11	11	978	112
Pedestrians		8			8			1			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.88	0.88	0.79	0.88	0.88	0.81	0.79			0.81		
vC, conflicting volume	1706	2218	554	1728	2269	543	1098			1064		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	552	1132	0	577	1189	0	583			601		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	77	86	93	96	85	99	94			99		
cM capacity (veh/h)	298	163	847	274	151	864	772			779		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	146	45	567	534	500	601						
Volume Left	67	11	45	0	11	0						
Volume Right	56	11	0	11	0	112						
cSH	340	222	772	1700	779	1700						
Volume to Capacity	0.43	0.20	0.06	0.31	0.01	0.35						
Queue Length 95th (ft)	52	18	5	0	1	0						
Control Delay (s)	23.4	25.3	1.6	0.0	0.4	0.0						
Lane LOS	C	D	A		A							
Approach Delay (s)	23.4	25.3	0.8		0.2							
Approach LOS	C	D										
Intersection Summary												
Average Delay			2.4									
Intersection Capacity Utilization			75.4%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	750	950	350	900	110	200	70	120	240	250	990
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (prot)	3467	3176	1231	1805	3574	1590	1698	1754	1584		1836	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (perm)	3467	3176	1231	1805	3574	1590	1698	1754	1584		1836	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	781	990	365	938	115	208	73	125	250	260	1031
RTOR Reduction (vph)	0	61	69	0	0	26	0	0	109	0	0	50
Lane Group Flow (vph)	333	1156	485	365	938	89	139	142	16	0	510	981
Confl. Peds. (#/hr)			20									62
Confl. Bikes (#/hr)			7			5			4			5
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	33.5	51.5	17.5	32.5	32.5	14.5	14.5	14.5		30.5	48.0
Effective Green, g (s)	17.0	33.0	51.0	17.0	33.0	33.0	14.0	14.0	14.0		30.0	47.0
Actuated g/C Ratio	0.15	0.30	0.46	0.15	0.30	0.30	0.13	0.13	0.13		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	953	571	279	1072	477	216	223	202		501	1134
v/s Ratio Prot	0.10	c0.36	c0.39	c0.20	0.26		0.08	0.08			c0.28	0.37
v/s Ratio Perm						0.06			0.01			
v/c Ratio	0.62	1.21	0.85	1.31	0.88	0.19	0.64	0.64	0.08		1.02	0.87
Uniform Delay, d1	43.5	38.5	26.1	46.5	36.5	28.5	45.6	45.6	42.3		40.0	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	105.7	11.1	162.1	10.0	0.9	5.7	5.1	0.1		44.8	8.9
Delay (s)	48.8	144.2	37.2	208.6	46.5	29.4	51.3	50.7	42.4		84.8	37.5
Level of Service	D	F	D	F	D	C	D	D	D		F	D
Approach Delay (s)		100.9			86.9			48.4			53.2	
Approach LOS		F			F			D			D	
Intersection Summary												
HCM Average Control Delay			79.9			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.13									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			98.0%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	850	160	60	620	130	420	580	80	110	410	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3463		1770	3457		1805	1839		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3463		1770	3457		1805	1839		1719	1845	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	895	168	63	653	137	442	611	84	116	432	316
RTOR Reduction (vph)	0	13	0	0	14	0	0	4	0	0	0	155
Lane Group Flow (vph)	168	1050	0	63	776	0	442	691	0	116	432	161
Confl. Peds. (#/hr)			7			9			13			8
Confl. Bikes (#/hr)			7			4			15			27
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	15.3	40.1		6.8	31.6		32.1	39.5		19.1	26.5	15.3
Effective Green, g (s)	14.8	40.6		6.3	32.1		31.6	39.0		18.6	26.0	14.8
Actuated g/C Ratio	0.12	0.34		0.05	0.27		0.26	0.32		0.15	0.22	0.12
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	217	1167		93	921		473	595		265	398	196
v/s Ratio Prot	0.09	c0.30		0.04	c0.22		0.24	c0.38		0.07	c0.23	0.10
v/s Ratio Perm												
v/c Ratio	0.77	0.90		0.68	0.84		0.93	1.16		0.44	1.09	0.82
Uniform Delay, d1	51.2	38.0		56.1	41.8		43.4	40.8		46.2	47.2	51.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.7	11.1		17.8	9.3		25.7	90.1		1.2	70.0	23.2
Delay (s)	66.9	49.2		73.9	51.1		69.2	130.9		47.4	117.2	74.7
Level of Service	E	D		E	D		E	F		D	F	E
Approach Delay (s)		51.6			52.8			106.9			92.3	
Approach LOS		D			D			F			F	
Intersection Summary												
HCM Average Control Delay			75.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.00									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			90.2%			ICU Level of Service				E		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	630	210	120	410	50	190	990	110	120	1140	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3414		1770	3535		1736	3492		1805	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3414		1770	3535		1736	3492		1805	3464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	643	214	122	418	51	194	1010	112	122	1163	173
RTOR Reduction (vph)	0	30	0	0	8	0	0	7	0	0	11	0
Lane Group Flow (vph)	255	827	0	122	461	0	194	1115	0	122	1325	0
Confl. Peds. (#/hr)			17			21			50			17
Confl. Bikes (#/hr)			9			4			19			4
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	27.5		10.5	27.0		14.0	46.5		10.5	43.0	
Effective Green, g (s)	10.0	28.0		9.5	27.5		13.0	47.0		9.5	43.5	
Actuated g/C Ratio	0.09	0.25		0.09	0.25		0.12	0.43		0.09	0.40	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	869		153	884		205	1492		156	1370	
v/s Ratio Prot	c0.14	c0.24		0.07	0.13		c0.11	c0.32		0.07	c0.38	
v/s Ratio Perm												
v/c Ratio	1.58	0.95		0.80	0.52		0.95	0.75		0.78	0.97	
Uniform Delay, d1	50.0	40.3		49.3	35.6		48.2	26.5		49.2	32.6	
Progression Factor	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Incremental Delay, d2	290.2	19.7		24.3	0.6		47.3	3.5		22.0	17.7	
Delay (s)	340.2	60.1		73.8	35.6		95.5	30.0		71.3	50.2	
Level of Service	F	E		E	D		F	C		E	D	
Approach Delay (s)		124.3			43.5			39.6			52.0	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			65.2			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.02									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			92.3%			ICU Level of Service				F		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis 6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	860	20	0	560	30	0	0	70	0	0	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	905	21	0	589	32	0	0	74	0	0	84
Pedestrians								1			19	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			2	
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	619											
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	640			927			1296	1557	464	1151	1552	330
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	457			927			1163	1445	464	1007	1439	122
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	86	100	100	90
cM capacity (veh/h)	1005			732			123	119	544	152	120	827
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	604	323	393	228	74	84						
Volume Left	0	0	0	0	0	0						
Volume Right	0	21	0	32	74	84						
cSH	1700	1700	1700	1700	544	827						
Volume to Capacity	0.36	0.19	0.23	0.13	0.14	0.10						
Queue Length 95th (ft)	0	0	0	0	12	8						
Control Delay (s)	0.0	0.0	0.0	0.0	12.6	9.8						
Lane LOS					B	A						
Approach Delay (s)	0.0		0.0		12.6	9.8						
Approach LOS					B	A						
Intersection Summary												
Average Delay			1.0									
Intersection Capacity Utilization			35.4%	ICU Level of Service		A						
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2035 No Project PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	20	40	880	10	560	20	60	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	43	946	0	602	22	65	11
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.90		0.00			0.90	0.90
vC, conflicting volume	0	624		0			1172	312
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	360		0			969	14
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	96		0			70	99
cM capacity (veh/h)	0	1076		0			217	957
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	43	473	473	401	222	75		
Volume Left	43	0	0	0	0	65		
Volume Right	0	0	0	0	22	11		
cSH	1076	1700	1700	1700	1700	244		
Volume to Capacity	0.04	0.28	0.28	0.24	0.13	0.31		
Queue Length 95th (ft)	3	0	0	0	0	32		
Control Delay (s)	8.5	0.0	0.0	0.0	0.0	26.2		
Lane LOS	A					D		
Approach Delay (s)	0.4			0.0		26.2		
Approach LOS						D		
Intersection Summary								
Average Delay			1.4					
Intersection Capacity Utilization			54.7%		ICU Level of Service			A
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	170	540	250	140	410	50	130	750	30	150	690	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3345		1770	3463		1770	3513		1770	3477	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3345		1770	3463		1770	3513		1770	3477	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	183	581	269	151	441	54	140	806	32	161	742	75
RTOR Reduction (vph)	0	47	0	0	8	0	0	2	0	0	6	0
Lane Group Flow (vph)	183	803	0	151	487	0	140	836	0	161	811	0
Confl. Peds. (#/hr)			8			25			17			20
Confl. Bikes (#/hr)			3			5			13			5
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	14.1	25.3		12.7	23.9		12.1	28.6		13.2	29.7	
Effective Green, g (s)	14.1	25.3		12.7	23.9		12.1	28.6		13.2	29.7	
Actuated g/C Ratio	0.15	0.26		0.13	0.25		0.12	0.30		0.14	0.31	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	258	874		232	855		221	1038		241	1067	
v/s Ratio Prot	c0.10	c0.24		0.09	0.14		0.08	c0.24		c0.09	0.23	
v/s Ratio Perm												
v/c Ratio	0.71	0.92		0.65	0.57		0.63	0.81		0.67	0.76	
Uniform Delay, d1	39.4	34.8		39.9	31.9		40.2	31.5		39.7	30.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.1	14.4		4.9	0.7		4.3	4.9		5.3	3.4	
Delay (s)	46.5	49.1		44.9	32.6		44.6	36.4		45.1	33.7	
Level of Service	D	D		D	C		D	D		D	C	
Approach Delay (s)		48.7			35.5			37.6			35.6	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			39.8			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.78									
Actuated Cycle Length (s)			96.8			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			75.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1718					1712				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1609					1603				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	11	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1				7	7		
Confl. Bikes (#/hr)												
Turn Type	Perm	Perm				Perm	Perm					Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3					1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			130					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			37.4			HCM Level of Service					D	
HCM Volume to Capacity ratio			0.60									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)					15.0	
Intersection Capacity Utilization			91.7%			ICU Level of Service					F	
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↑	↗	↘	↖	↙	↓	↘	↙	↗	↖	↘	↙
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔					↔				↔		
Volume (vph)	690	40	30	10	10	830	180	10	130	130	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				0.95		
Frpb, ped/bikes	0.99					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3461					3374				3405		
Flt Permitted	0.79					0.92				0.77		
Satd. Flow (perm)	2727					3122				2687		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	726	42	32	11	11	874	189	11	137	137	11	11
RTOR Reduction (vph)	3	0	0	0	0	1	0	0	0	2	0	0
Lane Group Flow (vph)	819	0	0	0	0	1095	0	0	0	294	0	0
Confl. Peds. (#/hr)							9	9			1	1
Confl. Bikes (#/hr)		30	30				19	19			20	20
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	970					1111				1022		
v/s Ratio Prot												
v/s Ratio Perm	0.30					0.35				0.11		
v/c Ratio	0.84					0.99				0.29		
Uniform Delay, d1	24.3					26.1				17.6		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	6.8					23.4				0.2		
Delay (s)	31.1					49.5				17.8		
Level of Service	C					D				B		
Approach Delay (s)	31.1					49.5				17.8		
Approach LOS	C					D				B		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	20	50	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			0.95		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.97		
Flt Protected			0.99		
Satd. Flow (prot)			3357		
Flt Permitted			0.82		
Satd. Flow (perm)			2806		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	21	53	11	11
RTOR Reduction (vph)	0	0	7	0	0
Lane Group Flow (vph)	0	0	100	0	0
Confl. Peds. (#/hr)				7	7
Confl. Bikes (#/hr)				8	8
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			1067		
v/s Ratio Prot					
v/s Ratio Perm			0.04		
v/c Ratio			0.09		
Uniform Delay, d1			16.3		
Progression Factor			1.00		
Incremental Delay, d2			0.0		
Delay (s)			16.3		
Level of Service			B		
Approach Delay (s)			16.3		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	110	120	300	220	30
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	32	117	128	319	234	32
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage (veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	669	137	270			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	669	137	270			
tC, single (s)	6.8	6.9	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	91	87	90			
cM capacity (veh/h)	351	883	1286			
Direction, Lane #	EB 1	NB 1	NB 2	SB 1	SB 2	
Volume Total	149	234	213	156	110	
Volume Left	32	128	0	0	0	
Volume Right	117	0	0	0	32	
cSH	667	1286	1700	1700	1700	
Volume to Capacity	0.22	0.10	0.13	0.09	0.06	
Queue Length 95th (ft)	21	8	0	0	0	
Control Delay (s)	11.9	4.8	0.0	0.0	0.0	
Lane LOS	B	A				
Approach Delay (s)	11.9	2.5		0.0		
Approach LOS	B					
Intersection Summary						
Average Delay			3.4			
Intersection Capacity Utilization			38.1%	ICU Level of Service		A
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	100	20	40	120	250	30	580	70	390	470	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.98			0.92		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807			1674		1732	1818		1753	1854	
Flt Permitted		0.96			0.96		0.40	1.00		0.26	1.00	
Satd. Flow (perm)		1743			1609		728	1818		484	1854	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	105	21	42	126	263	32	611	74	411	495	11
RTOR Reduction (vph)	0	12	0	0	102	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	125	0	0	329	0	32	679	0	411	505	0
Confl. Peds. (#/hr)	8		9	9		8	35		24	24		35
Confl. Bikes (#/hr)			1			7			35			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			4			2			2		
Permitted Phases	4			4			2			2		
Actuated Green, G (s)	15.5			15.5			30.3			30.3		
Effective Green, g (s)	15.5			15.5			30.3			30.3		
Actuated g/C Ratio	0.28			0.28			0.54			0.54		
Clearance Time (s)	5.0			5.0			5.0			5.0		
Vehicle Extension (s)	3.0			3.0			3.0			3.0		
Lane Grp Cap (vph)	484			447			395			263		
v/s Ratio Prot							0.37			0.27		
v/s Ratio Perm	0.07			c0.20			0.04			c0.85		
v/c Ratio	0.26			0.74			0.08			1.56		
Uniform Delay, d1	15.7			18.3			6.1			12.7		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	0.3			6.2			0.1			271.0		
Delay (s)	16.0			24.5			6.2			283.7		
Level of Service	B			C			A			F		
Approach Delay (s)	16.0			24.5			11.1			131.8		
Approach LOS	B			C			B			F		
Intersection Summary												
HCM Average Control Delay			64.3			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.28									
Actuated Cycle Length (s)			55.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			100.2%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	270	270	70	160	70	230	1680	110	160	1560	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.93			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1712			1769		1770	5009		1770	5069	
Flt Permitted		0.98			0.59		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1683			1056		1770	5009		1770	5069	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	284	284	74	168	74	242	1768	116	168	1642	21
RTOR Reduction (vph)	0	34	0	0	11	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	555	0	0	305	0	242	1877	0	168	1662	0
Confl. Peds. (#/hr)			17			15			31			30
Confl. Bikes (#/hr)			8			16			9			12
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		33.9			33.9		21.2	39.0		11.2	29.0	
Effective Green, g (s)		33.9			33.9		21.2	39.0		11.2	29.0	
Actuated g/C Ratio		0.34			0.34		0.22	0.40		0.11	0.29	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		579			363		381	1981		201	1491	
v/s Ratio Prot							0.14	c0.37		0.09	c0.33	
v/s Ratio Perm		c0.33			0.29							
v/c Ratio		0.96			0.84		0.64	0.95		0.84	1.11	
Uniform Delay, d1		31.7			29.8		35.2	28.8		42.8	34.8	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		27.0			15.6		3.4	10.3		24.8	61.4	
Delay (s)		58.6			45.4		38.6	39.1		67.6	96.2	
Level of Service		E			D		D	D		E	F	
Approach Delay (s)		58.6			45.4			39.1			93.5	
Approach LOS		E			D			D			F	
Intersection Summary												
HCM Average Control Delay		62.4			HCM Level of Service			E				
HCM Volume to Capacity ratio		0.98										
Actuated Cycle Length (s)		98.6			Sum of lost time (s)			10.0				
Intersection Capacity Utilization		102.8%			ICU Level of Service			G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	930	40	40	580	70	30	270	50	60	180	90
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3540		1805	3540			1830		1794	1780	
Flt Permitted	0.95	1.00		0.95	1.00			0.81		0.40	1.00	
Satd. Flow (perm)	1805	3540		1805	3540			1492		755	1780	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	129	1000	43	43	624	75	32	290	54	65	194	97
RTOR Reduction (vph)	0	5	0	0	17	0	0	12	0	0	36	0
Lane Group Flow (vph)	129	1038	0	43	682	0	0	364	0	65	255	0
Confl. Peds. (#/hr)			36			27	19		21	21		19
Confl. Bikes (#/hr)			48			5			13			19
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.3	25.7		2.8	22.2			10.5		10.5	10.5	
Effective Green, g (s)	5.8	25.7		2.3	22.2			10.0		10.0	10.0	
Actuated g/C Ratio	0.12	0.51		0.05	0.44			0.20		0.20	0.20	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	209	1820		83	1572			298		151	356	
v/s Ratio Prot	c0.07	c0.29		0.02	0.19						0.14	
v/s Ratio Perm								c0.24		0.09		
v/c Ratio	0.62	0.57		0.52	0.43			1.22		0.43	0.72	
Uniform Delay, d1	21.0	8.4		23.3	9.6			20.0		17.5	18.7	
Progression Factor	1.08	1.12		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.2	1.1		2.3	0.9			126.0		2.0	6.7	
Delay (s)	25.9	10.5		25.6	10.4			146.0		19.5	25.4	
Level of Service	C	B		C	B			F		B	C	
Approach Delay (s)		12.2			11.3			146.0			24.3	
Approach LOS		B			B			F			C	
Intersection Summary												
HCM Average Control Delay			32.6			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			83.4%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	210	20	70	170	20	0	1440	140	0	1490	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.99			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3523			3493			3506			3473	
Flt Permitted		0.79			0.99			1.00			1.00	
Satd. Flow (perm)		2821			3493			3506			3473	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	216	21	72	175	21	0	1485	144	0	1536	155
RTOR Reduction (vph)	0	5	0	0	6	0	0	6	0	0	6	0
Lane Group Flow (vph)	0	314	0	0	262	0	0	1623	0	0	1685	0
Confl. Peds. (#/hr)						25			13			24
Confl. Bikes (#/hr)			9			15			31			39
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		15.3			12.6			66.1			66.1	
Effective Green, g (s)		16.3			13.6			68.1			68.1	
Actuated g/C Ratio		0.15			0.12			0.62			0.62	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		418			432			2171			2150	
v/s Ratio Prot					c0.07			0.46			c0.49	
v/s Ratio Perm	c0.11											
v/c Ratio		0.75			0.61			0.75			0.78	
Uniform Delay, d1		44.9			45.7			14.9			15.5	
Progression Factor		1.00			1.00			0.65			1.00	
Incremental Delay, d2		6.6			1.7			1.8			2.9	
Delay (s)		51.5			47.3			11.4			18.4	
Level of Service		D			D			B			B	
Approach Delay (s)		51.5			47.3			11.4			18.4	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay		20.2			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.75										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		74.3%			ICU Level of Service			D				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	60	330	540	30	950	0	0	1460	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3523	1558		3536			5071	
Flt Permitted					0.99	1.00		0.84			1.00	
Satd. Flow (perm)					3523	1558		2989			5071	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	61	337	551	31	969	0	0	1490	20
RTOR Reduction (vph)	0	0	0	0	0	119	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	398	432	0	1000	0	0	1509	0
Confl. Peds. (#/hr)						8			16			36
Confl. Bikes (#/hr)									32			36
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					865	382		2038			3458	
v/s Ratio Prot					0.11						0.30	
v/s Ratio Perm						c0.28		c0.33				
v/c Ratio					0.46	1.13		0.49			0.44	
Uniform Delay, d1					35.3	41.5		8.4			7.9	
Progression Factor					1.00	1.00		0.12			1.08	
Incremental Delay, d2					0.1	86.4		0.4			0.2	
Delay (s)					35.4	127.9		1.4			8.8	
Level of Service					D	F		A			A	
Approach Delay (s)		0.0			89.1			1.4			8.8	
Approach LOS		A			F			A			A	
Intersection Summary												
HCM Average Control Delay			28.7				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			68.1%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	480	130	0	0	0	0	940	100	790	730	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		0.99						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3468						3479		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3468						3479		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	516	140	0	0	0	0	1011	108	849	785	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	678	0	0	0	0	0	1112	0	849	785	0
Confl. Peds. (#/hr)			17						17			39
Confl. Bikes (#/hr)			1						30			36
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split									Prot		
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		24.5						37.1		33.4	76.5	
Effective Green, g (s)		25.5						38.1		34.4	76.5	
Actuated g/C Ratio		0.23						0.35		0.31	0.70	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		804						1205		1074	2438	
v/s Ratio Prot		c0.20						c0.32		c0.25	0.22	
v/s Ratio Perm												
v/c Ratio		0.84						0.92		0.79	0.32	
Uniform Delay, d1		40.3						34.5		34.5	6.6	
Progression Factor		1.00						1.00		1.06	0.94	
Incremental Delay, d2		7.7						11.5		5.5	0.0	
Delay (s)		48.1						46.0		42.1	6.2	
Level of Service		D						D		D	A	
Approach Delay (s)		48.1			0.0			46.0			24.8	
Approach LOS		D			A			D			C	
Intersection Summary												
HCM Average Control Delay		36.4						HCM Level of Service		D		
HCM Volume to Capacity ratio		0.86										
Actuated Cycle Length (s)		110.0						Sum of lost time (s)		12.0		
Intersection Capacity Utilization		82.3%						ICU Level of Service		E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	70	290	72	41	500	200	85	443	53	170	655	50
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frbp, ped/bikes		1.00			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		0.98	1.00	
Frt		0.98			0.96		1.00	0.98		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1795			1764		1758	3457		1739	3489	
Flt Permitted		0.80			0.96		0.24	1.00		0.38	1.00	
Satd. Flow (perm)		1451			1694		445	3457		690	3489	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	76	315	78	45	543	217	92	482	58	185	712	54
RTOR Reduction (vph)	0	10	0	0	19	0	0	13	0	0	8	0
Lane Group Flow (vph)	0	459	0	0	786	0	92	527	0	185	758	0
Confl. Peds. (#/hr)	58		27	27		58	17		30	30		17
Confl. Bikes (#/hr)			4			17			8			11
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases	4			8			2			6		
Permitted Phases	4			8			2			6		
Actuated Green, G (s)	36.0			36.0			26.0			26.0		
Effective Green, g (s)	36.0			36.0			26.0			26.0		
Actuated g/C Ratio	0.51			0.51			0.37			0.37		
Clearance Time (s)	4.0			4.0			4.0			4.0		
Lane Grp Cap (vph)	746			871			165			256		
v/s Ratio Prot							0.15			0.22		
v/s Ratio Perm	0.32			c0.46			0.21			c0.27		
v/c Ratio	0.62			0.90			0.56			0.72		
Uniform Delay, d1	12.1			15.4			17.4			18.9		
Progression Factor	1.00			1.00			1.00			1.00		
Incremental Delay, d2	3.8			14.4			12.9			16.2		
Delay (s)	15.8			29.8			30.4			35.1		
Level of Service	B			C			C			D		
Approach Delay (s)	15.8			29.8			19.2			22.6		
Approach LOS	B			C			B			C		
Intersection Summary												
HCM Average Control Delay	22.8			HCM Level of Service			C					
HCM Volume to Capacity ratio	0.83											
Actuated Cycle Length (s)	70.0			Sum of lost time (s)			8.0					
Intersection Capacity Utilization	87.0%			ICU Level of Service			E					
Analysis Period (min)	15											
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	65	20	107	10	20	10	60	506	10	10	672	86
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	71	22	116	11	22	11	65	550	11	11	730	93
Pedestrians		1			21			11			3	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		0			2			1			0	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.84	0.84	0.84	0.84	0.84		0.84					
vC, conflicting volume	1230	1512	424	1232	1554	304	825			582		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	883	1221	0	886	1270	304	399			582		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	56	84	87	92	83	98	93			99		
cM capacity (veh/h)	159	135	898	138	126	678	966			971		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	209	43	340	286	376	459						
Volume Left	71	11	65	0	11	0						
Volume Right	116	11	0	11	0	93						
cSH	284	163	966	1700	971	1700						
Volume to Capacity	0.74	0.27	0.07	0.17	0.01	0.27						
Queue Length 95th (ft)	133	26	5	0	1	0						
Control Delay (s)	46.1	35.0	2.3	0.0	0.4	0.0						
Lane LOS	E	D	A		A							
Approach Delay (s)	46.1	35.0	1.3		0.2							
Approach LOS	E	D										
Intersection Summary												
Average Delay			7.0									
Intersection Capacity Utilization			65.2%	ICU Level of Service						C		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	983	420	74	731	92	110	30	71	141	70	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3366	1219	1770	3539	1560	1681	1720	1583		1802	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3366	1219	1770	3539	1560	1681	1720	1583		1802	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	383	1046	447	79	778	98	117	32	76	150	74	617
RTOR Reduction (vph)	0	3	203	0	0	25	0	0	69	0	0	126
Lane Group Flow (vph)	383	1088	199	79	778	73	74	75	7	0	224	491
Confl. Peds. (#/hr)			14									18
Confl. Bikes (#/hr)						4						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	41.5	55.0	14.0	37.0	37.0	10.0	10.0	10.0		30.5	48.0
Effective Green, g (s)	17.0	41.0	54.5	13.5	37.5	37.5	9.5	9.5	9.5		30.0	47.0
Actuated g/C Ratio	0.15	0.37	0.50	0.12	0.34	0.34	0.09	0.09	0.09		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1255	604	217	1206	532	145	149	137		491	1123
v/s Ratio Prot	0.11	c0.32	0.16	0.04	c0.22		c0.04	0.04			c0.12	0.19
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.72	0.87	0.33	0.36	0.65	0.14	0.51	0.50	0.05		0.46	0.44
Uniform Delay, d1	44.2	32.0	16.7	44.3	30.6	25.1	48.0	48.0	46.1		33.2	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.2	8.2	0.2	0.4	2.7	0.5	2.3	1.9	0.1		3.0	1.2
Delay (s)	52.5	40.2	17.0	44.7	33.3	25.6	50.3	49.9	46.2		36.3	23.4
Level of Service	D	D	B	D	C	C	D	D	D		D	C
Approach Delay (s)		37.7			33.4			48.8			26.8	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			35.0			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			71.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	365	260	50	557	60	210	230	40	150	230	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.94		1.00	0.99		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3278		1770	3469		1770	1814		1770	1863	1583
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3278		1770	3469		1770	1814		1770	1863	1583
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	284	415	295	57	633	68	239	261	45	170	261	170
RTOR Reduction (vph)	0	92	0	0	6	0	0	5	0	0	0	138
Lane Group Flow (vph)	284	618	0	57	695	0	239	301	0	170	261	32
Confl. Peds. (#/hr)			3			13			4			47
Confl. Bikes (#/hr)			1			1			7			8
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	23.2	56.3		6.8	39.9		21.0	21.9		20.0	20.9	23.2
Effective Green, g (s)	22.7	56.8		6.3	40.4		20.5	21.4		19.5	20.4	22.7
Actuated g/C Ratio	0.19	0.47		0.05	0.34		0.17	0.18		0.16	0.17	0.19
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	335	1552		93	1168		302	323		288	317	299
v/s Ratio Prot	c0.16	0.19		0.03	c0.20		0.14	c0.17		0.10	c0.14	0.02
v/s Ratio Perm												
v/c Ratio	0.85	0.40		0.61	0.60		0.79	0.93		0.59	0.82	0.11
Uniform Delay, d1	47.0	20.5		55.7	33.0		47.7	48.6		46.5	48.1	40.3
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	17.7	0.8		11.4	2.2		13.2	32.8		3.2	15.7	0.2
Delay (s)	64.7	21.3		67.0	35.3		60.9	81.4		49.8	63.8	40.4
Level of Service	E	C		E	D		E	F		D	E	D
Approach Delay (s)		33.7			37.6			72.4			53.2	
Approach LOS		C			D			E			D	
Intersection Summary												
HCM Average Control Delay			46.0			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			120.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			73.5%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	100	315	100	117	447	34	180	820	60	71	860	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3373		1770	3497		1770	3486		1770	3488	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3373		1770	3497		1770	3486		1770	3488	
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	115	362	115	134	514	39	207	943	69	82	989	69
RTOR Reduction (vph)	0	0	0	0	0	0	0	4	0	0	4	0
Lane Group Flow (vph)	115	477	0	134	553	0	207	1008	0	82	1054	0
Confl. Peds. (#/hr)			25			6			40			44
Confl. Bikes (#/hr)			3			1			28			18
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	10.4	22.3		10.8	22.7		14.0	53.7		8.2	47.9	
Effective Green, g (s)	9.4	22.8		9.8	23.2		13.0	54.2		7.2	48.4	
Actuated g/C Ratio	0.09	0.21		0.09	0.21		0.12	0.49		0.07	0.44	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	151	699		158	738		209	1718		116	1535	
v/s Ratio Prot	0.06	0.14		c0.08	c0.16		c0.12	0.29		0.05	c0.30	
v/s Ratio Perm												
v/c Ratio	0.76	0.68		0.85	0.75		0.99	0.59		0.71	0.69	
Uniform Delay, d1	49.2	40.3		49.4	40.7		48.4	19.9		50.4	24.7	
Progression Factor	1.00	1.00		0.99	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	20.0	2.8		32.2	4.2		59.3	1.5		17.8	2.5	
Delay (s)	69.2	43.0		81.2	44.0		107.8	21.4		68.2	27.2	
Level of Service	E	D		F	D		F	C		E	C	
Approach Delay (s)		48.1			51.2			36.1			30.2	
Approach LOS		D			D			D			C	
Intersection Summary												
HCM Average Control Delay			39.0			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			73.4%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	398	28	0	521	34	0	0	82	0	0	117
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	485	34	0	635	41	0	0	100	0	0	143
Pedestrians		7						7			7	
Lane Width (ft)		12.0						12.0			12.0	
Walking Speed (ft/s)		4.0						4.0			4.0	
Percent Blockage		1						1			1	
Right turn flare (veh)												
Median type		None			None							
Median storage (veh)												
Upstream signal (ft)					619							
pX, platoon unblocked	0.95						0.95	0.95		0.95	0.95	0.95
vC, conflicting volume	684			527			977	1193	267	1006	1190	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	558			527			867	1095	267	897	1091	208
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	86	100	100	81
cM capacity (veh/h)	951			1030			186	199	727	189	200	748
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	324	196	424	253	100	143						
Volume Left	0	0	0	0	0	0						
Volume Right	0	34	0	41	100	143						
cSH	1700	1700	1700	1700	727	748						
Volume to Capacity	0.19	0.12	0.25	0.15	0.14	0.19						
Queue Length 95th (ft)	0	0	0	0	12	18						
Control Delay (s)	0.0	0.0	0.0	0.0	10.7	10.9						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		10.7	10.9						
Approach LOS					B	B						
Intersection Summary												
Average Delay			1.8									
Intersection Capacity Utilization			31.3%		ICU Level of Service				A			
Analysis Period (min)			15									

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	41	38	401	10	504	10	39	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Hourly flow rate (vph)	0	46	489	0	615	12	48	12
Pedestrians					6		1	
Lane Width (ft)					12.0		12.0	
Walking Speed (ft/s)					4.0		4.0	
Percent Blockage					1		0	
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.92		0.00			0.92	0.92
vC, conflicting volume	0	628		0			965	314
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	430		0			796	91
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	96		0			83	99
cM capacity (veh/h)	0	1038		0			285	875
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	46	245	245	410	217	60		
Volume Left	46	0	0	0	0	48		
Volume Right	0	0	0	0	12	12		
cSH	1038	1700	1700	1700	1700	330		
Volume to Capacity	0.04	0.14	0.14	0.24	0.13	0.18		
Queue Length 95th (ft)	4	0	0	0	0	16		
Control Delay (s)	8.6	0.0	0.0	0.0	0.0	18.3		
Lane LOS	A					C		
Approach Delay (s)	0.7			0.0		18.3		
Approach LOS						C		
Intersection Summary								
Average Delay			1.2					
Intersection Capacity Utilization			39.0%		ICU Level of Service			A
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	76	256	138	112	361	20	143	490	20	60	709	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.98		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.99		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3299		1770	3506		1770	3514		1770	3501	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3299		1770	3506		1770	3514		1770	3501	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	78	261	141	114	368	20	146	500	20	61	723	41
RTOR Reduction (vph)	0	68	0	0	3	0	0	2	0	0	3	0
Lane Group Flow (vph)	78	334	0	114	385	0	146	518	0	61	761	0
Confl. Peds. (#/hr)			24			14			13			25
Confl. Bikes (#/hr)			8			3			16			24
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	6.6	13.6		8.0	15.0		11.4	32.4		6.0	27.0	
Effective Green, g (s)	6.6	13.6		8.0	15.0		11.4	32.4		6.0	27.0	
Actuated g/C Ratio	0.09	0.18		0.10	0.19		0.15	0.42		0.08	0.35	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	152	583		184	683		262	1479		138	1228	
v/s Ratio Prot	0.04	0.10		c0.06	c0.11		c0.08	0.15		0.03	c0.22	
v/s Ratio Perm												
v/c Ratio	0.51	0.57		0.62	0.56		0.56	0.35		0.44	0.62	
Uniform Delay, d1	33.7	29.0		33.0	28.0		30.5	15.2		33.9	20.7	
Progression Factor	1.00	1.01		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.2	1.1		4.3	0.9		1.5	0.2		0.8	1.1	
Delay (s)	35.0	30.6		37.4	28.9		31.9	15.3		34.7	21.8	
Level of Service	D	C		D	C		C	B		C	C	
Approach Delay (s)		31.3			30.8			19.0			22.8	
Approach LOS		C			C			B			C	
Intersection Summary												
HCM Average Control Delay			25.0			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.57									
Actuated Cycle Length (s)			77.0			Sum of lost time (s)			13.0			
Intersection Capacity Utilization			64.9%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	14	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.99				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1712					1707				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1603					1599				
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	16	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1							
Confl. Bikes (#/hr)									1	1		
Turn Type	Perm	Perm				Perm	Perm				Perm	Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3				1	1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			129					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			30.2			HCM Level of Service		C				
HCM Volume to Capacity ratio			0.77									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			84.2%			ICU Level of Service		E				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	↑	↗	↘	↙	↓	↘	↙	↗	↘	↙	↗	↘
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔					↔				↔		
Volume (vph)	476	40	10	10	10	705	184	10	127	240	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				1.00		
Frpb, ped/bikes	1.00					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3469					3355				1815		
Flt Permitted	0.78					0.93				0.86		
Satd. Flow (perm)	2716					3128				1580		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	529	44	11	11	11	783	204	11	141	267	11	11
RTOR Reduction (vph)	1	0	0	0	0	1	0	0	0	1	0	0
Lane Group Flow (vph)	610	0	0	0	0	1019	0	0	0	429	0	0
Confl. Peds. (#/hr)		3	3				1	1			1	1
Confl. Bikes (#/hr)		6	6				34	34			18	18
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	966					1113				601		
v/s Ratio Prot												
v/s Ratio Perm	0.22					0.33				0.27		
v/c Ratio	0.63					0.92				0.71		
Uniform Delay, d1	21.9					25.2				21.6		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	1.4					11.5				4.0		
Delay (s)	23.2					36.7				25.6		
Level of Service	C					D				C		
Approach Delay (s)	23.2					36.7				25.6		
Approach LOS	C					D				C		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	20	30	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			1.00		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.97		
Flt Protected			0.98		
Satd. Flow (prot)			1754		
Flt Permitted			0.81		
Satd. Flow (perm)			1443		
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	22	33	11	11
RTOR Reduction (vph)	0	0	4	0	0
Lane Group Flow (vph)	0	0	84	0	0
Confl. Peds. (#/hr)				3	3
Confl. Bikes (#/hr)				11	11
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			549		
v/s Ratio Prot					
v/s Ratio Perm			0.06		
v/c Ratio			0.15		
Uniform Delay, d1			16.7		
Progression Factor			1.00		
Incremental Delay, d2			0.1		
Delay (s)			16.8		
Level of Service			B		
Approach Delay (s)			16.8		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	40	114	86	307	260	38
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Hourly flow rate (vph)	53	152	115	409	347	51
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	1011	372	397			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	1011	372	397			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	78	77	90			
cM capacity (veh/h)	239	674	1161			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	205	524	397			
Volume Left	53	115	0			
Volume Right	152	0	51			
cSH	458	1161	1700			
Volume to Capacity	0.45	0.10	0.23			
Queue Length 95th (ft)	57	8	0			
Control Delay (s)	19.1	2.7	0.0			
Lane LOS	C	A				
Approach Delay (s)	19.1	2.7	0.0			
Approach LOS	C					
Intersection Summary						
Average Delay		4.7				
Intersection Capacity Utilization		56.1%		ICU Level of Service		B
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	70	20	40	140	250	20	320	40	355	420	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.98	1.00	
Frt		0.97			0.92		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1787			1673		1738	1819		1738	1853	
Flt Permitted		0.95			0.96		0.41	1.00		0.48	1.00	
Satd. Flow (perm)		1712			1618		747	1819		871	1853	
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	11	78	22	44	156	278	22	356	44	394	467	11
RTOR Reduction (vph)	0	15	0	0	87	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	96	0	0	391	0	22	393	0	394	477	0
Confl. Peds. (#/hr)	13		18	18		13	28		24	24		28
Confl. Bikes (#/hr)			1			13			14			32
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		17.3			17.3		29.3	29.3		29.3	29.3	
Effective Green, g (s)		17.3			17.3		29.3	29.3		29.3	29.3	
Actuated g/C Ratio		0.31			0.31		0.52	0.52		0.52	0.52	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		523			495		387	942		451	959	
v/s Ratio Prot								0.22			0.26	
v/s Ratio Perm		0.06			0.24		0.03			0.45		
v/c Ratio		0.18			0.79		0.06	0.42		0.87	0.50	
Uniform Delay, d1		14.5			18.0		6.8	8.4		12.0	8.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.2			8.4		0.1	0.3		16.9	0.4	
Delay (s)		14.6			26.4		6.8	8.7		28.9	9.3	
Level of Service		B			C		A	A		C	A	
Approach Delay (s)		14.6			26.4			8.6			18.1	
Approach LOS		B			C			A			B	
Intersection Summary												
HCM Average Control Delay		17.9					HCM Level of Service			B		
HCM Volume to Capacity ratio		0.84										
Actuated Cycle Length (s)		56.6					Sum of lost time (s)			10.0		
Intersection Capacity Utilization		84.0%					ICU Level of Service			E		
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	164	291	70	235	90	145	1560	50	70	1550	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.92			0.97		1.00	1.00		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1680			1777		1770	5055		1770	5066	
Flt Permitted		0.98			0.72		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1643			1288		1770	5055		1770	5066	
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	21	174	310	74	250	96	154	1660	53	74	1649	32
RTOR Reduction (vph)	0	69	0	0	13	0	0	3	0	0	2	0
Lane Group Flow (vph)	0	436	0	0	407	0	154	1710	0	74	1679	0
Confl. Peds. (#/hr)			8			21			10			13
Confl. Bikes (#/hr)			10			7			3			7
Turn Type	Perm			Perm			Prot			Prot		
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		27.9			27.9		12.5	35.1		5.7	28.3	
Effective Green, g (s)		27.9			27.9		12.5	35.1		5.7	28.3	
Actuated g/C Ratio		0.34			0.34		0.15	0.42		0.07	0.34	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		551			432		266	2133		121	1723	
v/s Ratio Prot							0.09	c0.34		0.04	c0.33	
v/s Ratio Perm		0.27			c0.32							
v/c Ratio		0.79			0.94		0.58	0.80		0.61	0.97	
Uniform Delay, d1		25.0			26.9		32.9	21.0		37.7	27.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		7.6			29.2		3.0	2.3		8.8	15.9	
Delay (s)		32.6			56.0		35.9	23.3		46.5	43.0	
Level of Service		C			E		D	C		D	D	
Approach Delay (s)		32.6			56.0			24.3			43.2	
Approach LOS		C			E			C			D	
Intersection Summary												
HCM Average Control Delay			35.4			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.89									
Actuated Cycle Length (s)			83.2			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			99.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	133	490	30	30	670	90	30	180	30	60	231	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			1.00		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		1.00	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.96	
Flt Protected	0.95	1.00		0.95	1.00			0.99		0.95	1.00	
Satd. Flow (prot)	1770	3501		1770	3455			1814		1770	1776	
Flt Permitted	0.95	1.00		0.95	1.00			0.66		0.44	1.00	
Satd. Flow (perm)	1770	3501		1770	3455			1199		819	1776	
Peak-hour factor, PHF	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91
Adj. Flow (vph)	146	538	33	33	736	99	33	198	33	66	254	80
RTOR Reduction (vph)	0	7	0	0	20	0	0	10	0	0	22	0
Lane Group Flow (vph)	146	564	0	33	815	0	0	254	0	66	312	0
Confl. Peds. (#/hr)			14			16			14			42
Confl. Bikes (#/hr)						17			7			13
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.5	25.9		2.6	22.0			10.5		10.5	10.5	
Effective Green, g (s)	6.0	25.9		2.1	22.0			10.0		10.0	10.0	
Actuated g/C Ratio	0.12	0.52		0.04	0.44			0.20		0.20	0.20	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	212	1814		74	1520			240		164	355	
v/s Ratio Prot	c0.08	c0.16		0.02	c0.24						0.18	
v/s Ratio Perm								c0.21		0.08		
v/c Ratio	0.69	0.31		0.45	0.54			1.06		0.40	0.88	
Uniform Delay, d1	21.1	6.9		23.4	10.3			20.0		17.4	19.4	
Progression Factor	1.22	1.18		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	3.9	0.2		1.6	1.4			73.8		1.6	20.9	
Delay (s)	29.8	8.4		24.9	11.6			93.8		19.0	40.3	
Level of Service	C	A		C	B			F		B	D	
Approach Delay (s)		12.8			12.1			93.8			36.8	
Approach LOS		B			B			F			D	
Intersection Summary												
HCM Average Control Delay			26.3			HCM Level of Service				C		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)				16.0		
Intersection Capacity Utilization			76.2%			ICU Level of Service				D		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	30	100	20	101	170	10	0	1320	130	0	1033	100
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			1.00			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.99			0.99	
Flt Protected		0.99			0.98			1.00			1.00	
Satd. Flow (prot)		3425			3446			3459			3481	
Flt Permitted		0.82			0.98			1.00			1.00	
Satd. Flow (perm)		2845			3446			3459			3481	
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	31	104	21	105	177	10	0	1375	135	0	1076	104
RTOR Reduction (vph)	0	12	0	0	3	0	0	5	0	0	5	0
Lane Group Flow (vph)	0	144	0	0	289	0	0	1505	0	0	1175	0
Confl. Peds. (#/hr)						32			37			16
Confl. Bikes (#/hr)			3			10			13			14
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		9.8			13.4			70.8			70.8	
Effective Green, g (s)		10.8			14.4			72.8			72.8	
Actuated g/C Ratio		0.10			0.13			0.66			0.66	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		279			451			2289			2304	
v/s Ratio Prot					c0.08			c0.44			0.34	
v/s Ratio Perm	c0.05											
v/c Ratio		0.52			0.64			0.66			0.51	
Uniform Delay, d1		47.1			45.4			11.1			9.5	
Progression Factor		1.00			1.00			0.93			1.00	
Incremental Delay, d2		0.7			2.3			0.8			0.8	
Delay (s)		47.8			47.7			11.2			10.3	
Level of Service		D			D			B			B	
Approach Delay (s)		47.8			47.7			11.2			10.3	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay			16.1			HCM Level of Service				B		
HCM Volume to Capacity ratio			0.64									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			65.8%			ICU Level of Service				C		
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	60	280	733	40	637	0	0	1104	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3508	1545		3529			5075	
Flt Permitted					0.99	1.00		0.81			1.00	
Satd. Flow (perm)					3508	1545		2863			5075	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	63	295	772	42	671	0	0	1162	11
RTOR Reduction (vph)	0	0	0	0	0	217	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	358	555	0	713	0	0	1172	0
Confl. Peds. (#/hr)						7			14			30
Confl. Bikes (#/hr)									17			28
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					861	379		1952			3460	
v/s Ratio Prot					0.10						0.23	
v/s Ratio Perm						c0.36		c0.25				
v/c Ratio					0.42	1.46		0.37			0.34	
Uniform Delay, d1					34.9	41.5		7.4			7.2	
Progression Factor					1.00	1.00		0.18			0.81	
Incremental Delay, d2					0.1	222.7		0.4			0.2	
Delay (s)					35.0	264.2		1.7			6.1	
Level of Service					C	F		A			A	
Approach Delay (s)		0.0			191.6			1.7			6.1	
Approach LOS		A			F			A			A	
Intersection Summary												
HCM Average Control Delay			74.6				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			71.6%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	160	50	0	0	0	0	657	60	286	878	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		1.00						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3396						3478		3433	3539	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3396						3478		3433	3539	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	168	53	0	0	0	0	692	63	301	924	0
RTOR Reduction (vph)	0	28	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	214	0	0	0	0	0	748	0	301	924	0
Confl. Peds. (#/hr)			4						28			14
Confl. Bikes (#/hr)									18			30
Turn Type	Split				Prot							
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		11.3						28.6		55.1	89.7	
Effective Green, g (s)		12.3						29.6		56.1	89.7	
Actuated g/C Ratio		0.11						0.27		0.51	0.82	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		380						936		1751	2886	
v/s Ratio Prot		c0.06						c0.21		0.09	c0.26	
v/s Ratio Perm												
v/c Ratio		0.56						0.80		0.17	0.32	
Uniform Delay, d1		46.3						37.4		14.5	2.5	
Progression Factor		1.00						1.00		0.95	0.80	
Incremental Delay, d2		1.1						4.5		0.2	0.0	
Delay (s)		47.5						41.9		13.9	2.0	
Level of Service		D						D		B	A	
Approach Delay (s)		47.5			0.0			41.9			5.0	
Approach LOS		D			A			D			A	
Intersection Summary												
HCM Average Control Delay		22.2										
HCM Volume to Capacity ratio		0.48										
Actuated Cycle Length (s)		110.0										
Intersection Capacity Utilization		47.1%										
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	590	145	62	420	340	64	889	42	150	790	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor		1.00			1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes		0.99			0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.99	1.00		1.00	1.00	
Frt		0.98			0.94		1.00	0.99		1.00	0.99	
Flt Protected		0.99			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1793			1727		1757	3507		1764	3486	
Flt Permitted		0.73			0.88		0.16	1.00		0.13	1.00	
Satd. Flow (perm)		1311			1527		295	3507		248	3486	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	641	158	67	457	370	70	966	46	163	859	65
RTOR Reduction (vph)	0	9	0	0	14	0	0	4	0	0	7	0
Lane Group Flow (vph)	0	920	0	0	880	0	70	1008	0	163	917	0
Confl. Peds. (#/hr)	36		32	32		36	24		13	13		24
Confl. Bikes (#/hr)			28			4			9			9
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Actuated Green, G (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Effective Green, g (s)		42.0			42.0		30.0	30.0		30.0	30.0	
Actuated g/C Ratio		0.52			0.52		0.38	0.38		0.38	0.38	
Clearance Time (s)		4.0			4.0		4.0	4.0		4.0	4.0	
Lane Grp Cap (vph)		688			802		111	1315		93	1307	
v/s Ratio Prot								0.29			0.26	
v/s Ratio Perm		c0.70			0.58		0.24			c0.66		
v/c Ratio		1.34			1.10		0.63	0.77		1.75	0.70	
Uniform Delay, d1		19.0			19.0		20.5	21.9		25.0	21.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		161.5			61.6		24.2	4.3		379.0	3.2	
Delay (s)		180.5			80.6		44.6	26.2		404.0	24.4	
Level of Service		F			F		D	C		F	C	
Approach Delay (s)		180.5			80.6			27.4			81.3	
Approach LOS		F			F			C			F	
Intersection Summary												
HCM Average Control Delay		89.6			HCM Level of Service			F				
HCM Volume to Capacity ratio		1.51										
Actuated Cycle Length (s)		80.0			Sum of lost time (s)			8.0				
Intersection Capacity Utilization		119.6%			ICU Level of Service			H				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Unsignalized Intersection Capacity Analysis

2: 63rd St/Lowell St & Sacramento St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	71	20	55	10	20	10	40	934	10	10	875	112
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Hourly flow rate (vph)	80	22	62	11	22	11	45	1049	11	11	983	126
Pedestrians		8			8			1			7	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			0			1	
Right turn flare (veh)												
Median type								None			None	
Median storage (veh)												
Upstream signal (ft)								1198			331	
pX, platoon unblocked	0.88	0.88	0.78	0.88	0.88	0.81	0.78			0.81		
vC, conflicting volume	1721	2235	563	1741	2292	545	1117			1069		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	556	1141	0	579	1206	0	595			606		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	73	86	93	96	85	99	94			99		
cM capacity (veh/h)	293	160	843	269	147	864	760			776		
Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2						
Volume Total	164	45	570	536	503	617						
Volume Left	80	11	45	0	11	0						
Volume Right	62	11	0	11	0	126						
cSH	338	216	760	1700	776	1700						
Volume to Capacity	0.49	0.21	0.06	0.32	0.01	0.36						
Queue Length 95th (ft)	63	19	5	0	1	0						
Control Delay (s)	25.3	26.0	1.6	0.0	0.4	0.0						
Lane LOS	D	D	A		A							
Approach Delay (s)	25.3	26.0	0.8		0.2							
Approach LOS	D	D										
Intersection Summary												
Average Delay			2.6									
Intersection Capacity Utilization			77.3%		ICU Level of Service					D		
Analysis Period (min)			15									

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	776	950	352	922	112	200	70	122	243	250	990
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	1.00	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (prot)	3467	3180	1231	1805	3574	1590	1698	1754	1584		1836	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (perm)	3467	3180	1231	1805	3574	1590	1698	1754	1584		1836	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	808	990	367	960	117	208	73	127	253	260	1031
RTOR Reduction (vph)	0	57	69	0	0	26	0	0	111	0	0	49
Lane Group Flow (vph)	333	1187	485	367	960	91	139	142	16	0	513	982
Confl. Peds. (#/hr)			20									62
Confl. Bikes (#/hr)			7			5			4			5
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	33.5	51.5	17.5	32.5	32.5	14.5	14.5	14.5		30.5	48.0
Effective Green, g (s)	17.0	33.0	51.0	17.0	33.0	33.0	14.0	14.0	14.0		30.0	47.0
Actuated g/C Ratio	0.15	0.30	0.46	0.15	0.30	0.30	0.13	0.13	0.13		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	954	571	279	1072	477	216	223	202		501	1134
v/s Ratio Prot	0.10	c0.37	c0.39	c0.20	0.27		0.08	0.08			c0.28	0.37
v/s Ratio Perm						0.06			0.01			
v/c Ratio	0.62	1.24	0.85	1.32	0.90	0.19	0.64	0.64	0.08		1.02	0.87
Uniform Delay, d1	43.5	38.5	26.1	46.5	36.9	28.6	45.6	45.6	42.3		40.0	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	118.6	11.2	165.1	11.6	0.9	5.7	5.1	0.1		46.4	8.9
Delay (s)	48.8	157.1	37.3	211.6	48.4	29.5	51.3	50.7	42.4		86.4	37.6
Level of Service	D	F	D	F	D	C	D	D	D		F	D
Approach Delay (s)		109.1			88.3			48.3			53.8	
Approach LOS		F			F			D			D	
Intersection Summary												
HCM Average Control Delay			83.7			HCM Level of Service			F			
HCM Volume to Capacity ratio			1.14									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			99.0%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

4: Powell St & Hollis St

BMSP Redevelopment Area

2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	160	881	160	60	646	130	420	580	80	110	410	300
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	4.0
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	1.00		1.00	1.00	1.00
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	0.99		1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Frt	1.00	0.98		1.00	0.97		1.00	0.98		1.00	1.00	0.85
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (prot)	1770	3467		1770	3461		1805	1839		1719	1845	1599
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	1.00
Satd. Flow (perm)	1770	3467		1770	3461		1805	1839		1719	1845	1599
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	168	927	168	63	680	137	442	611	84	116	432	316
RTOR Reduction (vph)	0	12	0	0	13	0	0	4	0	0	0	155
Lane Group Flow (vph)	168	1083	0	63	804	0	442	691	0	116	432	161
Confl. Peds. (#/hr)			7			9			13			8
Confl. Bikes (#/hr)			7			4			15			27
Heavy Vehicles (%)	2%	1%	1%	2%	1%	0%	0%	1%	0%	5%	3%	1%
Turn Type	Prot			Prot			Prot			Prot		Over
Protected Phases	5	2		1	6		3	7		8	4	5
Permitted Phases												
Actuated Green, G (s)	15.3	40.1		6.8	31.6		32.1	39.5		19.1	26.5	15.3
Effective Green, g (s)	14.8	40.6		6.3	32.1		31.6	39.0		18.6	26.0	14.8
Actuated g/C Ratio	0.12	0.34		0.05	0.27		0.26	0.32		0.15	0.22	0.12
Clearance Time (s)	3.5	4.5		3.5	4.5		3.5	3.5		3.5	3.5	3.5
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	3.0
Lane Grp Cap (vph)	217	1168		93	922		473	595		265	398	196
v/s Ratio Prot	0.09	c0.31		0.04	c0.23		0.24	c0.38		0.07	c0.23	0.10
v/s Ratio Perm												
v/c Ratio	0.77	0.93		0.68	0.87		0.93	1.16		0.44	1.09	0.82
Uniform Delay, d1	51.2	38.5		56.1	42.2		43.4	40.8		46.2	47.2	51.6
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	1.00
Incremental Delay, d2	15.7	13.8		17.8	11.1		25.7	90.1		1.2	70.0	23.2
Delay (s)	66.9	52.3		73.9	53.4		69.2	130.9		47.4	117.2	74.7
Level of Service	E	D		E	D		E	F		D	F	E
Approach Delay (s)		54.3			54.8			106.9			92.3	
Approach LOS		D			D			F			F	
Intersection Summary												
HCM Average Control Delay			76.8			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.01									
Actuated Cycle Length (s)			120.5			Sum of lost time (s)				8.0		
Intersection Capacity Utilization			91.1%			ICU Level of Service				F		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	661	210	132	436	53	190	990	110	123	1140	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3419		1770	3535		1736	3492		1805	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3419		1770	3535		1736	3492		1805	3464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	674	214	135	445	54	194	1010	112	126	1163	173
RTOR Reduction (vph)	0	28	0	0	8	0	0	7	0	0	11	0
Lane Group Flow (vph)	255	860	0	135	491	0	194	1115	0	126	1325	0
Confl. Peds. (#/hr)			17			21			50			17
Confl. Bikes (#/hr)			9			4			19			4
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	27.5		10.8	27.3		14.0	46.1		10.6	42.7	
Effective Green, g (s)	10.0	28.0		9.8	27.8		13.0	46.6		9.6	43.2	
Actuated g/C Ratio	0.09	0.25		0.09	0.25		0.12	0.42		0.09	0.39	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	870		158	893		205	1479		158	1360	
v/s Ratio Prot	c0.14	c0.25		0.08	0.14		c0.11	c0.32		0.07	c0.38	
v/s Ratio Perm												
v/c Ratio	1.58	0.99		0.85	0.55		0.95	0.75		0.80	0.97	
Uniform Delay, d1	50.0	40.8		49.4	35.7		48.2	26.8		49.2	32.9	
Progression Factor	1.00	1.00		1.01	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	290.2	27.5		33.6	0.7		47.3	3.6		23.7	19.0	
Delay (s)	340.2	68.3		83.3	35.6		95.5	30.4		73.0	51.8	
Level of Service	F	E		F	D		F	C		E	D	
Approach Delay (s)		129.0			45.8			40.0			53.7	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			67.5			HCM Level of Service				E		
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			93.7%			ICU Level of Service			F			
Analysis Period (min)			15									

c Critical Lane Group

HCM Unsignalized Intersection Capacity Analysis

6: Stanford Ave & Lowell St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	877	37	0	575	58	0	0	100	0	0	106
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Hourly flow rate (vph)	0	923	39	0	605	61	0	0	105	0	0	112
Pedestrians								1			19	
Lane Width (ft)								12.0			12.0	
Walking Speed (ft/s)								4.0			4.0	
Percent Blockage								0			2	
Right turn flare (veh)												
Median type	None				None							
Median storage (veh)												
Upstream signal (ft)	619											
pX, platoon unblocked	0.93						0.93	0.93		0.93	0.93	0.93
vC, conflicting volume	685			963			1358	1629	482	1222	1618	352
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	500			963			1226	1519	482	1079	1507	140
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	80	100	100	86
cM capacity (veh/h)	966			710			106	107	530	124	109	804
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	SB 1						
Volume Total	615	347	404	263	105	112						
Volume Left	0	0	0	0	0	0						
Volume Right	0	39	0	61	105	112						
cSH	1700	1700	1700	1700	530	804						
Volume to Capacity	0.36	0.20	0.24	0.15	0.20	0.14						
Queue Length 95th (ft)	0	0	0	0	18	12						
Control Delay (s)	0.0	0.0	0.0	0.0	13.5	10.2						
Lane LOS					B	B						
Approach Delay (s)	0.0		0.0		13.5	10.2						
Approach LOS					B	B						
Intersection Summary												
Average Delay	1.4											
Intersection Capacity Utilization	38.3%				ICU Level of Service				A			
Analysis Period (min)	15											

HCM Unsignalized Intersection Capacity Analysis

7: Stanford Ave & 60th Street

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour



Movement	EBU	EBL	EBT	WBU	WBT	WBR	SBL	SBR
Lane Configurations								
Volume (veh/h)	35	57	895	10	588	20	66	10
Sign Control			Free		Free		Stop	
Grade			0%		0%		0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	0	61	962	0	632	22	71	11
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage								
Right turn flare (veh)								
Median type			None		None			
Median storage veh								
Upstream signal (ft)					433			
pX, platoon unblocked	0.00	0.90		0.00			0.90	0.90
vC, conflicting volume	0	654		0			1247	327
vC1, stage 1 conf vol								
vC2, stage 2 conf vol								
vCu, unblocked vol	0	390		0			1050	27
tC, single (s)	0.0	4.1		0.0			6.8	6.9
tC, 2 stage (s)								
tF (s)	0.0	2.2		0.0			3.5	3.3
p0 queue free %	0	94		0			62	99
cM capacity (veh/h)	0	1047		0			188	938
Direction, Lane #	EB 1	EB 2	EB 3	WB 1	WB 2	SB 1		
Volume Total	61	481	481	422	232	82		
Volume Left	61	0	0	0	0	71		
Volume Right	0	0	0	0	22	11		
cSH	1047	1700	1700	1700	1700	211		
Volume to Capacity	0.06	0.28	0.28	0.25	0.14	0.39		
Queue Length 95th (ft)	5	0	0	0	0	43		
Control Delay (s)	8.7	0.0	0.0	0.0	0.0	32.6		
Lane LOS	A					D		
Approach Delay (s)	0.5			0.0		32.6		
Approach LOS						D		
Intersection Summary								
Average Delay			1.8					
Intersection Capacity Utilization			56.2%		ICU Level of Service		B	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis

8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	174	544	263	143	412	50	156	750	30	150	700	70
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.95		1.00	0.98		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3339		1770	3463		1770	3513		1770	3478	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3339		1770	3463		1770	3513		1770	3478	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	187	585	283	154	443	54	168	806	32	161	753	75
RTOR Reduction (vph)	0	50	0	0	8	0	0	2	0	0	6	0
Lane Group Flow (vph)	187	818	0	154	489	0	168	836	0	161	822	0
Confl. Peds. (#/hr)			8			25			17			20
Confl. Bikes (#/hr)			3			5			13			5
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		1	6		5	2	
Permitted Phases												
Actuated Green, G (s)	14.3	25.3		12.9	23.9		13.5	28.7		13.3	28.5	
Effective Green, g (s)	14.3	25.3		12.9	23.9		13.5	28.7		13.3	28.5	
Actuated g/C Ratio	0.15	0.26		0.13	0.25		0.14	0.30		0.14	0.29	
Clearance Time (s)	4.0	4.0		4.0	4.0		4.0	5.0		4.0	5.0	
Vehicle Extension (s)	2.0	2.5		2.0	2.5		2.0	4.0		2.0	4.0	
Lane Grp Cap (vph)	260	869		235	851		246	1037		242	1020	
v/s Ratio Prot	c0.11	c0.25		0.09	0.14		c0.09	c0.24		0.09	0.24	
v/s Ratio Perm												
v/c Ratio	0.72	0.94		0.66	0.57		0.68	0.81		0.67	0.81	
Uniform Delay, d1	39.5	35.2		40.0	32.2		39.8	31.7		39.8	31.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	7.7	18.0		4.9	0.8		6.1	4.9		5.3	5.0	
Delay (s)	47.2	53.2		45.0	33.0		45.9	36.6		45.1	36.8	
Level of Service	D	D		D	C		D	D		D	D	
Approach Delay (s)		52.1			35.8			38.2			38.1	
Approach LOS		D			D			D			D	
Intersection Summary												
HCM Average Control Delay			41.7			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.74									
Actuated Cycle Length (s)			97.2			Sum of lost time (s)			8.0			
Intersection Capacity Utilization			76.2%			ICU Level of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL2	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	WBR2	NBL2	NBL
Lane Configurations												
Volume (vph)	10	10	10	10	10	10	10	10	10	10	19	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)			3.0					3.0				
Lane Util. Factor			1.00					1.00				
Frpb, ped/bikes			0.99					0.98				
Flpb, ped/bikes			1.00					1.00				
Frt			0.95					0.95				
Flt Protected			0.98					0.98				
Satd. Flow (prot)			1712					1701				
Flt Permitted			0.92					0.92				
Satd. Flow (perm)			1603					1593				
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	11	11	11	11	11	11	11	11	11	20	11
RTOR Reduction (vph)	0	0	10	0	0	0	0	10	0	0	0	0
Lane Group Flow (vph)	0	0	45	0	0	0	0	45	0	0	0	0
Confl. Peds. (#/hr)				1	1				7	7		
Confl. Bikes (#/hr)												
Turn Type	Perm	Perm				Perm	Perm					Perm
Protected Phases			3					3				
Permitted Phases	3	3				3	3					1
Actuated Green, G (s)			6.6					6.6				
Effective Green, g (s)			6.6					6.6				
Actuated g/C Ratio			0.08					0.08				
Clearance Time (s)			3.0					3.0				
Vehicle Extension (s)			3.0					3.0				
Lane Grp Cap (vph)			129					129				
v/s Ratio Prot												
v/s Ratio Perm			0.03					0.03				
v/c Ratio			0.35					0.35				
Uniform Delay, d1			35.6					35.6				
Progression Factor			1.00					1.00				
Incremental Delay, d2			1.6					1.6				
Delay (s)			37.2					37.2				
Level of Service			D					D				
Approach Delay (s)			37.2					37.2				
Approach LOS			D					D				
Intersection Summary												
HCM Average Control Delay			46.4			HCM Level of Service		D				
HCM Volume to Capacity ratio			0.73									
Actuated Cycle Length (s)			81.8			Sum of lost time (s)		15.0				
Intersection Capacity Utilization			92.1%			ICU Level of Service		F				
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↑	↗	↘	↙	↓	↘	↙	↗	↘	↙	↗	↘
Movement	NBT	NBR	NBR2	SBL2	SBL	SBT	SBR	SBR2	NEL	NET	NER	NER2
Lane Configurations	↔					↔				↔		
Volume (vph)	702	40	30	10	10	848	188	10	144	130	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.0					6.0				6.0		
Lane Util. Factor	0.95					0.95				1.00		
Frpb, ped/bikes	0.99					0.98				1.00		
Flpb, ped/bikes	1.00					1.00				1.00		
Frt	0.99					0.97				0.99		
Flt Protected	1.00					1.00				0.98		
Satd. Flow (prot)	3461					3371				1793		
Flt Permitted	0.72					0.92				0.82		
Satd. Flow (perm)	2497					3105				1501		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	739	42	32	11	11	893	198	11	152	137	11	11
RTOR Reduction (vph)	3	0	0	0	0	1	0	0	0	1	0	0
Lane Group Flow (vph)	841	0	0	0	0	1123	0	0	0	310	0	0
Confl. Peds. (#/hr)							9	9			1	1
Confl. Bikes (#/hr)		30	30				19	19			20	20
Turn Type				Perm	Perm				Perm			
Protected Phases	1					1				2		
Permitted Phases				1	1				2			
Actuated Green, G (s)	29.1					29.1				31.1		
Effective Green, g (s)	29.1					29.1				31.1		
Actuated g/C Ratio	0.36					0.36				0.38		
Clearance Time (s)	6.0					6.0				6.0		
Vehicle Extension (s)	3.0					3.0				3.0		
Lane Grp Cap (vph)	888					1105				571		
v/s Ratio Prot												
v/s Ratio Perm	0.34					c0.36				c0.21		
v/c Ratio	0.95					1.02				0.54		
Uniform Delay, d1	25.6					26.3				19.8		
Progression Factor	1.00					1.00				1.00		
Incremental Delay, d2	18.5					31.3				1.1		
Delay (s)	44.1					57.6				20.9		
Level of Service	D					E				C		
Approach Delay (s)	44.1					57.6				20.9		
Approach LOS	D					E				C		
Intersection Summary												

HCM Signalized Intersection Capacity Analysis

9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour



Movement	SWL2	SWL	SWT	SWR	SWR2
Lane Configurations			↔		
Volume (vph)	10	10	10	10	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900
Total Lost time (s)			6.0		
Lane Util. Factor			1.00		
Frpb, ped/bikes			0.99		
Flpb, ped/bikes			1.00		
Frt			0.95		
Flt Protected			0.98		
Satd. Flow (prot)			1705		
Flt Permitted			0.84		
Satd. Flow (perm)			1454		
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	11	11	11	11
RTOR Reduction (vph)	0	0	7	0	0
Lane Group Flow (vph)	0	0	48	0	0
Confl. Peds. (#/hr)				7	7
Confl. Bikes (#/hr)				8	8
Turn Type	Perm	Perm			
Protected Phases			2		
Permitted Phases	2	2			
Actuated Green, G (s)			31.1		
Effective Green, g (s)			31.1		
Actuated g/C Ratio			0.38		
Clearance Time (s)			6.0		
Vehicle Extension (s)			3.0		
Lane Grp Cap (vph)			553		
v/s Ratio Prot					
v/s Ratio Perm			0.03		
v/c Ratio			0.09		
Uniform Delay, d1			16.3		
Progression Factor			1.00		
Incremental Delay, d2			0.1		
Delay (s)			16.3		
Level of Service			B		
Approach Delay (s)			16.3		
Approach LOS			B		
Intersection Summary					

HCM Unsignalized Intersection Capacity Analysis

10: Lowell St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Volume (veh/h)	30	120	132	314	220	47
Sign Control	Stop			Free	Free	
Grade	0%			0%	0%	
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Hourly flow rate (vph)	32	128	140	334	234	50
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	4.0					
Percent Blockage	0					
Right turn flare (veh)						
Median type				None	None	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	878	263	288			
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	878	263	288			
tC, single (s)	6.4	6.2	4.1			
tC, 2 stage (s)						
tF (s)	3.5	3.3	2.2			
p0 queue free %	89	83	89			
cM capacity (veh/h)	282	773	1270			
Direction, Lane #	EB 1	NB 1	SB 1			
Volume Total	160	474	284			
Volume Left	32	140	0			
Volume Right	128	0	50			
cSH	574	1270	1700			
Volume to Capacity	0.28	0.11	0.17			
Queue Length 95th (ft)	28	9	0			
Control Delay (s)	13.7	3.2	0.0			
Lane LOS	B	A				
Approach Delay (s)	13.7	3.2	0.0			
Approach LOS	B					
Intersection Summary						
Average Delay		4.0				
Intersection Capacity Utilization		57.4%		ICU Level of Service		B
Analysis Period (min)		15				

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	100	20	40	120	271	30	580	70	408	470	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.98			0.92		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807			1669		1732	1817		1753	1854	
Flt Permitted		0.96			0.96		0.40	1.00		0.26	1.00	
Satd. Flow (perm)		1739			1608		724	1817		478	1854	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	105	21	42	126	285	32	611	74	429	495	11
RTOR Reduction (vph)	0	11	0	0	110	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	126	0	0	343	0	32	679	0	429	505	0
Confl. Peds. (#/hr)	8		9	9		8	35		24	24		35
Confl. Bikes (#/hr)			1			7			35			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		15.8			15.8		30.2	30.2		30.2	30.2	
Effective Green, g (s)		15.8			15.8		30.2	30.2		30.2	30.2	
Actuated g/C Ratio		0.28			0.28		0.54	0.54		0.54	0.54	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		491			454		390	980		258	1000	
v/s Ratio Prot								0.37			0.27	
v/s Ratio Perm		0.07			0.21		0.04			0.90		
v/c Ratio		0.26			0.76		0.08	0.69		1.66	0.50	
Uniform Delay, d1		15.6			18.3		6.2	9.5		12.9	8.2	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			7.0		0.1	2.1		314.8	0.4	
Delay (s)		15.8			25.4		6.3	11.6		327.7	8.6	
Level of Service		B			C		A	B		F	A	
Approach Delay (s)		15.8			25.4			11.4			155.0	
Approach LOS		B			C			B			F	
Intersection Summary												
HCM Average Control Delay		74.4				HCM Level of Service		E				
HCM Volume to Capacity ratio		1.35										
Actuated Cycle Length (s)		56.0				Sum of lost time (s)		10.0				
Intersection Capacity Utilization		102.5%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	280	278	70	171	70	240	1680	110	160	1560	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713			1772		1770	5008		1770	5069	
Flt Permitted		0.98			0.59		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1683			1064		1770	5008		1770	5069	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	295	293	74	180	74	253	1768	116	168	1642	21
RTOR Reduction (vph)	0	33	0	0	10	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	576	0	0	318	0	253	1877	0	168	1662	0
Confl. Peds. (#/hr)			17			15			31			30
Confl. Bikes (#/hr)			8			16			9			12
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		35.0			35.0		21.3	39.0		11.3	29.0	
Effective Green, g (s)		35.0			35.0		21.3	39.0		11.3	29.0	
Actuated g/C Ratio		0.35			0.35		0.21	0.39		0.11	0.29	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		590			373		378	1957		200	1473	
v/s Ratio Prot							0.14	c0.37		0.09	c0.33	
v/s Ratio Perm		c0.34			0.30							
v/c Ratio		0.98			0.85		0.67	0.96		0.84	1.13	
Uniform Delay, d1		32.0			30.0		36.0	29.6		43.4	35.4	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		30.7			16.8		4.5	12.0		25.4	66.9	
Delay (s)		62.7			46.8		40.5	41.6		68.8	102.3	
Level of Service		E			D		D	D		E	F	
Approach Delay (s)		62.7			46.8			41.5			99.2	
Approach LOS		E			D			D			F	
Intersection Summary												
HCM Average Control Delay			66.0			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.99									
Actuated Cycle Length (s)			99.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			103.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

13: 40th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	126	930	40	40	580	70	30	290	50	60	188	92
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0			4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95			1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	0.99			0.99		1.00	0.99	
Flpb, ped/bikes	1.00	1.00		1.00	1.00			1.00		0.99	1.00	
Frt	1.00	0.99		1.00	0.98			0.98		1.00	0.95	
Flt Protected	0.95	1.00		0.95	1.00			1.00		0.95	1.00	
Satd. Flow (prot)	1805	3540		1805	3531			1833		1795	1782	
Flt Permitted	0.95	1.00		0.95	1.00			0.78		0.40	1.00	
Satd. Flow (perm)	1805	3540		1805	3531			1442		756	1782	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	135	1000	43	43	624	75	32	312	54	65	202	99
RTOR Reduction (vph)	0	5	0	0	17	0	0	11	0	0	35	0
Lane Group Flow (vph)	135	1038	0	43	682	0	0	387	0	65	266	0
Confl. Peds. (#/hr)			36			27	19		21	21		19
Confl. Bikes (#/hr)			48			5			13			19
Heavy Vehicles (%)	0%	1%	0%	0%	0%	0%	0%	1%	0%	0%	0%	0%
Turn Type	Prot			Prot			Perm			Perm		
Protected Phases	1	6		5	2			4			8	
Permitted Phases							4			8		
Actuated Green, G (s)	6.3	25.7		2.8	22.2			10.5		10.5	10.5	
Effective Green, g (s)	5.8	25.7		2.3	22.2			10.0		10.0	10.0	
Actuated g/C Ratio	0.12	0.51		0.05	0.44			0.20		0.20	0.20	
Clearance Time (s)	3.5	4.0		3.5	4.0			3.5		3.5	3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0			3.0		3.0	3.0	
Lane Grp Cap (vph)	209	1820		83	1568			288		151	356	
v/s Ratio Prot	c0.07	c0.29		0.02	0.19						0.15	
v/s Ratio Perm								c0.27		0.09		
v/c Ratio	0.65	0.57		0.52	0.43			1.34		0.43	0.75	
Uniform Delay, d1	21.1	8.4		23.3	9.6			20.0		17.5	18.8	
Progression Factor	1.08	1.12		1.00	1.00			1.00		1.00	1.00	
Incremental Delay, d2	4.4	1.1		2.3	0.9			175.9		2.0	8.3	
Delay (s)	27.1	10.4		25.6	10.5			195.9		19.5	27.1	
Level of Service	C	B		C	B			F		B	C	
Approach Delay (s)		12.4			11.3			195.9			25.7	
Approach LOS		B			B			F			C	
Intersection Summary												
HCM Average Control Delay			41.1			HCM Level of Service				D		
HCM Volume to Capacity ratio			0.80									
Actuated Cycle Length (s)			50.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			84.3%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	80	210	20	78	170	20	0	1440	160	0	1499	150
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0			4.0			4.0			4.0	
Lane Util. Factor		0.95			0.95			0.95			0.95	
Frpb, ped/bikes		1.00			0.99			0.99			1.00	
Flpb, ped/bikes		1.00			1.00			1.00			1.00	
Frt		0.99			0.99			0.98			0.99	
Flt Protected		0.99			0.99			1.00			1.00	
Satd. Flow (prot)		3523			3492			3497			3474	
Flt Permitted		0.79			0.99			1.00			1.00	
Satd. Flow (perm)		2813			3492			3497			3474	
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	82	216	21	80	175	21	0	1485	165	0	1545	155
RTOR Reduction (vph)	0	5	0	0	6	0	0	7	0	0	6	0
Lane Group Flow (vph)	0	314	0	0	270	0	0	1643	0	0	1694	0
Confl. Peds. (#/hr)						25			13			24
Confl. Bikes (#/hr)			9			15			31			39
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	1%	1%	0%	2%	2%
Turn Type	Perm			Split								
Protected Phases		4		3	3			2			6	
Permitted Phases	4											
Actuated Green, G (s)		15.3			12.8			65.9			65.9	
Effective Green, g (s)		16.3			13.8			67.9			67.9	
Actuated g/C Ratio		0.15			0.13			0.62			0.62	
Clearance Time (s)		5.0			5.0			6.0			6.0	
Vehicle Extension (s)		2.0			2.0			4.0			4.0	
Lane Grp Cap (vph)		417			438			2159			2144	
v/s Ratio Prot					c0.08			0.47			c0.49	
v/s Ratio Perm		c0.11										
v/c Ratio		0.75			0.62			0.76			0.79	
Uniform Delay, d1		44.9			45.6			15.2			15.7	
Progression Factor		1.00			1.00			0.66			1.00	
Incremental Delay, d2		6.7			1.8			1.9			3.1	
Delay (s)		51.6			47.4			11.9			18.8	
Level of Service		D			D			B			B	
Approach Delay (s)		51.6			47.4			11.9			18.8	
Approach LOS		D			D			B			B	
Intersection Summary												
HCM Average Control Delay		20.6			HCM Level of Service			C				
HCM Volume to Capacity ratio		0.76										
Actuated Cycle Length (s)		110.0			Sum of lost time (s)			12.0				
Intersection Capacity Utilization		74.7%			ICU Level of Service			D				
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	60	330	546	30	964	0	0	1477	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.97		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3523	1558		3536			5071	
Flt Permitted					0.99	1.00		0.84			1.00	
Satd. Flow (perm)					3523	1558		2987			5071	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	0	0	0	61	337	557	31	984	0	0	1507	20
RTOR Reduction (vph)	0	0	0	0	0	115	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	398	442	0	1015	0	0	1526	0
Confl. Peds. (#/hr)						8			16			36
Confl. Bikes (#/hr)									32			36
Heavy Vehicles (%)	0%	0%	0%	0%	2%	1%	0%	2%	0%	0%	2%	0%
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					27.0	27.0		74.0			74.0	
Effective Green, g (s)					27.0	27.0		75.0			75.0	
Actuated g/C Ratio					0.25	0.25		0.68			0.68	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					865	382		2037			3458	
v/s Ratio Prot					0.11						0.30	
v/s Ratio Perm						c0.28		c0.34				
v/c Ratio					0.46	1.16		0.50			0.44	
Uniform Delay, d1					35.3	41.5		8.4			8.0	
Progression Factor					1.00	1.00		0.15			1.10	
Incremental Delay, d2					0.1	95.8		0.4			0.2	
Delay (s)					35.4	137.3		1.6			9.0	
Level of Service					D	F		A			A	
Approach Delay (s)		0.0			94.8			1.6			9.0	
Approach LOS		A			F			A			A	
Intersection Summary												
HCM Average Control Delay			30.3				HCM Level of Service				C	
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)			8.0		
Intersection Capacity Utilization			68.8%				ICU Level of Service			C		
Analysis Period (min)			15									

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	480	130	0	0	0	0	954	100	794	743	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		4.0						4.0		4.0	4.0	
Lane Util. Factor		0.95						0.95		0.97	0.95	
Frpb, ped/bikes		0.99						1.00		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		0.97						0.99		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		3468						3480		3433	3505	
Flt Permitted		1.00						1.00		0.95	1.00	
Satd. Flow (perm)		3468						3480		3433	3505	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	43	516	140	0	0	0	0	1026	108	854	799	0
RTOR Reduction (vph)	0	21	0	0	0	0	0	7	0	0	0	0
Lane Group Flow (vph)	0	678	0	0	0	0	0	1127	0	854	799	0
Confl. Peds. (#/hr)			17						17			39
Confl. Bikes (#/hr)			1						30			36
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	0%	2%	0%	2%	3%	0%
Turn Type	Split						Prot					
Protected Phases	4	4						1		2	6	
Permitted Phases												
Actuated Green, G (s)		24.5						37.3		33.2	76.5	
Effective Green, g (s)		25.5						38.3		34.2	76.5	
Actuated g/C Ratio		0.23						0.35		0.31	0.70	
Clearance Time (s)		5.0						5.0		5.0	4.0	
Vehicle Extension (s)		2.0						2.0		2.0	2.0	
Lane Grp Cap (vph)		804						1212		1067	2438	
v/s Ratio Prot		c0.20						c0.32		c0.25	0.23	
v/s Ratio Perm												
v/c Ratio		0.84						0.93		0.80	0.33	
Uniform Delay, d1		40.3						34.6		34.8	6.6	
Progression Factor		1.00						1.00		1.06	0.95	
Incremental Delay, d2		7.7						12.2		5.9	0.0	
Delay (s)		48.1						46.7		42.8	6.3	
Level of Service		D						D		D	A	
Approach Delay (s)		48.1			0.0			46.7			25.2	
Approach LOS		D			A			D			C	
Intersection Summary												
HCM Average Control Delay		36.8						HCM Level of Service		D		
HCM Volume to Capacity ratio		0.86										
Actuated Cycle Length (s)		110.0						Sum of lost time (s)		12.0		
Intersection Capacity Utilization		82.8%						ICU Level of Service		E		
Analysis Period (min)		15										

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	360	983	420	74	731	92	110	30	71	141	70	580
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	0.97	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	0.99	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.99	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (prot)	3433	3366	1219	3433	3539	1560	1681	1720	1583		1802	2628
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.97	1.00		0.97	1.00
Satd. Flow (perm)	3433	3366	1219	3433	3539	1560	1681	1720	1583		1802	2628
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	383	1046	447	79	778	98	117	32	76	150	74	617
RTOR Reduction (vph)	0	3	203	0	0	25	0	0	69	0	0	126
Lane Group Flow (vph)	383	1088	199	79	778	73	74	75	7	0	224	491
Confl. Peds. (#/hr)			14									18
Confl. Bikes (#/hr)						4						
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	41.5	55.0	14.0	37.0	37.0	10.0	10.0	10.0		30.5	48.0
Effective Green, g (s)	17.0	41.0	54.5	13.5	37.5	37.5	9.5	9.5	9.5		30.0	47.0
Actuated g/C Ratio	0.15	0.37	0.50	0.12	0.34	0.34	0.09	0.09	0.09		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	531	1255	604	421	1206	532	145	149	137		491	1123
v/s Ratio Prot	0.11	c0.32	0.16	0.02	c0.22		c0.04	0.04			c0.12	0.19
v/s Ratio Perm						0.05			0.00			
v/c Ratio	0.72	0.87	0.33	0.19	0.65	0.14	0.51	0.50	0.05		0.46	0.44
Uniform Delay, d1	44.2	32.0	16.7	43.3	30.6	25.1	48.0	48.0	46.1		33.2	22.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	8.2	8.2	0.2	0.1	2.7	0.5	2.3	1.9	0.1		3.0	1.2
Delay (s)	52.5	40.2	17.0	43.4	33.3	25.6	50.3	49.9	46.2		36.3	23.4
Level of Service	D	D	B	D	C	C	D	D	D		D	C
Approach Delay (s)		37.7			33.3			48.8			26.8	
Approach LOS		D			C			D			C	
Intersection Summary												
HCM Average Control Delay			34.9			HCM Level of Service			C			
HCM Volume to Capacity ratio			0.66									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			71.2%			ICU Level of Service			C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	60	280	733	40	637	0	0	1104	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					4.0	4.0		4.0			4.0	
Lane Util. Factor					0.95	1.00		0.95			0.91	
Frpb, ped/bikes					1.00	0.98		1.00			1.00	
Flpb, ped/bikes					1.00	1.00		1.00			1.00	
Frt					1.00	0.85		1.00			1.00	
Flt Protected					0.99	1.00		1.00			1.00	
Satd. Flow (prot)					3508	1545		3529			5075	
Flt Permitted					0.99	1.00		0.81			1.00	
Satd. Flow (perm)					3508	1545		2862			5075	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	0	0	0	63	295	772	42	671	0	0	1162	11
RTOR Reduction (vph)	0	0	0	0	0	204	0	0	0	0	1	0
Lane Group Flow (vph)	0	0	0	0	358	568	0	713	0	0	1172	0
Confl. Peds. (#/hr)						7			14			30
Confl. Bikes (#/hr)									17			28
Turn Type				Split		Perm	Perm					
Protected Phases				8	8			2			6	
Permitted Phases						8	2					
Actuated Green, G (s)					29.0	29.0		72.0			72.0	
Effective Green, g (s)					29.0	29.0		73.0			73.0	
Actuated g/C Ratio					0.26	0.26		0.66			0.66	
Clearance Time (s)					4.0	4.0		5.0			5.0	
Vehicle Extension (s)					2.0	2.0		4.0			4.0	
Lane Grp Cap (vph)					925	407		1899			3368	
v/s Ratio Prot					0.10						0.23	
v/s Ratio Perm						c0.37		c0.25				
v/c Ratio					0.39	1.40		0.38			0.35	
Uniform Delay, d1					33.2	40.5		8.3			8.1	
Progression Factor					1.00	1.00		0.16			0.80	
Incremental Delay, d2					0.1	192.5		0.5			0.2	
Delay (s)					33.3	233.0		1.8			6.7	
Level of Service					C	F		A			A	
Approach Delay (s)		0.0			169.7			1.8			6.7	
Approach LOS		A			F			A			A	
Intersection Summary												
HCM Average Control Delay			66.6				HCM Level of Service			E		
HCM Volume to Capacity ratio			0.67									
Actuated Cycle Length (s)			110.0				Sum of lost time (s)		8.0			
Intersection Capacity Utilization			71.6%				ICU Level of Service		C			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	320	776	950	352	922	112	200	70	122	243	250	990
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	0.97	0.91	*0.77	0.97	0.95	1.00	0.95	0.95	1.00		1.00	*0.83
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	0.98	1.00	1.00	0.98		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Frt	1.00	0.95	0.85	1.00	1.00	0.85	1.00	1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (prot)	3467	3180	1231	3502	3574	1590	1698	1754	1584		1836	2654
Flt Permitted	0.95	1.00	1.00	0.95	1.00	1.00	0.95	0.98	1.00		0.98	1.00
Satd. Flow (perm)	3467	3180	1231	3502	3574	1590	1698	1754	1584		1836	2654
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	333	808	990	367	960	117	208	73	127	253	260	1031
RTOR Reduction (vph)	0	57	69	0	0	26	0	0	111	0	0	49
Lane Group Flow (vph)	333	1187	485	367	960	91	139	142	16	0	513	982
Confl. Peds. (#/hr)			20									62
Confl. Bikes (#/hr)			7			5			4			5
Heavy Vehicles (%)	1%	2%	1%	0%	1%	0%	1%	0%	0%	0%	2%	1%
Turn Type	Prot		pt+ov	Prot		Perm	Split		Perm	Split		pt+ov
Protected Phases	1	6	6 7	5	2		7	7		8	8	1 8
Permitted Phases						2			7			
Actuated Green, G (s)	17.5	33.5	51.5	17.5	32.5	32.5	14.5	14.5	14.5		30.5	48.0
Effective Green, g (s)	17.0	33.0	51.0	17.0	33.0	33.0	14.0	14.0	14.0		30.0	47.0
Actuated g/C Ratio	0.15	0.30	0.46	0.15	0.30	0.30	0.13	0.13	0.13		0.27	0.43
Clearance Time (s)	3.5	3.5		3.5	4.5	4.5	3.5	3.5	3.5		3.5	
Vehicle Extension (s)	2.0	4.0		2.0	4.0	4.0	2.5	2.5	2.5		4.0	
Lane Grp Cap (vph)	536	954	571	541	1072	477	216	223	202		501	1134
v/s Ratio Prot	0.10	c0.37	c0.39	0.10	c0.27		0.08	0.08			c0.28	0.37
v/s Ratio Perm						0.06			0.01			
v/c Ratio	0.62	1.24	0.85	0.68	0.90	0.19	0.64	0.64	0.08		1.02	0.87
Uniform Delay, d1	43.5	38.5	26.1	43.9	36.9	28.6	45.6	45.6	42.3		40.0	28.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	5.3	118.6	11.2	2.7	11.6	0.9	5.7	5.1	0.1		46.4	8.9
Delay (s)	48.8	157.1	37.3	46.6	48.4	29.5	51.3	50.7	42.4		86.4	37.6
Level of Service	D	F	D	D	D	C	D	D	D		F	D
Approach Delay (s)		109.1			46.4			48.3			53.8	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			72.8			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.05									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			12.0			
Intersection Capacity Utilization			89.5%			ICU Level of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	250	661	210	132	436	53	190	990	110	123	1140	170
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		4.0	4.0	
Lane Util. Factor	1.00	0.95		1.00	0.95		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	0.99		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.96		1.00	0.98		1.00	0.99		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1770	3420		1770	3535		1736	3492		1805	3464	
Flt Permitted	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (perm)	1770	3420		1770	3535		1736	3492		1805	3464	
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	255	674	214	135	445	54	194	1010	112	126	1163	173
RTOR Reduction (vph)	0	28	0	0	8	0	0	8	0	0	11	0
Lane Group Flow (vph)	255	860	0	135	491	0	194	1114	0	126	1325	0
Confl. Peds. (#/hr)			17			21			50			17
Confl. Bikes (#/hr)			9			4			19			4
Heavy Vehicles (%)	2%	1%	0%	2%	0%	0%	4%	1%	1%	0%	2%	0%
Turn Type	Prot			Prot			Prot			Prot		
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases												
Actuated Green, G (s)	11.0	28.5		10.0	27.5		14.0	45.9		10.6	42.5	
Effective Green, g (s)	10.0	29.0		9.0	28.0		13.0	46.4		9.6	43.0	
Actuated g/C Ratio	0.09	0.26		0.08	0.25		0.12	0.42		0.09	0.39	
Clearance Time (s)	3.0	4.5		3.0	4.5		3.0	4.5		3.0	4.5	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	161	902		145	900		205	1473		158	1354	
v/s Ratio Prot	c0.14	c0.25		0.08	0.14		c0.11	c0.32		0.07	c0.38	
v/s Ratio Perm												
v/c Ratio	1.58	0.95		0.93	0.55		0.95	0.76		0.80	0.98	
Uniform Delay, d1	50.0	39.8		50.2	35.5		48.2	27.0		49.2	33.0	
Progression Factor	1.00	1.00		1.01	0.98		1.00	1.00		1.00	1.00	
Incremental Delay, d2	290.2	19.5		54.2	0.7		47.3	3.7		23.7	19.9	
Delay (s)	340.2	59.3		104.7	35.4		95.5	30.7		73.0	52.9	
Level of Service	F	E		F	D		F	C		E	D	
Approach Delay (s)		122.0			50.2			40.2			54.6	
Approach LOS		F			D			D			D	
Intersection Summary												
HCM Average Control Delay			66.8			HCM Level of Service			E			
HCM Volume to Capacity ratio			1.03									
Actuated Cycle Length (s)			110.0			Sum of lost time (s)			16.0			
Intersection Capacity Utilization			93.7%			ICU Level of Service			F			
Analysis Period (min)			15									
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

11: 55th St & Market St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	10	100	20	40	120	271	30	580	70	408	470	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes		0.99			0.98		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		0.98	1.00		0.99	1.00	
Frt		0.98			0.92		1.00	0.98		1.00	1.00	
Flt Protected		1.00			1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1807			1669		1729	1817		1752	1853	
Flt Permitted		0.96			0.96		0.40	1.00		0.27	1.00	
Satd. Flow (perm)		1734			1607		729	1817		495	1853	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	11	105	21	42	126	285	32	611	74	429	495	11
RTOR Reduction (vph)	0	11	0	0	101	0	0	6	0	0	1	0
Lane Group Flow (vph)	0	126	0	0	352	0	32	679	0	429	505	0
Confl. Peds. (#/hr)	8		9	9		8	35		24	24		35
Confl. Bikes (#/hr)			1			7			35			13
Turn Type	Perm			Perm			Perm			Perm		
Protected Phases		4			4			2			2	
Permitted Phases	4			4			2			2		
Actuated Green, G (s)		16.9			16.9		34.2	34.2		34.2	34.2	
Effective Green, g (s)		16.9			16.9		34.2	34.2		34.2	34.2	
Actuated g/C Ratio		0.28			0.28		0.56	0.56		0.56	0.56	
Clearance Time (s)		5.0			5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		480			444		408	1017		277	1037	
v/s Ratio Prot								0.37			0.27	
v/s Ratio Perm		0.07			0.22		0.04			0.87		
v/c Ratio		0.26			0.79		0.08	0.67		1.55	0.49	
Uniform Delay, d1		17.2			20.5		6.2	9.5		13.4	8.1	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		0.3			9.4		0.1	1.7		264.1	0.4	
Delay (s)		17.5			29.9		6.3	11.1		277.5	8.5	
Level of Service		B			C		A	B		F	A	
Approach Delay (s)		17.5			29.9			10.9			131.9	
Approach LOS		B			C			B			F	
Intersection Summary												
HCM Average Control Delay		65.6				HCM Level of Service		E				
HCM Volume to Capacity ratio		1.30										
Actuated Cycle Length (s)		61.1				Sum of lost time (s)		10.0				
Intersection Capacity Utilization		102.5%				ICU Level of Service		G				
Analysis Period (min)		15										
c Critical Lane Group												

HCM Signalized Intersection Capacity Analysis

12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour Mitigated

												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	280	278	70	171	70	240	1680	110	160	1560	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Lane Util. Factor		1.00			1.00		1.00	0.91		1.00	0.91	
Frpb, ped/bikes		0.98			0.99		1.00	0.99		1.00	1.00	
Flpb, ped/bikes		1.00			1.00		1.00	1.00		1.00	1.00	
Frt		0.94			0.97		1.00	0.99		1.00	1.00	
Flt Protected		1.00			0.99		0.95	1.00		0.95	1.00	
Satd. Flow (prot)		1713			1772		1770	5008		1770	5069	
Flt Permitted		0.98			0.59		0.95	1.00		0.95	1.00	
Satd. Flow (perm)		1683			1064		1770	5008		1770	5069	
Peak-hour factor, PHF	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Adj. Flow (vph)	21	295	293	74	180	74	253	1768	116	168	1642	21
RTOR Reduction (vph)	0	33	0	0	10	0	0	7	0	0	1	0
Lane Group Flow (vph)	0	576	0	0	318	0	253	1877	0	168	1662	0
Confl. Peds. (#/hr)			17			15			31			30
Confl. Bikes (#/hr)			8			16			9			12
Turn Type	Perm		Perm		Prot		Prot		Prot		Prot	
Protected Phases		4			8		5	2		1	6	
Permitted Phases	4			8								
Actuated Green, G (s)		35.0			35.0		20.3	39.0		11.3	30.0	
Effective Green, g (s)		35.0			35.0		20.3	39.0		11.3	30.0	
Actuated g/C Ratio		0.35			0.35		0.20	0.39		0.11	0.30	
Clearance Time (s)		5.0			5.0		4.5	5.0		4.5	5.0	
Vehicle Extension (s)		3.0			3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)		590			373		360	1957		200	1524	
v/s Ratio Prot							0.14	c0.37		0.09	c0.33	
v/s Ratio Perm		c0.34			0.30							
v/c Ratio		0.98			0.85		0.70	0.96		0.84	1.09	
Uniform Delay, d1		32.0			30.0		36.9	29.6		43.4	34.9	
Progression Factor		1.00			1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2		30.7			16.8		6.1	12.0		25.4	51.8	
Delay (s)		62.7			46.8		43.1	41.6		68.8	86.7	
Level of Service		E			D		D	D		E	F	
Approach Delay (s)		62.7			46.8			41.8			85.1	
Approach LOS		E			D			D			F	
Intersection Summary												
HCM Average Control Delay			60.9			HCM Level of Service				E		
HCM Volume to Capacity ratio			0.98									
Actuated Cycle Length (s)			99.8			Sum of lost time (s)			10.0			
Intersection Capacity Utilization			103.6%			ICU Level of Service			G			
Analysis Period (min)			15									
c Critical Lane Group												

Appendix E-8
Traffic Congestion Management
Program (CMP) Tables

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Freeway Segments											
I-80 Eastbound											
Between	Toll Plaza	I-580/I-880	6	13,045	13,056	1.09	1.09	F	F	No	no change
Between	I-580/I-880	Powell Street	5	8,298	8,313	0.83	0.83	D	D	No	no change
Between	Powell Street	Ashby Avenue	4	8,722	8,728	1.09	1.09	F	F	No	no change
I-80 Westbound											
Between	Ashby Avenue	Powell Street	4	7,844	7,854	0.98	0.98	E	E	No	no change
Between	Powell Street	I-580/I-880	5	7,770	7,783	0.78	0.78	D	D	No	no change
Between	I-580/I-880	Toll Plaza	7	8,309	8,319	0.59	0.59	C	C	No	no change
I-580 Eastbound											
Between	I-580/I-880	I-980/SR 24	5	8,259	8,261	0.83	0.83	D	D	No	no change
Between	I-980/SR 24	Oakland Avenue	5	8,270	8,278	0.83	0.83	D	D	No	no change
I-580 Westbound											
Between	Oakland Avenue	I-980/SR 24	5	6,416	6,418	0.64	0.64	C	C	No	no change
Between	I-980/SR 24	I-580/I-880	3	3,690	3,699	0.61	0.62	C	C	No	no change
I-980 Eastbound											
Between	27th Street	I-580	4	6,102	6,106	0.76	0.76	D	D	No	no change
I-980 Westbound											
Between	I-580	27th Street	3	3,295	3,300	0.55	0.55	B	B	No	no change
SR 24 Eastbound											
Between	I-580	52nd Street	4	7,471	7,473	0.93	0.93	E	E	No	no change
Between	52nd Street	Claremont Avenue	4	7,678	7,683	0.96	0.96	E	E	No	no change
SR 24 Westbound											
Between	Claremont Avenue	52nd Street	4	3,897	3,903	0.49	0.49	B	B	No	no change
Between	52nd Street	I-580	4	4,604	4,606	0.58	0.58	B	B	No	no change
Arterials											
Powell Street Eastbound											
Between	I-80	Christie Avenue	2	1,804	1,830	1.13	1.14	F	F	No	no change
Between	Christie Avenue	Hollis Street	2	1,293	1,324	0.81	0.83	D	D	No	no change
Between	Hollis Street	San Pablo Avenue	2	1,445	1,476	0.90	0.92	D	E	No	change
Powell Street Westbound											
Between	San Pablo Avenue	Hollis Street	2	701	727	0.44	0.45	B	B	No	no change
Between	Hollis Street	Christie Avenue	2	818	844	0.51	0.53	B	B	No	no change
Between	Christie Avenue	I-80	2	1,200	1,222	0.75	0.76	C	D	No	change

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Stanford Avenue Eastbound											
Between	San Pablo Avenue	Market Street	2	1,099	1,133	0.69	0.71	C	C	No	no change
Between	Market Street	Adeline Street	2	840	844	0.53	0.53	B	B	No	no change
Stanford Avenue Westbound											
Between	Adeline Street	Market Street	2	522	527	0.33	0.33	A	A	No	no change
Between	Market Street	San Pablo Avenue	2	631	672	0.39	0.42	B	B	No	no change
51st Street Eastbound											
Between	Shattuck Avenue	Telegraph Avenue	2	821	826	0.51	0.52	B	B	No	no change
Between	Telegraph Avenue	Broadway	2	1,071	1,075	0.67	0.67	C	C	No	no change
51st Street Westbound											
Between	Broadway	Telegraph Avenue	2	824	830	0.52	0.52	B	B	No	no change
Between	Telegraph Avenue	Shattuck Avenue	2	602	607	0.38	0.38	B	B	No	no change
Grand Avenue Eastbound											
Between	I-880	Mandela Parkway	2	2,747	2,748	1.72	1.72	F	F	No	no change
Between	Mandela Parkway	Adeline Street	3	2,652	2,653	1.10	1.11	F	F	No	no change
Between	Adeline Street	Market Street	3	2,818	2,820	1.17	1.18	F	F	No	no change
Between	Market Street	San Pablo Avenue	3	1,915	1,917	0.80	0.80	D	D	No	no change
Between	San Pablo Avenue	Telegraph Avenue	3	1,517	1,519	0.63	0.63	C	C	No	no change
Grand Avenue Westbound											
Between	Telegraph Avenue	San Pablo Avenue	3	726	728	0.30	0.30	A	A	No	no change
Between	San Pablo Avenue	Market Street	3	611	613	0.25	0.26	A	A	No	no change
Between	Market Street	Adeline Street	3	1,196	1,198	0.50	0.50	B	B	No	no change
Between	Adeline Street	Mandela Parkway	3	1,332	1,334	0.56	0.56	B	B	No	no change
Between	Mandela Parkway	I-880	2	1,613	1,615	1.01	1.01	F	F	No	no change
San Pablo Avenue Northbound											
Between	Market Street	MacArthur Blvd	3	850	870	0.35	0.36	B	B	No	no change
Between	MacArthur Blvd	40th Street	3	1,453	1,453	0.61	0.61	C	C	No	no change
Between	40th Street	Stanford Avenue	2	1,397	1,398	0.87	0.87	D	D	No	no change
Between	Stanford Avenue	Alcatraz Avenue	2	1,310	1,313	0.82	0.82	D	D	No	no change
Between	Alcatraz Avenue	Ashby Avenue	2	1,497	1,504	0.94	0.94	E	E	No	no change
San Pablo Avenue Northbound											
Between	Ashby Avenue	Alcatraz Avenue	2	1,383	1,391	0.86	0.87	D	D	No	no change
Between	Alcatraz Avenue	Stanford Avenue	2	1,292	1,295	0.81	0.81	D	D	No	no change
Between	Stanford Avenue	40th Street	2	1,609	1,621	1.01	1.01	F	F	No	no change
Between	40th Street	MacArthur Blvd	3	2,373	2,382	0.99	0.99	E	E	No	no change

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	MacArthur Blvd	Market Street	3	1,554	1,571	0.65	0.65	C	C	No	no change
Adeline Street Northbound											
Between	Grand Avenue	MacArthur Blvd	2	34	35	0.02	0.02	A	A	No	no change
Between	MacArthur Blvd	40th Street	2	1	21	0.00	0.01	A	A	No	no change
Between	40th Street	Market Street	2	171	197	0.11	0.12	A	A	No	no change
Between	Market Street	Stanford Avenue	2	628	628	0.39	0.39	B	B	No	no change
Between	Stanford Avenue	Shattuck Avenue	3	1,482	1,488	0.62	0.62	C	C	No	no change
Adeline Street Southbound											
Between	Shattuck Avenue	Stanford Avenue	3	1,275	1,282	0.53	0.53	B	B	No	no change
Between	Stanford Avenue	Market Street	2	737	737	0.46	0.46	B	B	No	no change
Between	Market Street	40th Street	2	157	167	0.10	0.10	A	A	No	no change
Between	40th Street	MacArthur Blvd	2	0	8	0.00	0.01	A	A	No	no change
Between	MacArthur Blvd	Grand Avenue	2	3	5	0.00	0.00	A	A	No	no change
Shattuck Avenue Northbound											
Between	Telegraph Avenue	52nd Street	2	271	272	0.17	0.17	A	A	No	no change
Between	52nd Street	Alcatraz Avenue	1	935	936	1.17	1.17	F	F	No	no change
Between	Alcatraz Avenue	Ashby Avenue	1	957	959	1.20	1.20	F	F	No	no change
Shattuck Avenue Southbound											
Between	Ashby Avenue	Alcatraz Avenue	1	925	928	1.16	1.16	F	F	No	no change
Between	Alcatraz Avenue	52nd Street	1	899	901	1.12	1.13	F	F	No	no change
Between	52nd Street	Telegraph Avenue	2	97	98	0.06	0.06	A	A	No	no change
Telegraph Avenue Northbound											
Between	51st Street	Alcatraz Avenue	2	1,547	1,548	0.97	0.97	E	E	No	no change
Between	Alcatraz Avenue	Ashby Avenue	2	1,420	1,422	0.89	0.89	D	D	No	no change
Telegraph Avenue Southbound											
Between	Ashby Avenue	Alcatraz Avenue	2	1,892	1,894	1.18	1.18	F	F	No	no change
Between	Alcatraz Avenue	51st Street	2	1,795	1,797	1.12	1.12	F	F	No	no change
Broadway Northbound											
Between	MacArthur Boulevard	40th Street	3	850	852	0.35	0.36	B	B	No	no change
Between	40th Street	51st Street	3	1,065	1,067	0.44	0.44	B	B	No	no change
Between	51st Street	College Avenue	3	1,325	1,327	0.55	0.55	B	B	No	no change
Between	College Avenue	SR 24	2	509	510	0.32	0.32	A	A	No	no change
Broadway Southbound											

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2015 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	SR 24	College Avenue	2	722	724	0.45	0.45	B	B	No	no change
Between	College Avenue	51st Street	3	946	949	0.39	0.40	B	B	No	no change
Between	51st Street	40th Street	3	456	458	0.19	0.19	A	A	No	no change
Between	40th Street	MacArthur Boulevard	3	477	479	0.20	0.20	A	A	No	no change
College Avenue Northbound											
Between	Broadway	SR 24	1	215	216	0.27	0.27	A	A	No	no change
Between	SR 24	Claremont Avenue	1	295	296	0.37	0.37	B	B	No	no change
College Avenue Southbound											
Between	Claremont Avenue	SR 24	1	371	372	0.46	0.47	B	B	No	no change
Between	SR 24	Broadway	1	273	274	0.34	0.34	A	A	No	no change

Fehr & Peers, 2011.

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Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Freeway Segments											
I-80 Eastbound											
Between	Toll Plaza	I-580/I-880	6	16,270	16,281	1.36	1.36	F	F	No	no change
Between	I-580/I-880	Powell Street	5	9,039	9,054	0.90	0.91	D	E	No	change
Between	Powell Street	Ashby Avenue	4	10,425	10,431	1.30	1.30	F	F	No	no change
I-80 Westbound											
Between	Ashby Avenue	Powell Street	4	8,387	8,397	1.05	1.05	F	F	No	no change
Between	Powell Street	I-580/I-880	5	9,023	9,036	0.90	0.90	D	D	No	no change
Between	I-580/I-880	Toll Plaza	7	9,382	9,392	0.67	0.67	C	C	No	no change
I-580 Eastbound											
Between	I-580/I-880	I-980/SR 24	5	9,289	9,291	0.93	0.93	E	E	No	no change
Between	I-980/SR 24	Oakland Avenue	5	9,340	9,348	0.93	0.93	E	E	No	no change
I-580 Westbound											
Between	Oakland Avenue	I-980/SR 24	5	6,626	6,628	0.66	0.66	C	C	No	no change
Between	I-980/SR 24	I-580/I-880	3	3,902	3,911	0.65	0.65	C	C	No	no change
I-980 Eastbound											
Between	27th Street	I-580	4	6,933	6,937	0.87	0.87	D	D	No	no change
I-980 Westbound											
Between	I-580	27th Street	3	4,164	4,169	0.69	0.69	C	C	No	no change
SR 24 Eastbound											
Between	I-580	52nd Street	4	8,330	8,332	1.04	1.04	F	F	No	no change
Between	52nd Street	Claremont Avenue	4	8,942	8,947	1.12	1.12	F	F	No	no change
SR 24 Westbound											
Between	Claremont Avenue	52nd Street	4	5,614	5,620	0.70	0.70	C	C	No	no change
Between	52nd Street	I-580	4	5,902	5,904	0.74	0.74	C	C	No	no change
Arterials											
Powell Street Eastbound											
Between	I-80	Christie Avenue	2	1,848	1,874	1.16	1.17	F	F	No	no change
Between	Christie Avenue	Hollis Street	2	1,515	1,546	0.95	0.97	E	E	No	no change
Between	Hollis Street	San Pablo Avenue	2	1,812	1,843	1.13	1.15	F	F	No	no change
Powell Street Westbound											
Between	San Pablo Avenue	Hollis Street	2	953	979	0.60	0.61	C	C	No	no change
Between	Hollis Street	Christie Avenue	2	1,352	1,378	0.84	0.86	D	D	No	no change
Between	Christie Avenue	I-80	2	1,732	1,754	1.08	1.10	F	F	No	no change

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio No Project	V/C Ratio With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Stanford Avenue Eastbound											
Between	San Pablo Avenue	Market Street	2	1,491	1,525	0.93	0.95	E	E	No	no change
Between	Market Street	Adeline Street	2	1,259	1,263	0.79	0.79	D	D	No	no change
Stanford Avenue Westbound											
Between	Adeline Street	Market Street	2	615	620	0.38	0.39	B	B	No	no change
Between	Market Street	San Pablo Avenue	2	832	873	0.52	0.55	B	B	No	no change
51st Street Eastbound											
Between	Shattuck Avenue	Telegraph Avenue	2	1,110	1,115	0.69	0.70	C	C	No	no change
Between	Telegraph Avenue	Broadway	2	1,244	1,248	0.78	0.78	D	D	No	no change
51st Street Westbound											
Between	Broadway	Telegraph Avenue	2	1,069	1,075	0.67	0.67	C	C	No	no change
Between	Telegraph Avenue	Shattuck Avenue	2	941	946	0.59	0.59	C	C	No	no change
Grand Avenue Eastbound											
Between	I-880	Mandela Parkway	2	3,998	3,999	2.50	2.50	F	F	No	no change
Between	Mandela Parkway	Adeline Street	3	2,832	2,833	1.18	1.18	F	F	No	no change
Between	Adeline Street	Market Street	3	2,899	2,901	1.21	1.21	F	F	No	no change
Between	Market Street	San Pablo Avenue	3	2,564	2,566	1.07	1.07	F	F	No	no change
Between	San Pablo Avenue	Telegraph Avenue	3	2,484	2,486	1.03	1.04	F	F	No	no change
Grand Avenue Westbound											
Between	Telegraph Avenue	San Pablo Avenue	3	1,466	1,468	0.61	0.61	C	C	No	no change
Between	San Pablo Avenue	Market Street	3	1,339	1,341	0.56	0.56	B	B	No	no change
Between	Market Street	Adeline Street	3	2,182	2,184	0.91	0.91	E	E	No	no change
Between	Adeline Street	Mandela Parkway	3	2,401	2,403	1.00	1.00	F	F	No	no change
Between	Mandela Parkway	I-880	2	2,808	2,810	1.75	1.76	F	F	No	no change
San Pablo Avenue Northbound											
Between	Market Street	MacArthur Blvd	3	1,738	1,758	0.72	0.73	C	C	No	no change
Between	MacArthur Blvd	40th Street	3	2,514	2,514	1.05	1.05	F	F	No	no change
Between	40th Street	Stanford Avenue	2	1,878	1,879	1.17	1.17	F	F	No	no change
Between	Stanford Avenue	Alcatraz Avenue	2	1,878	1,881	1.17	1.18	F	F	No	no change
Between	Alcatraz Avenue	Ashby Avenue	2	1,884	1,891	1.18	1.18	F	F	No	no change
San Pablo Avenue Northbound											
Between	Ashby Avenue	Alcatraz Avenue	2	1,962	1,970	1.23	1.23	F	F	No	no change
Between	Alcatraz Avenue	Stanford Avenue	2	1,726	1,729	1.08	1.08	F	F	No	no change
Between	Stanford Avenue	40th Street	2	1,861	1,873	1.16	1.17	F	F	No	no change
Between	40th Street	MacArthur Blvd	3	2,684	2,693	1.12	1.12	F	F	No	no change

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	MacArthur Blvd	Market Street	3	1,682	1,699	0.70	0.71	C	C	No	no change
Adeline Street Northbound											
Between	Grand Avenue	MacArthur Blvd	2	115	116	0.07	0.07	A	A	No	no change
Between	MacArthur Blvd	40th Street	2	302	322	0.19	0.20	A	A	No	no change
Between	40th Street	Market Street	2	640	666	0.40	0.42	B	B	No	no change
Between	Market Street	Stanford Avenue	2	875	875	0.55	0.55	B	B	No	no change
Between	Stanford Avenue	Shattuck Avenue	3	1,679	1,685	0.70	0.70	C	C	No	no change
Adeline Street Southbound											
Between	Shattuck Avenue	Stanford Avenue	3	1,799	1,806	0.75	0.75	C	C	No	no change
Between	Stanford Avenue	Market Street	2	1,228	1,228	0.77	0.77	D	D	No	no change
Between	Market Street	40th Street	2	746	756	0.47	0.47	B	B	No	no change
Between	40th Street	MacArthur Blvd	2	4	12	0.00	0.01	A	A	No	no change
Between	MacArthur Blvd	Grand Avenue	2	195	197	0.12	0.12	A	A	No	no change
Shattuck Avenue Northbound											
Between	Telegraph Avenue	52nd Street	2	298	299	0.19	0.19	A	A	No	no change
Between	52nd Street	Alcatraz Avenue	1	1,014	1,015	1.27	1.27	F	F	No	no change
Between	Alcatraz Avenue	Ashby Avenue	1	913	915	1.14	1.14	F	F	No	no change
Shattuck Avenue Southbound											
Between	Ashby Avenue	Alcatraz Avenue	1	990	993	1.24	1.24	F	F	No	no change
Between	Alcatraz Avenue	52nd Street	1	879	881	1.10	1.10	F	F	No	no change
Between	52nd Street	Telegraph Avenue	2	196	197	0.12	0.12	A	A	No	no change
Telegraph Avenue Northbound											
Between	51st Street	Alcatraz Avenue	2	1,895	1,896	1.18	1.18	F	F	No	no change
Between	Alcatraz Avenue	Ashby Avenue	2	1,817	1,819	1.14	1.14	F	F	No	no change
Telegraph Avenue Southbound											
Between	Ashby Avenue	Alcatraz Avenue	2	1,887	1,889	1.18	1.18	F	F	No	no change
Between	Alcatraz Avenue	51st Street	2	1,703	1,705	1.06	1.07	F	F	No	no change
Broadway Northbound											
Between	MacArthur Boulevard	40th Street	3	1,785	1,787	0.74	0.74	C	C	No	no change
Between	40th Street	51st Street	3	2,064	2,066	0.86	0.86	D	D	No	no change
Between	51st Street	College Avenue	3	2,194	2,196	0.91	0.92	E	E	No	no change
Between	College Avenue	SR 24	2	918	919	0.57	0.57	B	B	No	no change
Broadway Southbound											

BMSP Redevelopment EIR
MTS Roadway System Analysis Summary - 2035 PM

Link Location	Segment Limits		# Lanes	No Project Volume	With Project Volume	V/C Ratio - No Project	V/C Ratio - With Project	No Project LOS	With Project LOS	Change in V/C >3%	Change in LOS
Between	SR 24	College Avenue	2	1,126	1,128	0.70	0.70	C	C	No	no change
Between	College Avenue	51st Street	3	1,506	1,509	0.63	0.63	C	C	No	no change
Between	51st Street	40th Street	3	762	764	0.32	0.32	A	A	No	no change
Between	40th Street	MacArthur Boulevard	3	732	734	0.31	0.31	A	A	No	no change
College Avenue Northbound											
Between	Broadway	SR 24	1	425	426	0.53	0.53	B	B	No	no change
Between	SR 24	Claremont Avenue	1	639	640	0.80	0.80	D	D	No	no change
College Avenue Southbound											
Between	Claremont Avenue	SR 24	1	438	439	0.55	0.55	B	B	No	no change
Between	SR 24	Broadway	1	412	413	0.52	0.52	B	B	No	no change

Fehr & Peers, 2011.

Appendix E-9

Queuing Calculation Worksheets

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
Existing AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	331	641	57	344	151	569
v/c Ratio	0.39	0.70	0.23	0.26	0.42	0.44
Control Delay	11.5	17.2	18.3	15.1	21.0	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	17.2	18.3	15.1	21.0	17.5
Queue Length 50th (ft)	76	183	16	50	47	92
Queue Length 95th (ft)	131	302	43	78	97	133
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	844	914	246	1300	358	1306
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.70	0.23	0.26	0.42	0.44
Intersection Summary						

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing AM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	352	962	278	59	560	79	53	54	60	144	391
v/c Ratio	0.66	0.73	0.37	0.25	0.45	0.14	0.41	0.41	0.34	0.29	0.30
Control Delay	50.6	35.1	3.6	44.0	29.7	14.5	56.6	56.4	17.0	33.6	2.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	35.1	3.6	44.0	29.7	14.5	56.6	56.4	17.0	33.6	2.4
Queue Length 50th (ft)	122	331	0	37	157	17	38	38	0	81	7
Queue Length 95th (ft)	172	#504	59	76	228	55	77	77	39	136	26
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1313	750	274	1241	575	214	218	254	493	1323
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.73	0.37	0.22	0.45	0.14	0.25	0.25	0.24	0.29	0.30
Intersection Summary											

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
Existing AM Peak Hour

	↗	→	↘	←	↖	↑	↘	↓	↖
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	201	568	40	454	195	175	31	150	135
v/c Ratio	0.74	0.30	0.37	0.29	0.74	0.51	0.15	0.67	0.38
Control Delay	64.6	11.3	63.3	24.3	64.7	49.1	45.7	64.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	11.3	63.3	24.3	64.7	49.1	45.7	64.7	9.9
Queue Length 50th (ft)	151	77	30	113	146	127	21	113	0
Queue Length 95th (ft)	215	136	66	192	209	188	47	171	49
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1887	118	1549	384	375	398	357	449
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.30	0.34	0.29	0.51	0.47	0.08	0.42	0.30
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing AM Peak Hour

	↗	→	↘	←	↖	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	239	101	379	166	666	57	724
v/c Ratio	0.41	0.50	0.69	0.62	0.83	0.33	0.46	0.40
Control Delay	58.8	46.4	72.5	46.5	80.5	14.3	60.6	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	46.4	72.5	46.5	80.5	14.3	60.6	17.9
Queue Length 50th (ft)	33	83	69	134	116	127	39	158
Queue Length 95th (ft)	68	111	#133	170	#214	192	77	224
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	851	161	891	209	2009	161	1812
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.28	0.63	0.43	0.79	0.33	0.35	0.40
Intersection Summary								
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.								

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	36	171	58	286	109	316	36	563
v/c Ratio	0.17	0.26	0.25	0.35	0.37	0.20	0.17	0.48
Control Delay	30.9	25.4	30.3	22.7	29.3	11.8	30.8	18.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.9	25.4	30.3	22.7	29.3	11.8	30.8	18.3
Queue Length 50th (ft)	12	28	19	37	35	27	12	83
Queue Length 95th (ft)	44	66	61	102	95	81	44	162
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	756	1876	756	1882	756	2159	756	2145
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.09	0.08	0.15	0.14	0.15	0.05	0.26
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	6	18	387	722	161	31
v/c Ratio	0.04	0.12	0.35	0.66	0.12	0.02
Control Delay	34.2	32.2	19.0	23.9	14.4	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.2	32.2	19.0	23.9	14.4	14.8
Queue Length 50th (ft)	2	6	58	125	18	3
Queue Length 95th (ft)	15	27	112	220	48	14
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	739	743	1378	1360	1331	1413
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.28	0.53	0.12	0.02
Intersection Summary						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
Existing AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	340	12	288	303	332
v/c Ratio	0.14	0.61	0.03	0.35	0.63	0.40
Control Delay	12.6	15.6	7.5	8.9	16.5	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.6	15.6	7.5	8.9	16.5	9.8
Queue Length 50th (ft)	12	47	1	36	47	45
Queue Length 95th (ft)	41	137	9	100	146	121
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	988	936	744	1330	780	1360
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.36	0.02	0.22	0.39	0.24
Intersection Summary						

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	418	315	132	1504	51	1405
v/c Ratio	0.75	0.80	0.49	0.63	0.29	0.70
Control Delay	26.3	38.9	38.0	17.5	38.7	22.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.3	38.9	38.0	17.5	38.7	22.6
Queue Length 50th (ft)	131	130	55	191	22	199
Queue Length 95th (ft)	229	222	124	313	62	316
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	933	715	334	2653	201	2148
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.44	0.40	0.57	0.25	0.65
Intersection Summary						

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
Existing AM Peak Hour

	↗	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	76	279	18	456	180	47	219
v/c Ratio	0.36	0.13	0.11	0.24	0.59	0.25	0.65
Control Delay	24.0	5.6	21.9	8.1	25.5	20.6	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.0	5.6	21.9	8.1	25.5	20.6	25.2
Queue Length 50th (ft)	34	31	5	38	44	12	48
Queue Length 95th (ft)	m46	m48	19	70	92	35	#103
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	2196	248	1868	350	219	382
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.27	0.13	0.07	0.24	0.51	0.21	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	111	207	1103	747
v/c Ratio	0.44	0.55	0.45	0.31
Control Delay	52.3	51.6	7.8	7.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.3	51.6	7.8	7.1
Queue Length 50th (ft)	39	73	155	92
Queue Length 95th (ft)	67	109	m204	145
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	478	568	2427	2426
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.36	0.45	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	330	692	423	756
v/c Ratio	0.45	0.97	0.18	0.21
Control Delay	38.9	40.7	0.5	5.0
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	38.9	40.7	0.7	5.0
Queue Length 50th (ft)	102	162	3	53
Queue Length 95th (ft)	145	#417	4	64
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	862	748	2326	3639
Starvation Cap Reductn	0	0	1145	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.93	0.36	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing AM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	194	452	221	561
v/c Ratio	0.54	0.72	0.10	0.19
Control Delay	46.2	47.6	10.0	2.2
Queue Delay	0.0	0.0	0.0	0.3
Total Delay	46.2	47.6	10.0	2.4
Queue Length 50th (ft)	60	154	27	1
Queue Length 95th (ft)	95	199	52	87
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	889	1237	2107	2932
Starvation Cap Reductn	0	0	0	1619
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.37	0.10	0.43

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
Existing PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	458	651	55	778	149	623
v/c Ratio	0.52	0.72	0.25	0.59	0.94	0.47
Control Delay	14.8	18.5	21.1	22.1	86.1	20.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	18.5	21.1	22.1	86.1	20.1
Queue Length 50th (ft)	137	210	19	159	70	119
Queue Length 95th (ft)	218	343	48	215	#186	166
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	881	905	219	1320	159	1315
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.72	0.25	0.59	0.94	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing PM Peak Hour

	↖	→	↗	↖	←	↖	↖	↑	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	316	967	436	208	826	96	107	109	106	321	692
v/c Ratio	0.59	0.92	0.62	0.75	0.74	0.18	0.55	0.55	0.39	0.64	0.57
Control Delay	48.3	50.3	13.7	61.9	38.9	19.7	56.9	56.4	12.9	42.0	12.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	50.3	13.7	61.9	38.9	19.7	56.9	56.4	12.9	42.0	12.6
Queue Length 50th (ft)	108	353	123	142	278	31	74	76	0	200	106
Queue Length 95th (ft)	155	#498	267	#251	353	72	135	136	51	298	148
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1046	695	279	1121	523	216	222	294	503	1210
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.92	0.63	0.75	0.74	0.18	0.50	0.49	0.36	0.64	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
Existing PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	132	772	51	490	347	366	94	268	244
v/c Ratio	0.68	0.53	0.47	0.39	0.85	0.83	0.33	0.82	0.66
Control Delay	68.9	29.8	68.6	32.7	64.2	58.7	46.7	66.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	29.8	68.6	32.7	64.2	58.7	46.7	66.9	17.7
Queue Length 50th (ft)	100	238	39	150	259	268	65	201	16
Queue Length 95th (ft)	164	343	82	232	353	350	116	288	97
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1452	118	1254	494	601	309	406	410
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.53	0.43	0.39	0.70	0.61	0.30	0.66	0.60
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	655	95	320	111	902	90	860
v/c Ratio	0.78	0.81	0.66	0.40	0.66	0.53	0.63	0.55
Control Delay	81.6	47.1	71.0	35.5	66.4	22.6	68.3	24.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.6	47.1	71.0	35.5	66.4	22.6	68.3	24.9
Queue Length 50th (ft)	83	220	65	95	76	245	62	237
Queue Length 95th (ft)	#176	282	m#129	m135	134	320	115	318
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	898	161	910	205	1696	164	1572
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.73	0.59	0.35	0.54	0.53	0.55	0.55

Intersection Summary								
#	95th percentile volume exceeds capacity, queue may be longer.							
	Queue shown is maximum after two cycles.							
m	Volume for 95th percentile queue is metered by upstream signal.							

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	467	122	329	129	689	62	552
v/c Ratio	0.47	0.60	0.49	0.42	0.50	0.53	0.34	0.55
Control Delay	41.3	31.8	41.2	28.3	41.1	23.5	42.0	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	41.3	31.8	41.2	28.3	41.1	23.5	42.0	26.8
Queue Length 50th (ft)	49	101	52	66	55	136	27	111
Queue Length 95th (ft)	126	198	132	137	137	255	80	216
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	533	1329	533	1314	533	1628	533	1587
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.22	0.35	0.23	0.25	0.24	0.42	0.12	0.35
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	8	14	718	903	229	33
v/c Ratio	0.06	0.10	0.56	0.73	0.20	0.02
Control Delay	33.3	32.3	21.2	25.3	15.9	15.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	32.3	21.2	25.3	15.9	15.1
Queue Length 50th (ft)	3	5	123	170	32	4
Queue Length 95th (ft)	17	23	215	292	67	14
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	658	667	1274	1232	1150	1323
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.56	0.73	0.20	0.02
Intersection Summary						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
Existing PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	392	13	546	368	397
v/c Ratio	0.23	0.74	0.03	0.53	0.93	0.38
Control Delay	15.1	19.1	7.6	10.9	50.2	9.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.1	19.1	7.6	10.9	50.2	9.2
Queue Length 50th (ft)	25	63	2	97	98	64
Queue Length 95th (ft)	55	141	10	220	#298	148
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	721	739	511	1032	395	1046
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.53	0.03	0.53	0.93	0.38

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	507	264	211	1811	109	1607
v/c Ratio	0.87	0.66	0.60	0.81	0.57	0.99
Control Delay	43.7	34.6	42.0	28.4	53.2	53.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.7	34.6	42.0	28.4	53.2	53.0
Queue Length 50th (ft)	260	130	117	379	65	~409
Queue Length 95th (ft)	#431	219	196	#500	123	#524
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	690	482	421	2225	225	1628
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.73	0.55	0.50	0.81	0.48	0.99

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
Existing PM Peak Hour

	↗	→	↖	←	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	98	686	31	467	229	52	200
v/c Ratio	0.43	0.33	0.17	0.25	0.68	0.32	0.55
Control Delay	25.4	8.1	22.4	8.3	29.6	23.1	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.4	8.1	22.4	8.3	29.6	23.1	20.3
Queue Length 50th (ft)	43	85	9	41	57	13	40
Queue Length 95th (ft)	m59	m132	27	71	#133	39	90
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	2053	253	1860	366	178	393
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.34	0.33	0.12	0.25	0.63	0.29	0.51

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	209	187	1214	1312
v/c Ratio	0.60	0.52	0.51	0.56
Control Delay	51.7	50.6	6.3	11.4
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	51.7	50.6	6.3	11.4
Queue Length 50th (ft)	72	65	109	231
Queue Length 95th (ft)	108	99	161	352
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	471	578	2358	2339
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.44	0.32	0.51	0.56

Intersection Summary

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	257	420	746	1202
v/c Ratio	0.45	0.89	0.30	0.31
Control Delay	42.6	37.9	0.3	4.2
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	42.6	37.9	0.5	4.2
Queue Length 50th (ft)	87	117	1	75
Queue Length 95th (ft)	115	225	1	102
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	863	579	2452	3878
Starvation Cap Reductn	0	0	928	0
Spillback Cap Reductn	0	0	0	519
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.73	0.49	0.36
Intersection Summary				

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing PM Peak Hour

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	530	843	699	604
v/c Ratio	0.76	0.82	0.51	0.24
Control Delay	47.4	42.4	29.7	5.5
Queue Delay	0.0	0.0	11.4	0.4
Total Delay	47.4	42.4	41.1	5.9
Queue Length 50th (ft)	180	285	240	66
Queue Length 95th (ft)	227	333	327	84
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	905	1243	1381	2567
Starvation Cap Reductn	0	0	657	1391
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.68	0.97	0.51
Intersection Summary				

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	333	642	62	361	151	574
v/c Ratio	0.39	0.70	0.26	0.28	0.43	0.44
Control Delay	11.5	17.3	18.8	15.2	21.4	17.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.5	17.3	18.8	15.2	21.4	17.5
Queue Length 50th (ft)	77	184	18	52	48	93
Queue Length 95th (ft)	132	304	47	82	98	135
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	844	913	243	1300	348	1306
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.70	0.26	0.28	0.43	0.44
Intersection Summary						

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	352	976	278	63	593	81	53	54	61	145	391
v/c Ratio	0.66	0.74	0.37	0.27	0.48	0.14	0.41	0.41	0.34	0.29	0.30
Control Delay	50.6	35.4	3.6	44.4	30.1	15.2	56.6	56.4	16.9	33.6	2.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	50.6	35.4	3.6	44.4	30.1	15.2	56.6	56.4	16.9	33.6	2.7
Queue Length 50th (ft)	122	338	0	40	168	19	38	38	0	81	9
Queue Length 95th (ft)	172	#515	59	81	242	57	77	77	39	137	28
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1313	750	274	1241	574	214	218	255	493	1315
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.74	0.37	0.23	0.48	0.14	0.25	0.25	0.24	0.29	0.30
Intersection Summary											
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.											

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	201	585	40	496	195	175	31	150	135
v/c Ratio	0.74	0.31	0.37	0.32	0.74	0.51	0.15	0.67	0.38
Control Delay	64.6	11.8	63.3	24.8	64.7	49.1	45.7	64.7	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.6	11.8	63.3	24.8	64.7	49.1	45.7	64.7	9.9
Queue Length 50th (ft)	151	84	30	126	146	127	21	113	0
Queue Length 95th (ft)	215	145	66	212	209	188	47	171	49
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1888	118	1550	384	375	398	357	449
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.31	0.34	0.32	0.51	0.47	0.08	0.42	0.30
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	48	256	121	426	166	666	59	724
v/c Ratio	0.41	0.50	0.79	0.65	0.83	0.34	0.48	0.41
Control Delay	58.8	45.3	81.7	45.5	80.5	15.3	61.1	18.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.8	45.3	81.7	45.5	80.5	15.3	61.1	18.9
Queue Length 50th (ft)	33	88	83	151	116	132	41	163
Queue Length 95th (ft)	68	115	#169	187	#214	198	80	231
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	854	161	890	209	1958	161	1763
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.30	0.75	0.48	0.79	0.34	0.37	0.41
Intersection Summary								
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.								

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	42	196	60	287	122	316	36	572
v/c Ratio	0.20	0.30	0.26	0.42	0.40	0.19	0.17	0.48
Control Delay	32.2	24.9	31.7	25.9	30.5	11.9	32.3	18.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	32.2	24.9	31.7	25.9	30.5	11.9	32.3	18.8
Queue Length 50th (ft)	15	32	21	50	42	29	13	91
Queue Length 95th (ft)	51	75	64	107	107	82	45	170
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	727	1778	727	1812	727	2147	727	2098
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.11	0.08	0.16	0.17	0.15	0.05	0.27
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	6	18	399	754	169	31
v/c Ratio	0.04	0.12	0.35	0.67	0.24	0.04
Control Delay	34.4	32.1	19.0	24.0	16.3	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	32.1	19.0	24.0	16.3	15.2
Queue Length 50th (ft)	2	6	61	132	42	7
Queue Length 95th (ft)	15	27	115	232	107	27
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	726	727	1338	1332	710	759
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.30	0.57	0.24	0.04
Intersection Summary						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	77	351	12	288	331	332
v/c Ratio	0.14	0.63	0.03	0.34	0.68	0.39
Control Delay	12.9	16.3	7.5	8.8	18.0	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.9	16.3	7.5	8.8	18.0	9.7
Queue Length 50th (ft)	13	51	1	37	55	47
Queue Length 95th (ft)	41	141	9	100	167	121
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	958	913	723	1298	761	1327
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.38	0.02	0.22	0.43	0.25
Intersection Summary						

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	445	320	137	1504	51	1405
v/c Ratio	0.77	0.77	0.52	0.64	0.29	0.71
Control Delay	27.6	35.6	40.0	18.7	40.0	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.6	35.6	40.0	18.7	40.0	24.0
Queue Length 50th (ft)	149	133	60	202	23	208
Queue Length 95th (ft)	252	223	132	331	63	#339
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	917	705	327	2602	196	2104
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.45	0.42	0.58	0.26	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	↗	→	↖	←	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	79	279	18	456	191	47	234
v/c Ratio	0.37	0.13	0.11	0.25	0.62	0.25	0.68
Control Delay	24.2	5.6	21.9	8.2	26.7	20.7	27.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.2	5.6	21.9	8.2	26.7	20.7	27.1
Queue Length 50th (ft)	35	31	5	39	47	12	53
Queue Length 95th (ft)	m47	m48	19	70	99	35	#126
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	2181	248	1847	346	210	382
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.28	0.13	0.07	0.25	0.55	0.22	0.61

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	111	219	1114	760
v/c Ratio	0.44	0.56	0.46	0.31
Control Delay	52.4	51.5	8.1	7.3
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	52.4	51.5	8.1	7.3
Queue Length 50th (ft)	39	77	160	95
Queue Length 95th (ft)	67	114	m205	151
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	476	567	2408	2414
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.23	0.39	0.46	0.31

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	330	696	430	782
v/c Ratio	0.43	0.97	0.19	0.22
Control Delay	38.2	41.3	0.5	5.2
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	38.2	41.3	0.7	5.2
Queue Length 50th (ft)	102	173	3	54
Queue Length 95th (ft)	145	#430	4	66
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	862	744	2299	3601
Starvation Cap Reductn	0	0	1136	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.38	0.94	0.37	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project AM Peak Hour

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	194	459	227	580
v/c Ratio	0.54	0.72	0.11	0.20
Control Delay	46.2	47.7	10.6	2.5
Queue Delay	0.0	0.0	0.0	0.3
Total Delay	46.2	47.7	10.6	2.7
Queue Length 50th (ft)	60	157	28	1
Queue Length 95th (ft)	95	202	54	93
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	889	1237	2100	2932
Starvation Cap Reductn	0	0	0	1592
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.22	0.37	0.11	0.43

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	464	653	60	790	149	634
v/c Ratio	0.53	0.72	0.28	0.60	0.96	0.48
Control Delay	14.9	18.8	21.9	22.3	92.9	20.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	18.8	21.9	22.3	92.9	20.2
Queue Length 50th (ft)	139	211	21	162	71	122
Queue Length 95th (ft)	222	346	52	220	#188	170
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	880	901	215	1320	155	1315
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.72	0.28	0.60	0.96	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	↗	→	↘	↖	←	↗	↖	↑	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	316	987	443	210	849	98	107	109	108	324	692
v/c Ratio	0.59	0.95	0.63	0.75	0.76	0.19	0.55	0.54	0.39	0.65	0.57
Control Delay	48.3	54.2	14.2	62.4	39.9	19.9	56.3	55.8	12.7	42.3	12.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.3	54.2	14.2	62.4	39.9	19.9	56.3	55.8	12.7	42.3	12.7
Queue Length 50th (ft)	108	365	131	144	288	32	74	76	0	202	107
Queue Length 95th (ft)	155	#517	277	#253	365	74	135	136	51	301	149
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1041	700	279	1114	520	216	222	296	502	1208
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.95	0.63	0.75	0.76	0.19	0.50	0.49	0.36	0.65	0.57

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	132	805	51	518	347	366	94	268	244
v/c Ratio	0.68	0.55	0.47	0.41	0.85	0.83	0.33	0.82	0.66
Control Delay	68.9	30.3	68.6	33.1	64.2	58.7	46.7	66.9	17.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	68.9	30.3	68.6	33.1	64.2	58.7	46.7	66.9	17.7
Queue Length 50th (ft)	100	252	39	161	259	268	65	201	16
Queue Length 95th (ft)	164	361	82	247	353	350	116	288	97
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1455	118	1255	494	601	309	406	410
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.55	0.43	0.41	0.70	0.61	0.30	0.66	0.60
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	686	107	349	111	902	93	860
v/c Ratio	0.78	0.82	0.72	0.42	0.66	0.54	0.65	0.56
Control Delay	81.6	47.6	75.8	35.0	66.4	23.3	69.1	25.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	81.6	47.6	75.8	35.0	66.4	23.3	69.1	25.5
Queue Length 50th (ft)	83	231	74	104	76	250	64	241
Queue Length 95th (ft)	#176	298	m#151	m146	134	320	#121	318
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	899	161	910	205	1661	164	1540
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.76	0.66	0.38	0.54	0.54	0.57	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	119	485	125	331	157	689	62	563
v/c Ratio	0.51	0.64	0.52	0.37	0.58	0.55	0.36	0.61
Control Delay	43.9	33.9	43.8	28.3	42.9	24.3	44.4	29.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.9	33.9	43.8	28.3	42.9	24.3	44.4	29.5
Queue Length 50th (ft)	53	109	55	68	69	139	28	118
Queue Length 95th (ft)	135	213	140	143	166	261	83	233
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	484	1204	484	1198	484	1497	484	1443
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.40	0.26	0.28	0.32	0.46	0.13	0.39
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	8	14	741	931	245	33
v/c Ratio	0.06	0.10	0.59	0.76	0.39	0.05
Control Delay	33.3	32.3	21.8	26.2	19.3	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.3	32.3	21.8	26.2	19.3	15.5
Queue Length 50th (ft)	3	5	128	177	71	8
Queue Length 95th (ft)	17	23	225	#307	157	29
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	655	661	1252	1231	621	725
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.02	0.59	0.76	0.39	0.05

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	109	415	13	546	388	397
v/c Ratio	0.23	0.75	0.03	0.53	1.00	0.38
Control Delay	14.9	19.3	7.8	11.3	67.3	9.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.9	19.3	7.8	11.3	67.3	9.5
Queue Length 50th (ft)	25	65	2	99	~119	66
Queue Length 95th (ft)	55	149	10	220	#319	148
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	715	742	505	1023	387	1037
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.56	0.03	0.53	1.00	0.38

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	526	276	222	1811	109	1607
v/c Ratio	0.89	0.67	0.63	0.82	0.57	1.00
Control Delay	45.2	35.1	43.7	29.2	53.9	56.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	45.2	35.1	43.7	29.2	53.9	56.7
Queue Length 50th (ft)	276	138	128	393	67	~426
Queue Length 95th (ft)	#459	231	206	#500	123	#524
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	683	479	416	2200	222	1606
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.58	0.53	0.82	0.49	1.00

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	↗	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	104	686	31	467	251	52	211
v/c Ratio	0.45	0.34	0.17	0.27	0.73	0.34	0.57
Control Delay	25.9	8.2	22.4	9.2	32.7	24.1	20.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	25.9	8.2	22.4	9.2	32.7	24.1	20.9
Queue Length 50th (ft)	46	85	9	41	65	13	44
Queue Length 95th (ft)	m63	m132	27	71	#152	39	96
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	2033	253	1699	366	163	393
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.34	0.12	0.27	0.69	0.32	0.54

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	209	195	1235	1322
v/c Ratio	0.60	0.53	0.53	0.57
Control Delay	51.6	50.7	6.5	11.7
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	51.6	50.7	6.5	11.7
Queue Length 50th (ft)	72	67	114	235
Queue Length 95th (ft)	108	102	166	360
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	469	578	2343	2330
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.45	0.34	0.53	0.57

Intersection Summary

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	257	427	760	1219
v/c Ratio	0.43	0.90	0.31	0.32
Control Delay	41.8	40.2	0.3	4.4
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	41.8	40.2	0.5	4.4
Queue Length 50th (ft)	85	127	1	80
Queue Length 95th (ft)	115	239	1	104
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	863	574	2431	3844
Starvation Cap Reductn	0	0	894	0
Spillback Cap Reductn	0	0	0	522
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.30	0.74	0.49	0.37
Intersection Summary				

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
Existing Plus Project PM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	530	858	703	618
v/c Ratio	0.76	0.82	0.51	0.24
Control Delay	47.4	42.3	30.1	5.5
Queue Delay	0.0	0.0	13.9	0.4
Total Delay	47.4	42.3	44.0	5.9
Queue Length 50th (ft)	180	291	244	68
Queue Length 95th (ft)	227	338	330	87
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	905	1243	1368	2567
Starvation Cap Reductn	0	0	651	1372
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.59	0.69	0.98	0.52
Intersection Summary				

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	358	685	65	370	163	598
v/c Ratio	0.43	0.76	0.28	0.28	0.48	0.46
Control Delay	11.9	19.4	19.5	15.4	22.6	17.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.9	19.4	19.5	15.4	22.6	17.8
Queue Length 50th (ft)	84	206	19	54	52	98
Queue Length 95th (ft)	144	342	49	84	108	141
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	838	907	233	1302	342	1307
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.76	0.28	0.28	0.48	0.46
Intersection Summary						

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	362	981	306	64	596	85	58	59	64	160	436
v/c Ratio	0.68	0.75	0.40	0.27	0.48	0.15	0.44	0.44	0.35	0.32	0.33
Control Delay	51.3	35.8	3.7	44.5	30.3	15.3	57.5	57.3	16.7	34.2	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	35.8	3.7	44.5	30.3	15.3	57.5	57.3	16.7	34.2	4.1
Queue Length 50th (ft)	126	343	0	40	171	20	42	43	0	90	21
Queue Length 95th (ft)	176	#520	62	81	244	60	83	83	40	150	41
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1307	764	274	1235	572	214	218	257	493	1303
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.75	0.40	0.23	0.48	0.15	0.27	0.27	0.25	0.32	0.33
Intersection Summary											
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.											

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	216	591	45	488	205	193	57	170	148
v/c Ratio	0.76	0.32	0.41	0.33	0.75	0.63	0.24	0.70	0.39
Control Delay	64.4	12.5	65.4	26.9	64.5	55.9	45.7	64.6	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	12.5	65.4	26.9	64.5	55.9	45.7	64.6	9.4
Queue Length 50th (ft)	162	87	34	130	154	141	40	128	0
Queue Length 95th (ft)	226	151	71	217	217	207	73	188	51
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1837	118	1464	384	350	398	357	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.32	0.38	0.33	0.53	0.55	0.14	0.48	0.32
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	57	287	103	402	172	735	57	793
v/c Ratio	0.46	0.56	0.70	0.63	0.86	0.37	0.46	0.45
Control Delay	60.6	46.8	73.2	46.0	83.7	15.4	60.6	19.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	46.8	73.2	46.0	83.7	15.4	60.6	19.3
Queue Length 50th (ft)	39	100	70	142	121	148	39	183
Queue Length 95th (ft)	77	130	#136	178	#225	218	77	253
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	854	161	892	209	1972	161	1772
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.34	0.64	0.45	0.82	0.37	0.35	0.45

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	41	276	71	306	112	357	41	602
v/c Ratio	0.21	0.43	0.31	0.38	0.40	0.25	0.21	0.51
Control Delay	33.2	22.4	32.9	25.1	32.4	14.2	33.1	19.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	33.2	22.4	32.9	25.1	32.4	14.2	33.1	19.7
Queue Length 50th (ft)	14	36	25	54	39	48	15	97
Queue Length 95th (ft)	50	88	73	114	101	94	50	178
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	683	1636	683	1699	683	2012	683	1977
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.17	0.10	0.18	0.16	0.18	0.06	0.30
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	←	↑	↓	↗	↙
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	455	799	233	66
v/c Ratio	0.33	0.33	0.43	0.74	0.20	0.06
Control Delay	34.7	34.7	22.0	28.3	17.7	15.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.7	34.7	22.0	28.3	17.7	15.2
Queue Length 50th (ft)	22	22	92	186	41	9
Queue Length 95th (ft)	57	57	141	267	71	23
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	620	620	1142	1164	1145	1118
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.40	0.69	0.20	0.06
Intersection Summary						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	366	11	300	311	367
v/c Ratio	0.17	0.65	0.03	0.36	0.65	0.44
Control Delay	13.0	16.7	7.7	9.2	17.4	10.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	16.7	7.7	9.2	17.4	10.3
Queue Length 50th (ft)	14	54	1	40	52	53
Queue Length 95th (ft)	46	149	9	105	154	134
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	898	913	673	1300	752	1319
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.40	0.02	0.23	0.41	0.28
Intersection Summary						

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	437	340	138	1543	53	1468
v/c Ratio	0.76	0.84	0.53	0.65	0.31	0.74
Control Delay	26.6	42.1	40.1	18.9	40.3	24.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.6	42.1	40.1	18.9	40.3	24.8
Queue Length 50th (ft)	143	145	60	211	24	223
Queue Length 95th (ft)	245	246	132	340	65	#380
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	900	671	322	2558	193	2066
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.51	0.43	0.60	0.27	0.71
Intersection Summary						
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.						

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	↗	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	88	341	22	528	187	55	242
v/c Ratio	0.40	0.16	0.13	0.29	0.59	0.29	0.70
Control Delay	24.7	5.9	22.1	8.5	25.4	21.4	28.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.7	5.9	22.1	8.5	25.4	21.4	28.5
Queue Length 50th (ft)	39	39	6	47	46	14	56
Queue Length 95th (ft)	m53	m59	22	81	96	39	#134
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	2175	248	1835	351	213	381
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.16	0.09	0.29	0.53	0.26	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	124	228	1188	833
v/c Ratio	0.47	0.58	0.50	0.35
Control Delay	50.5	51.1	8.9	7.9
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.5	51.1	8.9	7.9
Queue Length 50th (ft)	42	80	185	110
Queue Length 95th (ft)	71	117	m213	174
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	472	566	2392	2395
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.40	0.50	0.35

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	341	714	484	846
v/c Ratio	0.40	1.01	0.22	0.24
Control Delay	36.3	52.3	0.6	5.8
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	36.3	52.3	0.9	5.8
Queue Length 50th (ft)	106	~246	3	59
Queue Length 95th (ft)	150	#509	4	71
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	862	710	2160	3459
Starvation Cap Reductn	0	0	1030	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	1.01	0.43	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project AM Peak Hour

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	211	506	232	632
v/c Ratio	0.56	0.74	0.11	0.22
Control Delay	46.2	47.2	10.9	2.1
Queue Delay	0.0	0.0	0.0	0.3
Total Delay	46.2	47.2	10.9	2.3
Queue Length 50th (ft)	65	174	30	1
Queue Length 95th (ft)	102	219	60	95
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	889	1238	2036	2915
Starvation Cap Reductn	0	0	0	1506
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.41	0.11	0.45

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	554	696	54	816	152	673
v/c Ratio	0.66	0.78	0.27	0.62	1.04	0.51
Control Delay	18.0	21.5	22.1	22.7	116.3	20.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.0	21.5	22.1	22.7	116.3	20.7
Queue Length 50th (ft)	183	240	18	169	~83	132
Queue Length 95th (ft)	295	393	48	228	#196	182
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	845	893	198	1321	146	1315
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.78	0.27	0.62	1.04	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

											
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	323	1024	455	240	844	104	113	116	115	354	760
v/c Ratio	0.60	0.99	0.66	0.86	0.77	0.20	0.56	0.56	0.40	0.71	0.63
Control Delay	48.7	63.3	16.8	73.9	40.3	19.9	56.4	56.1	12.5	44.8	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	63.3	16.8	73.9	40.3	19.9	56.4	56.1	12.5	44.8	13.9
Queue Length 50th (ft)	110	~393	163	167	286	35	80	82	0	225	125
Queue Length 95th (ft)	158	#543	323	#306	363	78	142	144	52	332	172
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1030	686	279	1099	515	216	222	302	502	1205
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.99	0.66	0.86	0.77	0.20	0.52	0.52	0.38	0.71	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	828	54	549	366	430	97	301	258
v/c Ratio	0.70	0.60	0.50	0.47	0.87	0.87	0.36	0.86	0.71
Control Delay	69.7	32.7	69.9	35.6	64.9	59.6	48.6	70.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	32.7	69.9	35.6	64.9	59.6	48.6	70.0	23.0
Queue Length 50th (ft)	106	276	41	182	272	315	67	225	36
Queue Length 95th (ft)	172	374	85	262	374	411	122	#343	124
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1385	118	1167	494	601	299	406	398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.60	0.46	0.47	0.74	0.72	0.32	0.74	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	143	704	102	357	133	949	92	959
v/c Ratio	0.89	0.84	0.70	0.44	0.73	0.57	0.64	0.64
Control Delay	96.9	48.0	73.7	35.6	71.2	24.0	68.8	27.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.9	48.0	73.7	35.6	71.2	24.0	68.8	27.7
Queue Length 50th (ft)	102	235	70	106	91	271	63	290
Queue Length 95th (ft)	#220	306	m#141	m150	#170	342	118	366
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	899	161	909	205	1657	164	1508
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.78	0.63	0.39	0.65	0.57	0.56	0.64

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	129	742	129	355	129	721	86	602
v/c Ratio	0.57	0.78	0.57	0.38	0.57	0.63	0.47	0.63
Control Delay	48.1	34.5	48.1	28.4	48.1	29.4	48.6	31.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.1	34.5	48.1	28.4	48.1	29.4	48.6	31.8
Queue Length 50th (ft)	69	175	69	80	69	184	46	152
Queue Length 95th (ft)	140	#334	140	150	140	284	104	243
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	428	1061	428	1055	428	1299	428	1273
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.70	0.30	0.34	0.30	0.56	0.20	0.47

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	769	978	264	77
v/c Ratio	0.33	0.34	0.73	0.87	0.25	0.07
Control Delay	35.0	35.0	28.3	35.7	18.5	15.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.0	28.3	35.7	18.5	15.5
Queue Length 50th (ft)	22	22	181	248	47	11
Queue Length 95th (ft)	57	57	263	#391	81	26
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	604	602	1053	1119	1049	1102
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.73	0.87	0.25	0.07

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	121	396	22	582	385	429
v/c Ratio	0.26	0.74	0.05	0.57	1.07	0.42
Control Delay	15.7	19.4	7.9	11.8	88.4	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.7	19.4	7.9	11.8	88.4	9.8
Queue Length 50th (ft)	28	66	3	107	~146	71
Queue Length 95th (ft)	61	146	14	242	#326	162
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	688	729	477	1022	360	1033
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.54	0.05	0.57	1.07	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	516	280	215	1839	118	1624
v/c Ratio	0.89	0.76	0.57	0.87	0.62	1.03
Control Delay	46.4	41.7	40.6	32.1	55.9	64.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	46.4	41.7	40.6	32.1	55.9	64.0
Queue Length 50th (ft)	268	145	122	396	72	~427
Queue Length 95th (ft)	#445	246	200	#514	131	#532
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	672	433	409	2106	219	1579
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.77	0.65	0.53	0.87	0.54	1.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	↗	→	↘	←	↑	↖	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	108	752	32	516	269	54	226
v/c Ratio	0.46	0.37	0.18	0.31	0.77	0.36	0.60
Control Delay	26.4	8.4	22.4	9.5	35.9	24.8	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.4	8.4	22.4	9.5	35.9	24.8	22.0
Queue Length 50th (ft)	46	91	9	46	69	14	48
Queue Length 95th (ft)	m65	m149	28	79	#167	40	103
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	2024	253	1689	365	159	393
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.37	0.13	0.31	0.74	0.34	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	226	206	1289	1391
v/c Ratio	0.62	0.55	0.56	0.61
Control Delay	52.1	50.9	7.4	12.8
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	52.1	50.9	7.5	12.8
Queue Length 50th (ft)	79	72	131	265
Queue Length 95th (ft)	115	107	183	401
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	466	579	2316	2296
Starvation Cap Reductn	0	0	199	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.48	0.36	0.61	0.61

Intersection Summary

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	286	449	796	1265
v/c Ratio	0.43	0.92	0.34	0.34
Control Delay	40.0	45.2	0.3	5.3
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	40.0	45.2	0.6	5.4
Queue Length 50th (ft)	92	156	1	84
Queue Length 95th (ft)	127	#311	1	121
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	864	561	2340	3737
Starvation Cap Reductn	0	0	784	0
Spillback Cap Reductn	2	0	0	553
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.80	0.51	0.40

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 No Project PM Peak Hour

	→	↑	↘	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	560	903	731	645
v/c Ratio	0.77	0.83	0.56	0.25
Control Delay	47.0	42.3	32.1	5.6
Queue Delay	0.0	0.0	38.0	0.4
Total Delay	47.0	42.3	70.2	6.0
Queue Length 50th (ft)	190	305	263	71
Queue Length 95th (ft)	237	361	343	98
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	905	1242	1302	2537
Starvation Cap Reductn	0	0	615	1315
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.73	1.06	0.53

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	361	686	71	387	163	604
v/c Ratio	0.43	0.76	0.31	0.30	0.49	0.46
Control Delay	12.0	19.5	20.3	15.6	23.1	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	12.0	19.5	20.3	15.6	23.1	17.9
Queue Length 50th (ft)	84	206	21	57	53	100
Queue Length 95th (ft)	146	344	54	88	109	143
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	838	906	230	1301	333	1306
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.43	0.76	0.31	0.30	0.49	0.46
Intersection Summary						

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	362	995	306	68	629	87	58	59	65	161	436
v/c Ratio	0.68	0.76	0.40	0.29	0.51	0.15	0.44	0.44	0.35	0.33	0.34
Control Delay	51.3	36.2	3.7	44.9	30.8	15.7	57.5	57.3	16.6	34.2	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	51.3	36.2	3.7	44.9	30.8	15.7	57.5	57.3	16.6	34.2	4.4
Queue Length 50th (ft)	126	350	0	43	182	21	42	43	0	91	24
Queue Length 95th (ft)	176	#532	62	86	259	62	83	83	40	150	43
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1307	764	274	1235	572	214	218	258	493	1295
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.76	0.40	0.25	0.51	0.15	0.27	0.27	0.25	0.33	0.34
Intersection Summary											
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.											

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	216	608	45	530	205	193	57	170	148
v/c Ratio	0.76	0.33	0.41	0.36	0.75	0.63	0.24	0.70	0.39
Control Delay	64.4	13.0	65.4	27.3	64.5	55.9	45.7	64.6	9.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.4	13.0	65.4	27.3	64.5	55.9	45.7	64.6	9.4
Queue Length 50th (ft)	162	93	34	143	154	141	40	128	0
Queue Length 95th (ft)	226	160	71	237	217	207	73	188	51
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1837	118	1466	384	350	398	357	459
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.56	0.33	0.38	0.36	0.53	0.55	0.14	0.48	0.32
Intersection Summary									

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	57	304	123	450	172	735	59	793
v/c Ratio	0.46	0.55	0.80	0.65	0.86	0.38	0.48	0.46
Control Delay	60.6	45.2	82.8	44.7	83.7	16.5	61.1	20.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	60.6	45.2	82.8	44.7	83.7	16.5	61.1	20.6
Queue Length 50th (ft)	39	105	84	159	121	153	41	188
Queue Length 95th (ft)	77	133	#172	194	#225	228	80	264
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	857	161	892	209	1915	161	1717
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.35	0.35	0.76	0.50	0.82	0.38	0.37	0.46
Intersection Summary								
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.								

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

								
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	47	300	73	307	126	357	41	612
v/c Ratio	0.23	0.46	0.32	0.39	0.43	0.24	0.21	0.52
Control Delay	34.4	21.6	34.0	26.0	33.2	14.2	34.3	20.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.4	21.6	34.0	26.0	33.2	14.2	34.3	20.3
Queue Length 50th (ft)	17	37	26	56	45	50	15	101
Queue Length 95th (ft)	56	92	77	118	115	96	51	188
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	670	1608	670	1667	670	1994	670	1944
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.19	0.11	0.18	0.19	0.18	0.06	0.31
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

						
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	467	832	241	66
v/c Ratio	0.33	0.33	0.45	0.75	0.39	0.11
Control Delay	34.9	34.9	22.4	28.7	21.3	16.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	34.9	34.9	22.4	28.7	21.3	16.1
Queue Length 50th (ft)	22	22	96	196	89	18
Queue Length 95th (ft)	57	57	146	281	160	47
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	610	611	1073	1150	618	605
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.44	0.72	0.39	0.11
Intersection Summary						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	89	377	11	300	339	367
v/c Ratio	0.17	0.67	0.02	0.35	0.69	0.42
Control Delay	13.2	17.5	7.7	9.1	18.7	10.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.2	17.5	7.7	9.1	18.7	10.1
Queue Length 50th (ft)	16	62	1	42	62	56
Queue Length 95th (ft)	46	153	9	105	175	134
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	863	876	647	1253	724	1271
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.43	0.02	0.24	0.47	0.29
Intersection Summary						

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	463	346	144	1543	53	1468
v/c Ratio	0.81	0.90	0.58	0.63	0.33	0.79
Control Delay	30.5	50.8	42.7	19.1	41.7	27.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.5	50.8	42.7	19.1	41.7	27.3
Queue Length 50th (ft)	161	152	64	216	24	227
Queue Length 95th (ft)	269	259	139	347	66	#390
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	843	598	299	2434	179	1918
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.55	0.58	0.48	0.63	0.30	0.77
Intersection Summary						

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	↗	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	91	341	22	528	198	55	257
v/c Ratio	0.41	0.16	0.13	0.29	0.63	0.29	0.73
Control Delay	24.9	5.9	22.1	8.6	27.5	21.6	30.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	24.9	5.9	22.1	8.6	27.5	21.6	30.6
Queue Length 50th (ft)	40	39	6	47	50	14	61
Queue Length 95th (ft)	m55	m59	22	81	#109	39	#148
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	2159	248	1814	340	205	380
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.16	0.09	0.29	0.58	0.27	0.68

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	124	240	1198	847
v/c Ratio	0.48	0.59	0.50	0.36
Control Delay	50.5	51.3	9.2	8.1
Queue Delay	0.0	0.0	0.0	0.0
Total Delay	50.5	51.3	9.2	8.1
Queue Length 50th (ft)	42	84	188	114
Queue Length 95th (ft)	71	122	m215	180
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	470	565	2376	2382
Starvation Cap Reductn	0	0	0	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.26	0.42	0.50	0.36

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	341	718	491	873
v/c Ratio	0.40	1.02	0.23	0.25
Control Delay	36.3	55.7	0.6	5.8
Queue Delay	0.0	0.0	0.3	0.0
Total Delay	36.3	55.7	0.9	5.8
Queue Length 50th (ft)	106	~270	3	61
Queue Length 95th (ft)	150	#522	4	72
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	862	706	2157	3459
Starvation Cap Reductn	0	0	1020	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.40	1.02	0.43	0.25

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project AM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	211	513	238	651
v/c Ratio	0.56	0.74	0.12	0.22
Control Delay	46.2	47.2	11.2	2.1
Queue Delay	0.0	0.0	0.0	0.3
Total Delay	46.2	47.2	11.2	2.4
Queue Length 50th (ft)	65	176	31	1
Queue Length 95th (ft)	102	221	61	101
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	889	1239	2029	2915
Starvation Cap Reductn	0	0	0	1479
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.24	0.41	0.12	0.45

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	560	699	59	827	152	684
v/c Ratio	0.66	0.79	0.30	0.63	1.06	0.52
Control Delay	18.2	22.1	23.1	22.8	123.4	20.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	18.2	22.1	23.1	22.8	123.4	20.8
Queue Length 50th (ft)	186	244	20	172	~85	134
Queue Length 95th (ft)	299	#407	53	232	#198	185
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	846	887	194	1321	143	1317
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.79	0.30	0.63	1.06	0.52

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↗	→	↘	↖	←	↗	↖	↑	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	323	1043	463	242	867	106	113	116	117	357	760
v/c Ratio	0.60	1.02	0.67	0.87	0.79	0.21	0.55	0.55	0.40	0.71	0.63
Control Delay	48.7	69.0	17.5	74.9	41.4	20.1	56.2	55.9	12.3	45.1	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.7	69.0	17.5	74.9	41.4	20.1	56.2	55.9	12.3	45.1	13.9
Queue Length 50th (ft)	110	~422	172	169	296	36	80	82	0	228	127
Queue Length 95th (ft)	158	#562	336	#309	375	80	142	144	53	336	173
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1026	686	279	1097	514	216	222	304	502	1203
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.60	1.02	0.67	0.87	0.79	0.21	0.52	0.52	0.38	0.71	0.63

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	140	862	54	577	366	430	97	301	258
v/c Ratio	0.70	0.62	0.50	0.49	0.87	0.87	0.36	0.86	0.71
Control Delay	69.7	33.4	69.9	36.1	64.9	59.6	48.6	70.0	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.7	33.4	69.9	36.1	64.9	59.6	48.6	70.0	23.0
Queue Length 50th (ft)	106	292	41	193	272	315	67	225	36
Queue Length 95th (ft)	172	394	85	276	374	411	122	#343	124
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1386	118	1167	494	601	299	406	398
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.62	0.46	0.49	0.74	0.72	0.32	0.74	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	143	736	114	387	133	949	95	959
v/c Ratio	0.89	0.86	0.75	0.46	0.73	0.61	0.66	0.65
Control Delay	96.9	49.6	78.9	35.3	71.2	25.5	69.7	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	96.9	49.6	78.9	35.3	71.2	25.5	69.7	28.3
Queue Length 50th (ft)	102	250	78	116	91	272	66	290
Queue Length 95th (ft)	#220	323	m#163	m162	#170	342	#127	366
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	898	161	909	205	1566	164	1481
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.82	0.71	0.43	0.65	0.61	0.58	0.65

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	133	760	132	357	157	721	86	613
v/c Ratio	0.58	0.80	0.58	0.38	0.62	0.62	0.48	0.66
Control Delay	49.5	36.0	49.6	29.6	49.1	29.1	50.2	33.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.5	36.0	49.6	29.6	49.1	29.1	50.2	33.7
Queue Length 50th (ft)	72	181	71	82	84	185	46	160
Queue Length 95th (ft)	148	#362	147	156	167	287	107	258
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	416	1038	416	1027	416	1293	416	1238
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.32	0.73	0.32	0.35	0.38	0.56	0.21	0.50

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	793	1007	279	77
v/c Ratio	0.34	0.34	0.83	0.90	0.49	0.13
Control Delay	35.0	35.1	33.6	38.3	23.6	16.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.1	33.6	38.3	23.6	16.9
Queue Length 50th (ft)	22	22	195	259	108	23
Queue Length 95th (ft)	57	57	#317	#410	191	54
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	601	598	959	1118	568	604
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.83	0.90	0.49	0.13

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	121	419	22	582	404	429
v/c Ratio	0.26	0.76	0.05	0.57	1.13	0.42
Control Delay	15.6	19.9	8.1	12.0	110.9	9.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.6	19.9	8.1	12.0	110.9	9.9
Queue Length 50th (ft)	28	68	3	110	~163	74
Queue Length 95th (ft)	61	154	14	242	#344	162
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	683	734	474	1017	356	1027
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.18	0.57	0.05	0.57	1.13	0.42

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	536	292	226	1839	118	1624
v/c Ratio	0.91	0.77	0.60	0.88	0.62	1.04
Control Delay	48.8	42.8	42.0	32.9	56.5	67.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	48.8	42.8	42.0	32.9	56.5	67.8
Queue Length 50th (ft)	285	153	130	404	73	~435
Queue Length 95th (ft)	#475	#278	210	#514	131	#532
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	666	429	404	2083	216	1562
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.80	0.68	0.56	0.88	0.55	1.04

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	↗	→	↘	←	↑	↖	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	114	752	32	516	291	54	236
v/c Ratio	0.48	0.37	0.18	0.31	0.82	0.36	0.62
Control Delay	26.8	8.4	22.4	9.6	40.2	24.8	23.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	26.8	8.4	22.4	9.6	40.2	24.8	23.1
Queue Length 50th (ft)	49	90	9	47	77	14	51
Queue Length 95th (ft)	m68	m148	28	79	#186	41	#114
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	2011	253	1669	366	156	392
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.37	0.13	0.31	0.80	0.35	0.60

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	226	214	1310	1401
v/c Ratio	0.62	0.56	0.57	0.61
Control Delay	52.1	51.0	7.6	13.1
Queue Delay	0.0	0.0	0.1	0.0
Total Delay	52.1	51.0	7.7	13.1
Queue Length 50th (ft)	79	75	136	271
Queue Length 95th (ft)	115	111	186	408
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	464	579	2302	2288
Starvation Cap Reductn	0	0	182	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.49	0.37	0.62	0.61

Intersection Summary

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	286	455	810	1282
v/c Ratio	0.41	0.93	0.35	0.35
Control Delay	39.3	46.9	0.3	5.6
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	39.3	46.9	0.6	5.6
Queue Length 50th (ft)	91	164	1	88
Queue Length 95th (ft)	127	#328	1	128
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	864	556	2320	3706
Starvation Cap Reductn	0	0	753	0
Spillback Cap Reductn	1	0	0	563
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.82	0.52	0.41

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2015 Plus Project PM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	560	918	735	659
v/c Ratio	0.77	0.84	0.57	0.26
Control Delay	47.0	42.4	33.0	5.7
Queue Delay	0.0	0.0	43.8	0.4
Total Delay	47.0	42.4	76.8	6.2
Queue Length 50th (ft)	190	310	267	74
Queue Length 95th (ft)	237	369	345	104
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	905	1242	1291	2537
Starvation Cap Reductn	0	0	610	1295
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.62	0.74	1.08	0.53

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	467	803	87	521	185	761
v/c Ratio	0.62	0.90	0.52	0.40	0.70	0.58
Control Delay	15.9	30.5	31.1	16.7	35.9	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	15.9	30.5	31.1	16.7	35.9	19.6
Queue Length 50th (ft)	127	279	29	81	66	132
Queue Length 95th (ft)	220	#523	#86	120	#164	185
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	757	893	167	1297	265	1303
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.90	0.52	0.40	0.70	0.58

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	383	1077	402	74	745	96	74	75	74	223	617
v/c Ratio	0.72	0.84	0.50	0.32	0.62	0.17	0.51	0.50	0.36	0.45	0.49
Control Delay	52.9	40.8	4.1	45.5	33.7	17.7	59.1	58.6	15.5	36.8	9.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	40.8	4.1	45.5	33.7	17.7	59.1	58.6	15.5	36.8	9.6
Queue Length 50th (ft)	134	398	0	47	228	27	53	54	0	131	77
Queue Length 95th (ft)	186	#601	71	92	314	70	101	100	43	206	103
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1277	809	274	1205	557	214	219	266	492	1252
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.84	0.50	0.27	0.62	0.17	0.35	0.34	0.28	0.45	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	284	693	57	659	239	306	170	261	170
v/c Ratio	0.85	0.42	0.52	0.56	0.79	0.93	0.59	0.82	0.39
Control Delay	69.5	17.1	71.2	36.7	66.0	82.7	53.9	69.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	17.1	71.2	36.7	66.0	82.7	53.9	69.0	8.5
Queue Length 50th (ft)	211	137	43	224	179	230	122	195	0
Queue Length 95th (ft)	#300	201	86	310	251	#383	178	#281	54
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1664	118	1175	384	338	398	357	476
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.42	0.48	0.56	0.62	0.91	0.43	0.73	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	460	115	505	207	1012	80	1058
v/c Ratio	0.76	0.69	0.76	0.73	0.99	0.57	0.59	0.67
Control Delay	79.2	46.5	79.0	47.2	109.4	21.7	66.1	26.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.2	46.5	79.0	47.2	109.4	21.7	66.1	26.8
Queue Length 50th (ft)	80	160	79	178	148	263	55	300
Queue Length 95th (ft)	#158	194	#159	213	#285	352	102	394
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	857	161	891	209	1788	161	1585
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.54	0.71	0.57	0.99	0.57	0.50	0.67

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	71	377	112	387	133	520	61	755
v/c Ratio	0.38	0.59	0.48	0.55	0.52	0.35	0.34	0.63
Control Delay	42.0	29.6	41.5	31.7	41.3	18.4	41.8	25.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	42.0	29.6	41.5	31.7	41.3	18.4	41.8	25.2
Queue Length 50th (ft)	32	72	50	87	59	90	28	152
Queue Length 95th (ft)	85	138	118	155	133	170	75	282
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	516	1246	516	1279	516	1609	516	1532
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.14	0.30	0.22	0.30	0.26	0.32	0.12	0.49
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	←	↑	↓	↗	↙
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	599	989	422	88
v/c Ratio	0.33	0.33	0.58	0.89	0.38	0.09
Control Delay	35.0	35.0	24.5	36.9	20.0	15.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.0	24.5	36.9	20.0	15.8
Queue Length 50th (ft)	22	22	131	252	82	13
Queue Length 95th (ft)	57	57	195	#399	127	30
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	604	604	1033	1116	1102	1013
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.58	0.89	0.38	0.09
Intersection Summary						
# 95th percentile volume exceeds capacity, queue may be longer. Queue shown is maximum after two cycles.						

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	111	467	22	400	367	478
v/c Ratio	0.21	0.81	0.06	0.43	0.83	0.51
Control Delay	13.0	25.7	8.7	10.8	33.3	12.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	25.7	8.7	10.8	33.3	12.1
Queue Length 50th (ft)	22	108	4	81	105	106
Queue Length 95th (ft)	53	#243	14	146	#265	185
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	686	709	418	1027	488	1042
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.16	0.66	0.05	0.39	0.75	0.46

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	479	415	149	1713	74	1681
v/c Ratio	0.78	0.93	0.60	0.79	0.48	0.95
Control Delay	27.9	53.2	45.9	25.9	49.1	41.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	27.9	53.2	45.9	25.9	49.1	41.6
Queue Length 50th (ft)	172	196	74	293	38	316
Queue Length 95th (ft)	286	#357	#145	#438	85	#487
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	773	579	275	2178	165	1763
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.72	0.54	0.79	0.45	0.95

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	↗	→	↘	←	↑	↙	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	143	571	33	835	253	66	319
v/c Ratio	0.59	0.29	0.19	0.52	0.95	0.38	0.84
Control Delay	29.7	8.0	22.6	11.8	68.4	24.8	41.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.7	8.0	22.6	11.8	68.4	24.8	41.5
Queue Length 50th (ft)	65	70	9	90	70	17	82
Queue Length 95th (ft)	m85	m102	28	138	#189	47	#201
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	1965	248	1595	267	172	378
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.29	0.13	0.52	0.95	0.38	0.84

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	156	281	1500	1166
v/c Ratio	0.53	0.63	0.65	0.50
Control Delay	49.6	51.1	11.9	10.8
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	49.6	51.1	12.2	10.8
Queue Length 50th (ft)	51	99	246	195
Queue Length 95th (ft)	83	138	m243	299
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	478	567	2306	2318
Starvation Cap Reductn	0	0	224	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.50	0.72	0.50

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	358	768	705	1148
v/c Ratio	0.42	1.28	0.36	0.33
Control Delay	36.6	161.8	1.7	6.1
Queue Delay	0.0	3.8	0.4	0.0
Total Delay	36.6	165.6	2.0	6.1
Queue Length 50th (ft)	112	~526	21	84
Queue Length 95th (ft)	157	#763	16	94
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	861	600	1957	3463
Starvation Cap Reductn	0	0	674	0
Spillback Cap Reductn	0	4	42	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	1.29	0.55	0.33

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project AM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	242	747	295	905
v/c Ratio	0.59	0.80	0.17	0.31
Control Delay	46.2	43.6	15.2	2.4
Queue Delay	0.0	0.0	0.5	0.2
Total Delay	46.2	43.6	15.7	2.6
Queue Length 50th (ft)	75	256	60	106
Queue Length 95th (ft)	113	300	97	126
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	888	1240	1758	2886
Starvation Cap Reductn	0	0	1043	1104
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.60	0.41	0.51

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	923	892	65	1000	163	913
v/c Ratio	1.32	1.09	0.57	0.76	1.75	0.70
Control Delay	177.5	78.2	43.7	26.2	402.6	24.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	177.5	78.2	43.7	26.2	402.6	24.3
Queue Length 50th (ft)	~608	~502	25	223	~123	196
Queue Length 95th (ft)	#834	#727	#87	296	#201	263
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	697	822	114	1320	93	1313
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.32	1.09	0.57	0.76	1.75	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	333	1217	554	365	938	115	139	142	125	510	1031
v/c Ratio	0.62	1.20	0.87	1.31	0.88	0.23	0.64	0.64	0.40	1.02	0.87
Control Delay	49.2	133.0	35.9	200.3	47.0	20.8	60.3	59.5	12.0	85.3	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	133.0	35.9	200.3	47.0	20.8	60.3	59.5	12.0	85.3	24.0
Queue Length 50th (ft)	114	~552	357	~332	330	40	100	102	0	~372	222
Queue Length 95th (ft)	162	#695	#657	#518	#439	87	#181	#182	54	#590	#306
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1013	640	279	1072	503	216	223	311	501	1184
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	1.20	0.87	1.31	0.88	0.23	0.64	0.64	0.40	1.02	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	168	1063	63	790	442	695	116	432	316
v/c Ratio	0.77	0.89	0.57	0.84	0.93	1.16	0.44	1.09	0.90
Control Delay	74.4	48.0	75.0	51.2	71.6	126.1	51.3	114.6	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.4	48.0	75.0	51.2	71.6	126.1	51.3	114.6	51.0
Queue Length 50th (ft)	126	423	48	312	331	~639	82	~377	109
Queue Length 95th (ft)	#220	#571	#101	#434	#519	#876	142	#579	#266
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1199	118	936	494	600	292	406	372
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.89	0.53	0.84	0.89	1.16	0.40	1.06	0.85

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	255	857	122	469	194	1122	122	1336
v/c Ratio	1.58	0.95	0.79	0.53	0.95	0.75	0.78	0.97
Control Delay	324.2	59.6	83.4	36.6	99.5	30.4	81.4	50.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	324.2	59.6	83.4	36.6	99.5	30.4	81.4	50.6
Queue Length 50th (ft)	~257	301	85	145	138	346	85	477
Queue Length 95th (ft)	#419	#431	m#178	m198	#280	430	#178	#640
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	899	161	908	205	1498	164	1380
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.58	0.95	0.76	0.52	0.95	0.75	0.74	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	183	850	151	495	140	838	161	817
v/c Ratio	0.71	0.92	0.65	0.57	0.63	0.81	0.67	0.76
Control Delay	56.2	50.9	54.7	36.3	54.9	39.9	54.7	36.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.2	50.9	54.7	36.3	54.9	39.9	54.7	36.7
Queue Length 50th (ft)	110	256	91	141	84	247	97	234
Queue Length 95th (ft)	196	#462	165	225	156	#410	174	362
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	370	919	370	911	370	1101	370	1126
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.49	0.92	0.41	0.54	0.38	0.76	0.44	0.73

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	822	1096	296	107
v/c Ratio	0.33	0.34	0.84	0.98	0.29	0.10
Control Delay	35.0	35.0	34.3	51.2	18.9	15.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.0	34.3	51.2	18.9	15.9
Queue Length 50th (ft)	22	22	204	~297	54	16
Queue Length 95th (ft)	57	57	#331	#467	90	35
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	604	601	979	1116	1031	1081
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.84	0.98	0.29	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	137	431	32	685	411	506
v/c Ratio	0.28	0.79	0.08	0.69	1.57	0.50
Control Delay	14.8	23.1	8.7	15.6	293.5	11.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	23.1	8.7	15.6	293.5	11.5
Queue Length 50th (ft)	31	86	5	156	~208	100
Queue Length 95th (ft)	66	177	19	#325	#304	200
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	671	697	394	991	262	1005
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.20	0.62	0.08	0.69	1.57	0.50

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	589	316	242	1884	168	1663
v/c Ratio	0.96	0.84	0.64	0.95	0.83	1.12
Control Delay	58.1	50.3	44.1	40.7	75.9	95.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	58.1	50.3	44.1	40.7	75.9	95.5
Queue Length 50th (ft)	336	174	141	419	106	~454
Queue Length 95th (ft)	#560	#330	224	#536	#219	#552
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	631	385	386	1988	207	1491
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.93	0.82	0.63	0.95	0.81	1.12

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	↗	→	↘	←	↑	↖	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	129	1043	43	699	376	65	291
v/c Ratio	0.53	0.53	0.23	0.43	1.21	0.43	0.74
Control Delay	28.5	9.9	22.9	10.7	144.6	27.7	30.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	28.5	9.9	22.9	10.7	144.6	27.7	30.5
Queue Length 50th (ft)	50	118	12	70	~139	17	67
Queue Length 95th (ft)	m75	m237	34	111	#276	#54	#169
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	1975	253	1640	311	151	392
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.45	0.53	0.17	0.43	1.21	0.43	0.74

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	319	268	1629	1691
v/c Ratio	0.75	0.61	0.75	0.78
Control Delay	55.8	50.4	12.1	19.6
Queue Delay	0.0	0.0	0.1	0.2
Total Delay	55.8	50.4	12.2	19.9
Queue Length 50th (ft)	111	93	216	442
Queue Length 95th (ft)	160	132	m291	605
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	467	578	2179	2157
Starvation Cap Reductn	0	0	63	85
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.68	0.46	0.77	0.82

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	398	551	1000	1510
v/c Ratio	0.46	1.10	0.49	0.44
Control Delay	37.4	98.4	1.4	8.9
Queue Delay	0.0	0.0	0.4	0.2
Total Delay	37.4	98.4	1.8	9.0
Queue Length 50th (ft)	126	~352	1	119
Queue Length 95th (ft)	174	#569	m1	215
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	864	502	2038	3459
Starvation Cap Reductn	0	0	496	0
Spillback Cap Reductn	3	0	0	827
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	1.10	0.65	0.57

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 No Project PM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	699	1119	849	785
v/c Ratio	0.85	0.92	0.79	0.32
Control Delay	49.2	47.5	43.4	6.8
Queue Delay	0.0	0.0	207.5	0.5
Total Delay	49.2	47.5	250.9	7.3
Queue Length 50th (ft)	237	387	326	92
Queue Length 95th (ft)	303	#517	#412	170
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	903	1241	1074	2438
Starvation Cap Reductn	0	0	492	1099
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.90	1.46	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	469	805	92	540	185	766
v/c Ratio	0.62	0.90	0.56	0.42	0.72	0.59
Control Delay	16.0	31.0	33.7	16.9	38.4	19.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.0	31.0	33.7	16.9	38.4	19.6
Queue Length 50th (ft)	127	281	31	84	67	133
Queue Length 95th (ft)	221	#527	#94	125	#168	187
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	757	891	165	1297	256	1303
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.62	0.90	0.56	0.42	0.72	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	↖	→	↘	↙	←	↖	↗	↑	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	383	1091	402	79	778	98	74	75	76	224	617
v/c Ratio	0.72	0.85	0.50	0.34	0.65	0.18	0.51	0.50	0.37	0.46	0.49
Control Delay	52.9	41.5	4.1	46.0	34.3	18.1	59.1	58.6	15.4	36.8	9.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.9	41.5	4.1	46.0	34.3	18.1	59.1	58.6	15.4	36.8	9.7
Queue Length 50th (ft)	134	406	0	50	241	29	53	54	0	132	79
Queue Length 95th (ft)	186	#614	71	97	330	73	101	100	43	207	105
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	531	1277	809	274	1205	556	214	219	268	492	1249
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.72	0.85	0.50	0.29	0.65	0.18	0.35	0.34	0.28	0.46	0.49

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	284	710	57	701	239	306	170	261	170
v/c Ratio	0.85	0.43	0.52	0.60	0.79	0.93	0.59	0.82	0.39
Control Delay	69.5	17.6	71.2	37.6	66.0	82.7	53.9	69.0	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	69.5	17.6	71.2	37.6	66.0	82.7	53.9	69.0	8.5
Queue Length 50th (ft)	211	146	43	242	179	230	122	195	0
Queue Length 95th (ft)	#300	212	86	333	251	#383	178	#281	54
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	384	1663	118	1175	384	338	398	357	476
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.74	0.43	0.48	0.60	0.62	0.91	0.43	0.73	0.36

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	115	477	134	553	207	1012	82	1058
v/c Ratio	0.76	0.68	0.85	0.75	0.99	0.58	0.60	0.69
Control Delay	79.2	45.0	91.0	46.4	109.4	22.9	66.7	28.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	79.2	45.0	91.0	46.4	109.4	22.9	66.7	28.3
Queue Length 50th (ft)	80	164	93	195	148	271	56	308
Queue Length 95th (ft)	#158	200	#193	233	#285	356	103	398
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	859	161	890	209	1740	161	1539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.56	0.83	0.62	0.99	0.58	0.51	0.69

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	78	402	114	388	146	520	61	764
v/c Ratio	0.40	0.61	0.49	0.56	0.55	0.35	0.35	0.64
Control Delay	43.1	29.5	42.7	32.5	42.1	18.6	43.0	26.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	43.1	29.5	42.7	32.5	42.1	18.6	43.0	26.3
Queue Length 50th (ft)	36	76	53	90	67	91	28	160
Queue Length 95th (ft)	92	145	122	158	147	174	77	296
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	504	1224	504	1250	504	1594	504	1498
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.15	0.33	0.23	0.31	0.29	0.33	0.12	0.51
Intersection Summary								

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	611	1020	430	88
v/c Ratio	0.34	0.34	0.63	0.91	0.71	0.16
Control Delay	35.0	35.0	25.8	39.8	30.1	17.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.0	25.8	39.8	30.1	17.6
Queue Length 50th (ft)	22	22	136	264	187	27
Queue Length 95th (ft)	57	57	205	#419	#328	62
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	601	602	974	1117	606	556
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.63	0.91	0.71	0.16
Intersection Summary						

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	111	478	22	400	394	478
v/c Ratio	0.21	0.82	0.06	0.42	0.88	0.50
Control Delay	13.0	27.1	8.7	10.7	38.7	12.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	13.0	27.1	8.7	10.7	38.7	12.0
Queue Length 50th (ft)	22	111	4	83	122	108
Queue Length 95th (ft)	53	#252	14	146	#291	185
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	654	683	400	978	465	992
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.17	0.70	0.06	0.41	0.85	0.48

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	505	420	154	1713	74	1681
v/c Ratio	0.81	0.94	0.63	0.79	0.48	0.96
Control Delay	30.3	55.0	47.4	26.4	49.6	43.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.3	55.0	47.4	26.4	49.6	43.5
Queue Length 50th (ft)	191	201	78	302	38	~329
Queue Length 95th (ft)	314	#369	#158	#438	85	#487
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	767	565	272	2159	163	1745
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.74	0.57	0.79	0.45	0.96

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	↗	→	↘	←	↑	↖	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	146	571	33	835	264	66	334
v/c Ratio	0.59	0.29	0.19	0.53	1.06	0.40	0.88
Control Delay	30.0	8.0	22.6	11.8	98.5	25.8	47.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	30.0	8.0	22.6	11.8	98.5	25.8	47.0
Queue Length 50th (ft)	66	70	9	91	~86	17	87
Queue Length 95th (ft)	m87	m102	28	138	#204	47	#215
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	283	1965	248	1589	250	164	378
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.29	0.13	0.53	1.06	0.40	0.88

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	156	292	1510	1180
v/c Ratio	0.54	0.64	0.66	0.51
Control Delay	49.6	51.3	12.2	11.0
Queue Delay	0.0	0.0	0.2	0.0
Total Delay	49.6	51.3	12.4	11.0
Queue Length 50th (ft)	51	103	248	201
Queue Length 95th (ft)	83	144	m243	304
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	476	566	2294	2308
Starvation Cap Reductn	0	0	218	0
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.33	0.52	0.73	0.51

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	358	772	713	1173
v/c Ratio	0.42	1.29	0.37	0.34
Control Delay	36.6	167.5	1.7	6.1
Queue Delay	0.0	3.9	0.4	0.0
Total Delay	36.6	171.4	2.1	6.1
Queue Length 50th (ft)	112	~537	22	86
Queue Length 95th (ft)	157	#774	17	97
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	861	597	1952	3463
Starvation Cap Reductn	0	0	667	0
Spillback Cap Reductn	0	4	43	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.42	1.30	0.55	0.34

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project AM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	242	755	301	924
v/c Ratio	0.59	0.80	0.17	0.32
Control Delay	46.2	43.6	15.4	2.5
Queue Delay	0.0	0.0	0.5	0.2
Total Delay	46.2	43.6	15.9	2.7
Queue Length 50th (ft)	75	258	61	110
Queue Length 95th (ft)	113	303	101	131
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	888	1240	1751	2886
Starvation Cap Reductn	0	0	1035	1078
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.27	0.61	0.42	0.51

Intersection Summary

Queues
1: Alcatraz Ave & Sacramento St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	929	894	70	1012	163	924
v/c Ratio	1.33	1.10	0.63	0.77	1.75	0.70
Control Delay	181.2	82.0	50.1	26.5	402.6	24.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	181.2	82.0	50.1	26.5	402.6	24.5
Queue Length 50th (ft)	~614	~508	28	227	~123	200
Queue Length 95th (ft)	#842	#733	#96	301	#201	266
Internal Link Dist (ft)	358	281		251		295
Turn Bay Length (ft)			110		110	
Base Capacity (vph)	697	816	111	1320	93	1313
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	1.33	1.10	0.63	0.77	1.75	0.70

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
3: Powell St & Christie Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↗	→	↘	↖	←	↗	↖	↑	↗	↓	↖
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	333	1244	554	367	960	117	139	142	127	513	1031
v/c Ratio	0.62	1.23	0.87	1.32	0.90	0.23	0.64	0.64	0.41	1.02	0.87
Control Delay	49.2	145.0	36.1	203.0	48.9	21.0	60.3	59.5	12.0	86.7	24.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	49.2	145.0	36.1	203.0	48.9	21.0	60.3	59.5	12.0	86.7	24.1
Queue Length 50th (ft)	114	~576	358	~335	340	42	100	102	0	~387	222
Queue Length 95th (ft)	162	#720	#657	#519	#457	88	#181	#182	55	#593	#307
Internal Link Dist (ft)		365			1540			523		234	
Turn Bay Length (ft)	290			200		60	180				
Base Capacity (vph)	536	1011	639	279	1072	503	216	223	312	501	1183
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.62	1.23	0.87	1.32	0.90	0.23	0.64	0.64	0.41	1.02	0.87

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
4: Powell St & Hollis St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓	↙
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT	SBR
Lane Group Flow (vph)	168	1095	63	817	442	695	116	432	316
v/c Ratio	0.77	0.91	0.57	0.87	0.93	1.16	0.44	1.09	0.90
Control Delay	74.4	50.6	75.0	53.4	71.6	126.1	51.3	114.6	51.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	74.4	50.6	75.0	53.4	71.6	126.1	51.3	114.6	51.0
Queue Length 50th (ft)	126	~445	48	326	331	~639	82	~377	109
Queue Length 95th (ft)	#220	#600	#101	#458	#519	#876	142	#579	#266
Internal Link Dist (ft)		1540		1795		367		580	
Turn Bay Length (ft)	80		80				90		150
Base Capacity (vph)	242	1200	118	937	494	600	292	406	372
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.69	0.91	0.53	0.87	0.89	1.16	0.40	1.06	0.85

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
5: Stanford Ave & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	255	888	135	499	194	1122	126	1336
v/c Ratio	1.58	0.99	0.86	0.55	0.95	0.75	0.80	0.97
Control Delay	324.2	67.2	92.4	36.8	99.5	30.7	83.6	51.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	324.2	67.2	92.4	36.8	99.5	30.7	83.6	51.8
Queue Length 50th (ft)	~257	318	95	157	138	346	89	477
Queue Length 95th (ft)	#419	#457	m#204	m210	#280	430	#187	#640
Internal Link Dist (ft)		1795		1860		3670		541
Turn Bay Length (ft)	120		140		105		115	
Base Capacity (vph)	161	898	161	908	205	1488	164	1372
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	1.58	0.99	0.84	0.55	0.95	0.75	0.77	0.97

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
8: Stanford Ave & Market St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↗	→	↘	←	↙	↑	↘	↓
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	187	868	154	497	168	838	161	828
v/c Ratio	0.72	0.95	0.66	0.58	0.68	0.81	0.67	0.81
Control Delay	56.7	54.3	54.9	36.6	55.6	40.0	54.9	40.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	56.7	54.3	54.9	36.6	55.6	40.0	54.9	40.1
Queue Length 50th (ft)	113	265	93	143	102	249	98	245
Queue Length 95th (ft)	201	#477	168	226	181	#412	175	#404
Internal Link Dist (ft)		353		644		941		1118
Turn Bay Length (ft)	140		160		75		100	
Base Capacity (vph)	368	916	368	908	368	1103	368	1090
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.95	0.42	0.55	0.46	0.76	0.44	0.76

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
9: 57th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	←	↑	↓	↗	↖
Lane Group	EBT	WBT	NBT	SBT	NET	SWT
Lane Group Flow (vph)	55	55	844	1124	311	55
v/c Ratio	0.34	0.34	0.94	1.01	0.54	0.10
Control Delay	35.0	35.2	46.4	58.8	24.7	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	35.0	35.2	46.4	58.8	24.7	15.4
Queue Length 50th (ft)	22	22	221	~335	124	14
Queue Length 95th (ft)	57	57	#370	#487	216	40
Internal Link Dist (ft)	268	516	783	941	1446	556
Turn Bay Length (ft)						
Base Capacity (vph)	601	596	897	1110	576	563
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.09	0.94	1.01	0.54	0.10

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Queues
11: 55th St & Market St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	137	453	32	685	429	506
v/c Ratio	0.27	0.80	0.08	0.69	1.66	0.51
Control Delay	14.8	24.0	8.7	15.8	336.0	11.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.8	24.0	8.7	15.8	336.0	11.6
Queue Length 50th (ft)	31	90	5	160	~226	103
Queue Length 95th (ft)	66	187	19	#325	#324	200
Internal Link Dist (ft)	108	1157		659		783
Turn Bay Length (ft)			60		60	
Base Capacity (vph)	666	702	390	986	258	1001
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.21	0.65	0.08	0.69	1.66	0.51

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
12: 55th St & MLK Jr Way

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	←	↖	↑	↗	↓
Lane Group	EBT	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	609	328	253	1884	168	1663
v/c Ratio	0.98	0.85	0.67	0.96	0.84	1.13
Control Delay	61.6	51.2	45.8	42.7	77.0	100.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	61.6	51.2	45.8	42.7	77.0	100.8
Queue Length 50th (ft)	355	184	149	419	106	~454
Queue Length 95th (ft)	#591	#348	235	#536	#219	#552
Internal Link Dist (ft)	1157	252		287		384
Turn Bay Length (ft)			110		105	
Base Capacity (vph)	623	384	382	1965	204	1474
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.98	0.85	0.66	0.96	0.82	1.13

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Queues
13: 40th St & Adeline St

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	↗	→	↘	←	↑	↖	↓
Lane Group	EBL	EBT	WBL	WBT	NBT	SBL	SBT
Lane Group Flow (vph)	135	1043	43	699	398	65	301
v/c Ratio	0.55	0.53	0.23	0.43	1.33	0.43	0.77
Control Delay	29.0	9.9	22.9	10.7	191.9	27.7	32.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	29.0	9.9	22.9	10.7	191.9	27.7	32.5
Queue Length 50th (ft)	52	118	12	71	~158	17	71
Queue Length 95th (ft)	m79	m236	34	111	#298	#54	#178
Internal Link Dist (ft)		392		1168	866		2282
Turn Bay Length (ft)	200		50			60	
Base Capacity (vph)	289	1975	253	1631	300	151	392
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.47	0.53	0.17	0.43	1.33	0.43	0.77

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
14: Adeline St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	←	↑	↓
Lane Group	EBT	WBT	NBT	SBT
Lane Group Flow (vph)	319	276	1650	1700
v/c Ratio	0.76	0.62	0.76	0.79
Control Delay	56.0	50.4	12.7	20.1
Queue Delay	0.0	0.0	0.1	0.2
Total Delay	56.0	50.4	12.8	20.3
Queue Length 50th (ft)	111	96	220	449
Queue Length 95th (ft)	160	135	m300	616
Internal Link Dist (ft)	344	866	603	728
Turn Bay Length (ft)				
Base Capacity (vph)	465	578	2165	2149
Starvation Cap Reductn	0	0	54	81
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.69	0.48	0.78	0.82

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Queues
15: 36th St & San Pablo Avenue

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	←	↖	↑	↓
Lane Group	WBT	WBR	NBT	SBT
Lane Group Flow (vph)	398	557	1015	1527
v/c Ratio	0.46	1.12	0.50	0.44
Control Delay	37.4	106.0	1.6	9.0
Queue Delay	0.0	0.0	0.4	0.2
Total Delay	37.4	106.0	2.0	9.2
Queue Length 50th (ft)	126	~367	1	125
Queue Length 95th (ft)	174	#583	m2	219
Internal Link Dist (ft)	922		186	603
Turn Bay Length (ft)		70		
Base Capacity (vph)	864	498	2035	3459
Starvation Cap Reductn	0	0	494	0
Spillback Cap Reductn	3	0	1	833
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.46	1.12	0.66	0.58

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Queues
16: 35th St & San Pablo Ave

BMSP Redevelopment Area
2035 Plus Project PM Peak Hour

	→	↑	↗	↓
Lane Group	EBT	NBT	SBL	SBT
Lane Group Flow (vph)	699	1134	854	799
v/c Ratio	0.85	0.93	0.80	0.33
Control Delay	49.2	48.4	44.1	6.9
Queue Delay	0.0	0.0	218.1	0.5
Total Delay	49.2	48.4	262.2	7.4
Queue Length 50th (ft)	237	395	328	96
Queue Length 95th (ft)	303	#529	#415	174
Internal Link Dist (ft)	399	638		186
Turn Bay Length (ft)				
Base Capacity (vph)	903	1241	1068	2438
Starvation Cap Reductn	0	0	492	1085
Spillback Cap Reductn	0	0	0	0
Storage Cap Reductn	0	0	0	0
Reduced v/c Ratio	0.77	0.91	1.48	0.59

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

APPENDIX G

2000 EIR Impacts and Mitigation Measures Update Table

APPENDIX G: Proposed SEIR Revisions to Impacts and Mitigation Measures Identified in the Previous Broadway/MacArthur/San Pablo Redevelopment Plan EIR

The following table shows the impacts and mitigation measures in the 2000 Broadway/MacArthur/San Pablo Redevelopment Plan EIR (SCH#99052061), as updated by this Supplement to that EIR. Each proposed revision is discussed in Chapter 4 of the SEIR in the respective environmental topic sections. The revisions are considered minor additions/changes necessary to update the 2000 EIR for the Proposed Redevelopment Plan as Amended, pursuant to CEQA Guidelines Section 15163.

Revisions to 2000 EIR impacts and mitigation measures are shown in underlined format (new text) and ~~strikeout~~ format (deleted text). Impacts are shown in the sequence that they appear in the 2000 EIR. Environmental topic names are shown as applied in this SEIR.

2000 EIR IMPACTS AND MITIGATION MEASURES UPDATE

Environmental Impact
Aesthetics, Shadow, and Wind
No impact statements or mitigation measures in the 2000 EIR.
Air Quality
Updated Impact C.1 (AIR): Development facilitated by the Redevelopment Plan, as Amended, would not fundamentally conflict with the <i>Bay Area 2010 Clean Air Plan</i> because the projected rate of increase in vehicle miles traveled (VMT) or vehicle trips is not greater than the projected rate of increase in population. (Less than Significant) ~~The proposed Plan would not be consistent with the population and VMT assumptions used in air quality planning since growth resulting from the proposed Plan would be consistent with growth projections under the General Plan and the General Plan was determine to be not consistent with the same population and VMT assumptions. This would be a potentially significant impact.~~ (Eliminated) Mitigation Measure C.1: The above adopted policies (General Plan Land Use and Transportation Element (LUTE), including the Bicycle Master Plan, and the Open Space, Conservation and Recreation Element (OSCAR) would help reduce potential regional air quality emissions, and there are no other feasible measures. Impact after Mitigation: Significant and Unavoidable. Mitigation: None Required.
Updated Impact C.2 (AIR): Development facilitated by the Redevelopment Plan, as Amended, would not fundamentally conflict with the <i>Bay Area 2010 Clean Air Plan</i> because that future development under the Redevelopment Plan, as Amended, would incorporate reasonable efforts to implement control measures contained in the CAP. (Less than Significant) ~~The proposed Broadway/MacArthur/San Pablo Redevelopment Plan would be consistent with Clean Air Plan Transportation Control Measures (TCMs) since the LUTE was determined to be consistent with Clean Air Plan TCMs and policies of the LUTE would~~

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Environmental Impact
~~also be implemented as part of future development within the Broadway/MacArthur/San Pablo Redevelopment Project Area. This would be a less than significant impact.~~ Mitigation: None Required.
Updated Impact C.3 (AIR): Traffic generated by the ~~proposed Broadway/MacArthur/San Pablo Redevelopment Plan, as Amended,~~ would not significantly increase CO emissions along roadways and at intersections within the planning area. This is a less than significant impact. Mitigation: None Required.
Updated Impact C.4 (AIR): Cumulative development of future development projects in the <u>Existing</u> Project Area would result in increased stationary source emissions associated with heating and electricity consumption. This is a less than significant impact. Mitigation: None Required.
Updated Impact C.5 (AIR): ~~Development facilitated by the Redevelopment Plan, as Amended, The proposed Broadway/MacArthur/San Pablo Redevelopment Plan would encourage new residential uses as part of mixed-use retail areas within the Project Area, that could expose occupants to sources of substantial and frequent odors affecting a substantial number of people and would be guided by City policies to reduce potential odor impacts which could result in odor nuisance problems at residential receptors. This would be a less than significant impact due to policies in the recently adopted Land Use and Transportation Element. (Significant)~~ Mitigation: None Available. Significance after Mitigation: Significant and Unavoidable.
Updated Impact C.6 (AIR): Construction activities associated with development projects within the <u>Existing</u> Project Area would generate dust (including the respirable fraction known as PM₁₀) and combustion emissions. This is a less than significant impact. Updated Mitigation Measure C.6 (AIR): The mitigation measures set forth below are intended to address construction-related air quality impacts associated with future development projects in the Project Area. Implementation of adopted Policy CO-12.6 from the OSCAR Element would help reduce short-term emissions associated with future development within the Project Area. In addition, the following measures are recommended to ensure that construction-related impacts are minimized to a less-than-significant level: a) The following Basic Control Measures shall be implemented at all construction sites: • Water all active construction areas at least twice daily. • Cover all trucks hauling soil, sand, and other loose debris or require all trucks to maintain at least two feet of freeboard. • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas, and staging areas at construction sites. • Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites. • Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets. b) In addition to the above, the following enhanced control measures shall be implemented at all construction sites when more than four acres are under construction at any one time: • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously

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Environmental Impact
graded areas inactive for ten days or more). • Enclose, cover, water twice daily or apply (non-toxic) soil binders to exposed stockpiles (dirt, sand, etc.) • Limit traffic speeds on unpaved roads to 15 mph. • Install sandbags or other erosion control measures to prevent silt runoff to public roadways. • Replant vegetation in disturbed areas as quickly as possible. c) BAAQMD dust control measures would be implemented by contractors of future development projects as outlined in <i>BAAQMD CEQA Guidelines</i> (1996) or any subsequent applicable BAAQMD updates. Significance After Mitigation: ~~Less than Significant.~~ Mitigation: None Required. (NOTE: Although <u>Updated</u> Mitigation Measure C.6 will remain in this SEIR, it is effectively the same and expanded by SCA A, <i>Construction-Related Air Pollution Controls (Dust and Equipment Emissions)</i>, and Chapter 15.36 of the Oakland Municipal Code, which specifies Dust Control Measures and adherence to “best management practices.”)
Biological Resources
No impact statements or mitigation measures in the 2000 EIR.
Cultural Resources
No impact statements or mitigation measures in the 2000 EIR.
Geology, Soils and Geohazards
No impact statements or mitigation measures in the 2000 EIR.
Greenhouse Gases and Climate Change
Topic not addressed in the 2000 EIR.
Hazardous Materials
No impact statements or mitigation measures in the 2000 EIR.
Hydrology and Water Quality
No impact statements or mitigation measures in the 2000 EIR.
Land Use, Plans and Policies
Updated Impact A.1 (LU): <u>Development facilitated by the Redevelopment Plan, as Amended, would blend with the established communities of Subarea 1, Subarea 2 and Subarea 3 the Project Area, as Amended, and would not result in the physical division of an existing community or conflict with nearby land uses.</u> This is a less than significant impact. Mitigation: None Required.
Updated Impact A.2 (LU): <u>Development facilitated by the Redevelopment Plan, as Amended, would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. The project would be generally consistent with applicable plans and policies of the City of Oakland's General Plan Land Use and Transportation Element, Housing Element, and Safety Element.</u> This would be a less than significant impact.

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Environmental Impact

Impact A.3 (LU): The proposed project could result in land use conflicts in Subarea 3, particularly along San Pablo Avenue and Stanford Avenue because of the proximity of schools and parks. ~~This is a potentially significant impact.~~ (Less than Significant)

Updated Mitigation Measure A.3a (LU): The City of Oakland will work closely with the Oakland Public School District to assure that land uses proposed by the Redevelopment Plan, as Amended, are compatible with school and park uses, and will restrict uses near schools and parks, that are incompatible with persons under the age of 18.

Significance After Mitigation: ~~Less than Significant.~~

Mitigation: None Required.

(NOTE: Mitigation Measure A.3a will remain in this SEIR, although, as presented in the SEIR, the impact is less than significant and no mitigation is required under the City's current CEQA approach.)

Mitigation Measure A.3b (LU): The City of Oakland will explore the potential rezoning of areas near schools and parks, if necessary, to permanently restrict land uses near public schools, parks and some residential areas that could be incompatible for persons under the age of 18. The City will coordinate its efforts with adjacent municipalities if the proposed rezoning occurs in adjacent areas.

Significance After Mitigation: ~~Less than Significant.~~

Mitigation: None Required.

(NOTE: Mitigation Measure A.3b will remain in this SEIR, although, as presented in the SEIR, the impact is less than significant and no mitigation is required under the City's current CEQA approach.)

Updated Impact A.4 (LU): ~~The proposed project~~ Redevelopment Plan, as Amended, could potentially conflict with the General Plan Historic Preservation Element. This is a potentially significant impact.

Updated Mitigation Measure A.4 (LU): ~~Same as New Mitigation Measure CUL-1. Mitigation measures, including but not limited to those outlined in the General Plan Historic Preservation Element, in the best combination befitting the specific situation and with the approval of the City of Oakland, would lessen significant effects to an Historical Resource.~~

Significance After Mitigation: Less than Significant (Land Use, Plans and Policies)

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Environmental Impact

Updated Impact A.5 (LU): ~~The proposed project~~ Redevelopment Plan, as Amended, could result in land use conflicts between the City of Berkeley, the City of Emeryville and the City of Oakland in Subarea 3. ~~This is a potentially significant impact. (Less than Significant)~~

Mitigation Measure A.5a (LU): Representatives from the City of Oakland will meet and confer with representatives of the cities of Berkeley and Emeryville to discuss land uses along borders shared with Subarea 3. Such meetings will have the goal of establishing an agreement concerning land uses along the Subarea 3 border, to include present and future uses, building heights, maximum allowable densities, parking, set backs, rehabilitation standards, design standards, historic resources, as well as open space requirements and recreational opportunities.

Significance After Mitigation: ~~Less than Significant.~~

Mitigation: None Required.

(NOTE: Mitigation Measure A.5a will remain in this SEIR, although, as presented in the SEIR, the impact is less than significant and no mitigation is required under the City's current CEQA approach.)

Mitigation Measure A.5b (LU): Representatives from the City of Oakland will confer with representatives of the cities of Berkeley and Emeryville, as part of any rezoning of adjacent areas, and as part of ongoing City-wide zoning update efforts.

Significance After Mitigation: ~~Less than Significant.~~

Mitigation: None Required.

(NOTE: Mitigation Measure A.5b will remain in this SEIR, although, as presented in the SEIR, the impact is less than significant and no mitigation is required under the City's current CEQA approach.)

Noise

Updated Impact D.1 (NOI): ~~Traffic generated by development facilitated by the Redevelopment Plan, as Amended, could substantially increase traffic noise levels in the Project Area, as Amended. Implementation of the proposed Broadway/MacArthur/San Pablo Redevelopment Plan would result in future noise levels that are higher than or the same as future noise levels that would occur under the recently adopted General Plan. This is a less than significant impact.~~

Mitigation: None Required.

Updated Impact D.2 (NOI): ~~Development facilitated by the Redevelopment Plan, as Amended, would result in substantial temporary or periodic increases in ambient noise levels in the Project Area, as Amended, above levels existing without the Redevelopment Plan, as Amended, and in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. Development of the future projects within the Broadway/MacArthur/San Pablo Redevelopment Project Area would generate short-term increases in noise and vibration due to construction. This would be a short-term adverse impact, and would be potentially significant but mitigated to a less than significant level by existing regulations. (Less than Significant)~~

(Eliminated) Mitigation Measure D.2: ~~Compliance with the City Noise Ordinance would mitigate construction noise impacts associated with the future development projects in the Project Area to a less than significant level. The following measures shall be considered and applicable, if appropriate, as part of future development projects within the Project Area in order to comply with Ordinance noise limits (when construction occurs closer than 50 feet from a noise-sensitive receptor) as well as to minimize pile driving noise and vibration impacts:~~

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Environmental Impact

- Equipment and trucks used for project construction should utilize the best available noise control techniques (improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically attenuating shields or shrouds) in order to minimize construction noise impacts. Construction equipment should not generate noise levels above the mitigated levels listed in Table 3 (75 dBA to 80 dBA at 50 feet, depending on equipment type).
- Equipment used for project construction should be hydraulically or electrical powered impact tools (e.g., jack hammers, pavement breakers, and rock drills) wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatically powered tools is unavoidable, an exhaust muffler on the compressed air exhaust should be used; this muffler could lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves should be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures should be used such as drilling rather than impact equipment whenever feasible.
- Stationary noise sources should be located as far from adjacent uses as possible, particularly, adjacent residences receptors. If they must be located near existing receptors, they should be adequately muffled and enclosed within temporary sheds.
- Where existing residences are located within 50 feet of the project construction activities, operation of heavy equipment should be limited to 10 or less days at one time and weekend construction activities should be prohibited.
- Wherever possible, sonic or vibratory pile drivers should be used instead of impact pile drivers (sonic pile drivers are only effective in some soils).
- Pile holes should be pre-drilled to reduce potential noise and vibration impacts.

Mitigation: None Required.

(NOTE: Mitigation Measure D.2 is replaced in this SEIR by SCAs, consistent with the City's current approach to employing SCAs to all projects.)

Updated Impact D.3 (NOI): The proposed ~~Broadway/MacArthur/San Pablo~~ Redevelopment Plan, as Amended, would encourage new residential uses as part of mixed-use retail areas within the Project Area, as Amended, and future noise levels in some areas could be incompatible with these new residential uses. This is a potentially significant impact.

Mitigation Measure D.3 (NOI): A detailed analysis of noise reduction requirements shall be required for any future residential development proposals along arterials or in the vicinity of the MacArthur BART Station, and the design of residential development shall incorporate recommendations of such analyses in the project.

Significance after Mitigation: Less than Significant

Updated Impact D.4 (NOI): ~~Development facilitated by the Redevelopment Plan, as Amended, could increase noise levels in the Project Area, as Amended, to levels in excess of standards established in the Oakland Noise Ordinance and Planning Code, which may result in~~ The proposed ~~Broadway/MacArthur/San Pablo~~ Redevelopment Plan encourages residential uses as part of mixed-use retail areas and noise compatibility problems due to the proximity of residential uses with other uses (including commercial and employment uses). This is a less than significant impact ~~due to General Plan policies.~~

Mitigation: None Required.

Population, Employment and Housing

No impact statements or mitigation measures in the 2000 EIR.

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Environmental Impact

Public Services and Recreation Facilities

Updated Impact E.1 (PSR): Development facilitated by the Redevelopment Plan, as Amended, could result in an increase in calls for fire protection and emergency medical response services, but would not require new or physically altered fire protection facilities in order to maintain acceptable performance objectives. ~~The project could result in an incremental increase in calls for City of Oakland fire protection services. This would be a less than significant impact but implementation of the mitigation measure included below would be desirable.~~

~~(Eliminated) Measure E.1:~~ The proponent of each specific project should include fire protection systems such as fire sprinklers and automatic fire alarm systems in projects even when not required by the applicable building code, if deemed appropriate or necessary by the Oakland Fire Services Agency, on a case-by-case basis.

Mitigation: None Required.

(NOTE: Mitigation Measure E.1 is replaced in this SEIR by SCAs, consistent with the City's current approach to employing SCAs to all projects.)

~~(Eliminated) Impact E.2:~~ The project could result in an incremental increase in ambulance service calls in the project area. However, project operations would not require substantial changes in ambulance provider staffing or equipment. This would therefore be a less than significant impact.

Updated Impact E.3 (PSR): Development facilitated by the Proposed Redevelopment Plan as Amended could increase the use of existing neighborhood and regional parks, including Mosswood Park and the Golden Gate Recreation Center, but not to the extent that substantial physical deterioration of the facilities would occur or be accelerated. This would be a less than significant impact. (Less than Significant)

~~(Eliminated) Impact E.4:~~ The proposed project could result in a lack of adequate open space and recreational opportunities for residents of new housing developments. This is a potentially significant impact.

~~Mitigation Measure E.4:~~ Residential developments constructed as a part of this Redevelopment Plan must provide the minimum open space required by the Zoning Regulations, with no variances, conditional use permits, or planned unit development applications granted by the City that would reduce the required open space. All residential developments of ten units or more must, in consultation with City staff, provide secure recreational areas and a grassy open space that can be used by residents.

~~Significance After Mitigation:~~ Less than Significant.

Updated Impact E.5 (PSR): Development facilitated by the Redevelopment Plan, as Amended, could result in an increase in calls for police service in the Project Area, as Amended, but would not require new or physically altered police facilities in order to maintain acceptable performance objectives. ~~The proposed project could cause an increase in automobile-related crimes in Subarea 1, overloading the staff of the Oakland Police Services Agency. This would be a less than significant impact. (Less than Significant)~~

Updated Impact E.6 (PSR): Development facilitated by the Proposed Redevelopment Plan as Amended ~~The project could add an estimated 213 537 new students the Oakland Unified School District to for local schools, but would not require new or physically altered school facilities to maintain acceptable performance objectives. This would be a less than significant impact. (Less than Significant)~~

Updated Impact E.7: Together with other existing and reasonably foreseeable future development in the vicinity in Oakland, the ~~project~~ Redevelopment Plan, as Amended, would contribute to a cumulative demand for increased police and fire protection services. This could lead to potentially significant impacts that would be mitigated to a less than significant levels through individual project planning, design, and approvals and

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Environmental Impact

through the expansion of services commensurate with growth. This would be a potentially significant impact.

Mitigation Measure E.7 (PSR): Cumulative demand for police and fire protection services in Oakland would be mitigated to less-than-significant levels through individual project planning, design, and approvals, and, if necessary, through the expansion of fire protection services through the use of tax increment funds to accommodate growth.

Significance After Mitigation: Less than Significant.

(NOTE: Although Mitigation Measure E.7 will remain in this SEIR, it is effectively addressed by New Impact PSR-5, which is less than significant with adherence to established City SCAs.)

Transportation and Circulation

Updated Impact B.1 (TRA): The addition of project traffic from the Existing Redevelopment Plan would result in unacceptable level of service at three intersections during the PM peak hour under existing conditions in the Existing Project Area. ~~This is a potentially significant impact.~~ (Potentially Significant)

Mitigation Measure B.1a (TRA): By providing “protected + permitted” left turn phasing for the southbound left turns on Broadway, the impacts at the intersection of Broadway / Piedmont Avenue can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project.

Mitigation Measure B.1b (TRA): By providing “protected” left turn phasing for all approaches and re-striping the shared through-left lanes to exclusive left turn lanes on MacArthur Boulevard, the impacts at the intersection of Telegraph Avenue / MacArthur Boulevard can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project.

Mitigation Measure B.1c (TRA): By providing “protected” left turn phasing for all approaches and re-striping the shared through-left lanes to exclusive left turn lanes on 27th Street, the impacts at the intersection of Telegraph Avenue / 27th Street can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project during the PM peak hour.

Significance After Mitigation: Less than Significant.

Updated Impact B.2 (TRA): The addition of project traffic from the Existing Redevelopment Plan would result in unacceptable level of service at three intersections during the PM peak hour under cumulative Year 2020 conditions in the Existing Project Area. ~~This is a potentially significant impact.~~ (Potentially Significant)

Mitigation Measure B.2a (TRA): By providing “protected + permitted” left turn phasing for the southbound left turns, the impacts at the intersection of Broadway / Piedmont Avenue can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project.

Mitigation Measure B.2b (TRA): By providing “protected” left turn phasing for all approaches and re-striping the shared through-left lanes to exclusive left turn lanes on MacArthur Boulevard, the impacts at the intersection of Telegraph Avenue / MacArthur Boulevard can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project.

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Environmental Impact
Mitigation Measure B.2c (TRA): By providing “protected” left turn phasing for all approaches and re-striping the shared through-left lanes to exclusive left turn lanes on 27th Street, the impacts at the intersection of Telegraph Avenue / 27th Street can be reduced to less than significant levels. With these improvements, which could be funded through the Redevelopment Plan by earmarking funds for transportation improvements, the intersection would operate at LOS C without the project and LOS D with the project during the PM peak hour. Significance After Mitigation: Less than Significant.
Updated Impact B.3 (TRA): <u>Traffic from the Existing Redevelopment Plan</u> ~~The project~~ would contribute incrementally to the cumulative impacts on the regional and local roadways. This would be a less than significant impact. Mitigation: <u>None Required.</u>
Updated Impact B.4 (TRA): <u>Development facilitated by the Redevelopment Plan, as Amended, would generate demand for alternative transportation services.</u> ~~The project would increase transit ridership.~~ This would be a less than significant impact. Mitigation: <u>None Required.</u>
Updated Impact B.5 (TRA): <u>Traffic from the Existing Redevelopment Plan</u> ~~The project~~ would increase vehicular and bicycle traffic along identified bicycle corridors and has the potential to increase pedestrian circulation in the Broadway Auto Row and MacArthur Transit Village subareas. This would be a less than significant impact. Mitigation: <u>None Required.</u>
Utilities and Service Systems
No impact statements or mitigation measures in the 2000 EIR.

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“Eliminated Impact” – Impact identified in 1999 Initial Study or 2000 EIR Proposed Amendments and eliminated from this B/M/SP Redevelopment Plan SEIR

APPENDIX H

Impacts and Mitigation Measures from Project-level EIRs completed Since 2000 for Major Projects in the Existing Project Area

Alta Bates Summit
Medical Center, Summit
Campus Seismic Upgrade
and Master Plan



TABLE 2-1
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.1 Land Use, Plans and Policies		
Impact LU-1: The project would redevelop and expand buildings at the ABSMC Summit Campus property between Webster Street, 34th Street, Telegraph Avenue, and 30th Street, but would not result in the physical division of an existing community or conflict with nearby land uses. (Less than Significant)	None Required	
Impact LU-2: The project would not conflict with applicable land use plans and policies adopted for the purpose of avoiding or mitigating an environmental effect. (Less than Significant)	None Required	
Impact LU-3: The project would not result in a fundamental conflict between adjacent and nearby land uses; particularly with respect to any applicable habitat conservation plan or natural community conservation plan. (Less than Significant)	None Required	
Impact LU-4: The proposed project, combined with cumulative development in the defined geographic area, including past, present, existing, approved, pending, and reasonably foreseeable future development, does not reveal any significant adverse cumulative impacts in the area. (Cumulative Impact: Less than Significant)	None Required	
4.2 Visual Quality and Shadow		
Impact VIS-1: The proposed project would not adversely affect a scenic vista or substantially damage scenic resources within a state or locally designated scenic highway. (Less than Significant)	None Required	
Impact VIS-2: The proposed project would alter the existing visual conditions on the project site, but would not substantially degrade the existing visual character or quality of the site and its surroundings. In addition, it would be consistent with the City of Oakland Design Review criteria for non-Residential projects. (Less than Significant)	None Required	
Impact VIS-3: The proposed project would create a new source of light or glare, but would not adversely affect day or nighttime views in the area. (Less than Significant)	Standard Condition of Approval VIS-1, <i>Lighting Plan</i>	Less than Significant
Impact VIS-4: The proposed project would result in additional shadow on adjacent areas. It would not cast shadow that would substantially impair the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors. Nor would it cast shadow that would substantially	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.2 Visual Quality and Shadow (cont.) impair the beneficial use of any public or quasi-public park, lawn, garden, or open space. Finally, although it would cast shadow on an historic resource, it would not do so to an extent that the shadow would materially impair the resource's historic significance. (Less than significant) Impact VIS-5: The proposed project would not require an exception to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, addressing the provision of adequate light related to appropriate uses. (Less than Significant) Impact VIS-6: Project construction activity and operations, combined with cumulative development in the defined geographic area, including past, present, existing, approved, pending, and reasonably foreseeable future development, would result in cumulative impacts related to visual character, views, aesthetics, shadow, or light and glare. (Less than Significant)	None Required Standard Condition of Approval VIS-1, <i>Lighting Plan</i>	Less than Significant
4.3 Transportation, Circulation and Parking Impact TRANS-1: Phase 1 of the proposed project, when added to existing traffic levels, would add more than 10 trips to <i>Intersection #11-Telegraph Avenue / Hawthorne Avenue</i> (Existing), which meets peak-hour volume signal warrants. (Significant)	Mitigation Measure TRANS-1: Implement the following measures at the Telegraph Avenue / Hawthorne Avenue intersection: - Signalize the intersection, providing actuated operation, with permitted left turns and communication conduit/cabling connecting the traffic signal to the existing traffic signals on Telegraph Avenue at 30th Street and 34th Street. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. The signal should. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-1 (cont.)	State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: – 2070L Type Controller – GPS communication (clock) ~~installation at locations that are not in the City's ITS Master Plan~~ – Accessible pedestrian crosswalks <u>according to Federal and State Access Board guidelines</u> – <u>City Standard ADA wheelchair ramps</u> – Full actuation (video detection, pedestrian push buttons, bicycle detection) – <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> – Countdown Pedestrian Signals – ~~Fiber S~~Signal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet • Signal timing plans for the signals in the coordination group • <u>A complete traffic signal warrant analysis to verify that this location meets MUTCD signal warrants, subject to review and approval of the City.</u> The project sponsor shall ~~fund the cost of preparing and implementing these plans, prepare, and install the approved plans and improvements.~~ Prior to the installation of the traffic signals, a complete traffic signal warrant analysis ~~shall be conducted at this location to verify that this location meets MUTCD signal warrants and be subject to review and approval of the City. After implementation of this measure, the intersection would operate at LOS A during both AM and PM peak hours. No secondary impacts would result from implementation of this measure.~~	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-2: Phase 1 of the proposed project, <u>when added to existing traffic levels</u>, would add more than 10 trips to <i>Intersection #44-West Grand Avenue / Brush Street</i> (Existing), which meets peak hour volume signal warrants. (Significant)	Mitigation Measure TRANS-2: Implement the following measures at the West Grand Avenue / Brush Street intersection: - Signalize the intersection providing actuated operation and signal communication with the existing signal interconnect on West Grand Avenue and making other necessary City-approved associated improvements. The project sponsor shall work with the City to perform a detailed intersection/signalization engineering design study to determine the most feasible design to implement, which improves intersection operations and minimizes any potential secondary impacts, in accordance with City standards, which may include measures not specified herein, or even an alternative to signalization of the intersection, but which result from the detailed study. Because several design alternatives may be acceptable, a final, detailed design plan for this intersection improvement shall be prepared, subject to review and approval of the City. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards, taking into consideration the adjacency with the West Grand/San Pablo intersection and other factors. - The study shall address necessary access improvements (including without limitation signage, signal operations, intelligent transportation systems and employee/patient/visitor education) from the ABSMC campus to southbound I-880 for at least three (3) alternative routes, including without limitation: (a) street closures; (b) queuing impacts of short left turn lane; (c) geometric analysis of new lane configurations and offsets (safety and operations); (d) analysis of cycle length on vehicle, bus, and pedestrian crossings (safety and operations); (e) potential bike lane removal (policy conflict); (f) prohibition of pedestrian crossing; (g) potential parking space removal; and (h) drainage relocation. The study could result in recommendations that would not require the intersection to be signalized.	Significant and Unavoidable Conservatively deemed to be Significant and Unavoidable because the intersection is complicated, and the specific improvements to be implemented, according to City standards, must be finalized after a detailed intersection/signalization engineering design study is performed and a preferred, detailed design selected by the City.

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-2 (cont.)	- Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for the elements listed below: <u>2070L Type Controller</u> <u>GPS communication (clock)</u> <u>Accessible pedestrian crosswalks according to Federal and State Access Board guidelines</u> <u>City Standard ADA wheelchair ramps</u> <u>Full actuation (video detection, pedestrian push buttons, bicycle detection)</u> <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> <u>Countdown Pedestrian Signals</u> <u>Fiber signal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet</u> <u>Signal timing plans for the signals in the coordination group</u> <u>A final design plan for this intersection improvement, subject to review and approval of the City</u> The project sponsor shall fund, prepare, and install the approved plans and improvements.	Less than Significant
Impact TRANS-3: Buildout of the proposed project, when added to existing traffic levels, would add more than 10 trips to <i>Intersection #11- Telegraph Avenue / Hawthorne Avenue</i> (Existing), which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-3: Implement See Mitigation Measures TRANS-1. After implementation of this measure, the intersection would operate at LOS A and B during the AM and PM peak hours, respectively. No secondary impacts would result from implementation of this measure.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-4: Buildout of the proposed project, when added to existing traffic levels, would add more than 10 trips to <i>Intersection #44-West Grand Avenue / Brush Street</i> (Existing), which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-4: Implement <u>See Mitigation Measure TRANS-2</u>. After implementation of this measure, the intersection would operate at an acceptable LOS C during both AM and PM peak hours. No secondary impacts would result from implementation of this measure. However, because further study is required to determine feasibility of this measure, this impact is conservatively deemed significant and unavoidable at this time. If, after submission of final design plans, these improvements are determined to be feasible, then this impact would be reduced to a less-than-significant level.	Significant and Unavoidable ~~This impact is conservatively deemed significant and unavoidable at this time because further study is required to determine feasibility of this measure. If, after submission of final design plans, these improvements are determined to be feasible, then this impact would be reduced to a less-than-significant level.~~
Impact TRANS-5: Phase 1 of the proposed project plus the MOB from Future Phases, when added to projected 2015 traffic levels, would add more than 10 trips to <i>Intersection #11-Telegraph Avenue / Hawthorne Avenue</i> (2015), which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-5: Implement <u>See Mitigation Measure TRANS-1</u>. After implementation of this measure, the intersection would operate at LOS A and B during the AM and PM peak hours, respectively. No secondary impacts would result from implementation of this measure.	Less than Significant
Impact TRANS-6: Phase 1 of the proposed project plus the MOB from Future Phases, when added to projected 2015 traffic levels, would add more than 10 trips to <i>Intersection #44-West Grand Avenue / Brush Street</i> (2015), which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-6: Implement Mitigation Measure TRANS-2, and optimize/adjust signal timing and/or review the adequacy of the measures implemented under TRANS-2, and make necessary adjustments.	Conservatively deemed to be Significant and Unavoidable because the intersection is complicated, and the specific improvements to be implemented, according to City standards, must be finalized after a detailed intersection/signalization engineering design study is performed and a preferred, detailed design selected by the City. ~~This impact is conservatively deemed significant and unavoidable at this time because further study is required to determine feasibility of this measure. If, after submission of final design plans, these improvements are determined to be feasible, then this impact would be reduced to a less-than-significant level.~~
Impact TRANS-7: Buildout of the proposed project, when added to projected 2015 traffic levels, would add more than 10 trips to <i>Intersection #11-Telegraph Avenue / Hawthorne Avenue</i> (2015), which meets peak-hour signal warrants. (Significant)	Mitigation Measure TRANS-7: Implement <u>See Mitigation Measure TRANS-1</u>. After implementation of this measure, the intersection would operate at LOS B during both the AM and PM peak hours. No secondary impacts would result from implementation of this measure.	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-8: Buildout of the proposed project, <u>when added to projected 2015 traffic levels</u>, would add more than 10 trips to <u>Intersection #44-West Grand Avenue / Brush Street (2015)</u>, which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-8: Implement Mitigation Measure TRANS-2, and optimize/adjust signal timing and/or review the adequacy of the measures implemented under TRANS-2, and make necessary adjustments. <u>After implementation of this measure, the intersection would operate at an acceptable LOS D during both AM and PM peak hours. No secondary impacts would result from implementation of this measure.</u>	Conservatively deemed to be Significant and Unavoidable because the intersection is complicated, and the specific improvements to be implemented, according to City standards, must be finalized after a detailed intersection/signalization engineering design study is performed and a preferred, detailed design selected by the City. <u>This impact is conservatively deemed significant and unavoidable at this time because further study is required to determine feasibility of this measure. If, after submission of final design plans, these improvements are determined to be feasible, then this impact would be reduced to a less-than-significant level.</u>
Impact TRANS-9: <u>Under 2035 cumulative traffic conditions</u>, buildout of the proposed project would increase the vehicle delay to a critical movement by more than four seconds during the AM and PM peak hour at <u>Intersection #6-27th Street / Northgate Avenue / I-980 On-Ramps (2035)</u>, which would operate at LOS F during the PM peak hour under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-9: Implement the following measure at the 27th Street / Northgate Avenue / I-980 On-Ramp intersection: - Optimize signal timing (i.e., <u>changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection</u>) for each intersection approach for the AM and PM peak hours. - Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. This intersection is under the jurisdiction of Caltrans so any equipment or facility upgrades must be approved by Caltrans prior to installation. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division and Caltrans for review and approval: - An assessment of existing traffic signal facilities and <u>coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards.</u>	Significant and Unavoidable This project impact would be significant and unavoidable because it is not certain that the measure could be implemented because the City of Oakland, as lead agency, could not implement Measure TRANS-9 without the approval of Caltrans. However, in the event that Mitigation Measure TRANS-9 could be implemented, the impact would be less than significant.

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-9 (cont.)	- Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal timing changes supporting vehicle travel and alternative modes travel consistent with Caltrans requirements. - Signal timing plans for the signals in the coordination group The project sponsor shall fund, the cost of preparing and implementing these plans, prepare, and install the approved plans and improvements. After implementation of this measure, the intersection would operate at LOS E in both the AM and PM peak hours. LOS E is an unacceptable service level, but the vehicle delay during the AM peak hour would be less than under the 2035 Without Project condition, and the PM peak hour condition would improve from LOS F to LOS E. No secondary impacts would result from implementation of this measure.	Significant and Unavoidable
Impact TRANS-10: Under 2035 cumulative traffic conditions, Buildout of the proposed project would degrade the vehicle level of service from an acceptable LOS E to an unacceptable LOS F during the PM peak hour at <i>Intersection #7- Telegraph Avenue / Grand Avenue (2035)</i>. (Significant)	Mitigation Measure TRANS-10: Implement the following measures at the Telegraph Avenue / Grand Avenue intersection: - Provide protected left-turn phase(s) for all approaches - Optimize signal timing (i.e., changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach) for the AM and PM peak hours. - Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards. - Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. The signal should All elements shall be designed to City standards in effect at the time of construction and all new or	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		
Impact TRANS-10 (cont.)	upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call ~~among other items~~ for the elements listed below: - 2070L Type Controller - ~~GPS communication (clock) installation at locations that are not in the City's ITS Master Plan~~ - Accessible pedestrian crosswalks according to <u>Federal and State Access Board guidelines</u> - <u>City Standard ADA wheelchair ramps</u> - Full actuation (video detection, pedestrian push buttons, bicycle detection) - <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> - Countdown Pedestrian Signals - <u>Fiber Signal</u> interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet - <u>Installation of PTZ cameras</u>	
	• Signal timing plans for the signals in the coordination group The project sponsor shall fund, prepare, and install the approved plans and <u>improvements the cost of preparing and implementing these plans.</u> After implementation of this measure, the intersection would worsen the LOS F conditions over the unmitigated condition during the PM peak hour because the protected left-turn phasing mitigation worsens LOS. The protected left-turn phasing is necessary because of the high volume of left turning traffic conflicting with both oncoming traffic and pedestrians crossing the street. The protected left-turn phasing removes these conflicts but adversely impacts vehicle traffic flow. The impact remains significant and unavoidable even with the stated mitigation measure. No secondary impacts would result from implementation of this measure.	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)	Impact TRANS-11: <u>Under 2035 cumulative traffic conditions,</u> ~~Buildout~~ of the proposed project would increase the average intersection vehicle delay by more than two seconds during the PM peak hour at <u>Intersection #8-Telegraph Avenue / 27th Street (2035),</u> which would operate at LOS F during both peak hours under 2035 Without Project conditions. (Significant) Mitigation Measure TRANS-11: Implement the following measures at the Telegraph Avenue / 27th Street intersection: • Provide protected left-turn phase(s) for the northbound and southbound approaches • Optimize signal timing (i.e., <u>changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach</u>) for the AM and PM peak hours. • Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • <u>An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards.</u> • Plans, Specifications, and Estimates (PS&E) to modify the intersection ~~to accommodate the signal modifications. The signal should~~ <u>All elements shall</u> be designed to City standards in effect at the time of construction <u>and all new or upgraded signals should include these enhancements.</u> All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: – 2070L Type Controller – GPS communication (clock) ~~installation at locations that are not in the City's ITS Master Plan~~ – <u>Accessible pedestrian crosswalks according to Federal and State Access Board guidelines</u> – <u>City Standard ADA wheelchair ramps</u> – Full actuation (video detection, pedestrian push buttons, bicycle detection)	Significant and Unavoidable

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-11 (cont.)	- Accessible Pedestrian Signals, audible and tactile according to <u>Federal Access Board guidelines</u> - Countdown Pedestrian Signals - Fiber Signal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. • Signal timing plans for the signals in the coordination group The project sponsor shall fund, ~~the cost of preparing and implementing these plans~~ <u>prepare, and install the approved plans and improvements</u>. After implementation of this measure, the intersection operation would worsen the LOS F condition over the unmitigated condition during the AM and PM peak hours because the protected left turn phasing mitigation worsens LOS. The left turn phasing is necessary because of the high volume of left turning traffic conflicting with both oncoming traffic and pedestrians crossing the street. The protected left turn phasing removes these conflicts. The impact remains significant and unavoidable even with the stated mitigation measure. No secondary impacts would result from implementation of this measure.	
Impact TRANS-12: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would add more than 10 trips to Intersection #11-Telegraph Avenue / Hawthorne Avenue (2035), which meets peak hour signal warrants. (Significant)	Mitigation Measure TRANS-12: Implement Mitigation Measure TRANS-1. After implementation of this measure, the intersection would operate at LOS A and B during the AM and PM peak hours, respectively. No significant effects would result from implementation of this measure. No secondary impacts would result from implementation of this measure.	Less than Significant
Impact TRANS-13: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would degrade PM peak-hour operations from LOS E to LOS F (and increase the average intersection delay by more than two seconds) during the PM peak hour at Intersection #13-Telegraph Avenue / MacArthur Boulevard (2035). In addition, buildout of the proposed project would increase the average intersection vehicle delay by more than four seconds (under prevailing LOS E conditions) during the AM peak hour. (Significant)	Mitigation Measure TRANS-13: Implement the following measures at the Telegraph Avenue / MacArthur Boulevard intersection: • Provide protected left-turn phase(s) for the northbound and southbound approaches • Optimize signal timing (i.e., <u>changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach</u>) for the AM and PM peak hours.	Significant and Unavoidable

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		
Impact TRANS-13 (cont.)	- Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. ~~The signal should~~ All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: 2070L Type Controller - GPS communication (clock) ~~Installation at locations that are not in the City's ITS Master Plan~~ - Accessible pedestrian crosswalks according to Federal and State Access Board guidelines - City Standard ADA wheelchair ramps - Full actuation (video detection, pedestrian push buttons, bicycle detection) - Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines - Countdown Pedestrian Signals - Fiber Ssignal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. - Installation of PTZ cameras	Signal timing plans for the signals in the coordination group

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-13 (cont.)	The project sponsor shall fund, the cost of preparing and implementing these plans prepare, and install the approved plans and improvements. After implementation of this measure, the intersection would deteriorate from LOS E to LOS F during the AM peak hour, but PM peak hour operations would improve from LOS F to LOS E. The deteriorated conditions during the AM peak hour are due to the protected left turn phasing mitigation. The protected left turn phasing is necessary because of the high volume of left turning traffic conflicting with both oncoming traffic and pedestrians crossing the street. The protected left turn phasing removes these conflicts. As a result, the impact remains significant and unavoidable even with the stated mitigation measure. No secondary impacts would result from implementation of this measure.	
Impact TRANS-14: Under 2035 cumulative traffic conditions, buildout of the proposed project would increase the average intersection vehicle delay by more than two seconds during the PM peak hour at Intersection #29-Broadway / 27th Street (2035), which would operate at LOS F during the PM peak hour under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-14: Implement the following measures at the Broadway / 27th Street intersection: • Provide actuated traffic signal operation • Optimize signal timing (i.e., changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach) for the AM and PM peak hours. • Coordinate the signal timing changes at this intersection with the adjacent intersection that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards. • Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. The signal should. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-14 (cont.)	ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: – 2070L Type Controller – GPS communication (clock) ~~installation at locations that are not in the City's ITS Master Plan~~ – Accessible pedestrian crosswalks according to <u>Federal and State Access Board guidelines</u> – <u>City Standard ADA wheelchair ramps</u> – Full actuation (video detection, pedestrian push buttons, bicycle detection) – Accessible Pedestrian Signals, <u>audible and tactile according to Federal Access Board guidelines</u> – Countdown Pedestrian Signals – <u>Fiber Signal</u> interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. • Signal timing plans for the signals in the coordination group The project sponsor shall <u>fund the cost of preparing and implementing these plans</u> <u>prepare, and install the approved plans and improvements.</u> <u>After implementation of this measure, the intersection would maintain LOS F during the PM peak hour; however, the intersection delay would be improved over the unmitigated condition. No secondary impacts would result from implementation of this measure.</u> Mitigation Measure TRANS-15: Implement the following measures at the Broadway / West MacArthur Boulevard intersection: • Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour • Coordinate the signal timing changes at this intersection with the adjacent intersection that are in the same signal coordination group.	Significant and Unavoidable
Impact TRANS-15: <u>Under 2035 cumulative traffic conditions, buildout of the proposed project would increase the average intersection vehicle delay by more than six seconds during the AM peak hour at Intersection #34-Broadway / West MacArthur Boulevard (2035), which would operate at LOS E during the AM peak hour under 2035 Without Project conditions. (Significant)</u>		

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-15 (cont.)	To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • <u>An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards.</u> • <u>Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. The signal should All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for among other items the elements listed below:</u> – 2070L Type Controller – <u>GPS communication (clock) installation at locations that are not in the City's ITS Master Plan</u> – <u>Accessible pedestrian crosswalks according to Federal and State Access Board guidelines</u> – <u>City Standard ADA wheelchair ramps</u> – Full actuation (video detection, pedestrian push buttons, bicycle detection) – <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> – Countdown Pedestrian Signals – <u>Fiber Signal</u> interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. • Signal timing plans for the signals in the coordination group The project sponsor shall fund, <u>the cost of preparing and implementing these plans prepare, and install the approved plans and improvements.</u> <u>After implementation of this measure, the intersection operations would deteriorate from LOS E to LOS F during the AM peak hour.</u>	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		
Impact TRANS-15 (cont.)		
Impact TRANS-16: <u>Under 2035 cumulative traffic conditions</u> , buildout of the proposed project would increase the average intersection vehicle delay by more than two seconds during the AM peak hour at <i>Intersection #36-Broadway / 51st Street / Pleasant Valley Avenue</i> (2035), which would operate at LOS F during both peak hours under 2035 Without Project conditions. (Significant)	As a result, the impact remains significant and unavoidable even with the stated mitigation measure. No secondary impacts would result from implementation of this measure. Mitigation Measure TRANS-16: Implement the following measures at the Broadway / 51st Street / Pleasant Valley Avenue intersection: - Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour - Coordinate the signal timing changes at this intersection with the adjacent intersection that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards. - Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. The signal should <u>All elements shall</u> be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: 2070L Type Controller - GPS communication (clock) ~~Installation at locations that are not in the City's ITS Master Plan~~ - Accessible pedestrian crosswalks according to Federal and State Access Board guidelines - City Standard ADA wheelchair ramps - Full actuation (video detection, pedestrian push buttons, bicycle detection)	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-16 (cont.)	- <u>Accessible Pedestrian Signals</u>, audible and tactile according to <u>Federal Access Board guidelines</u> - Countdown Pedestrian Signals - <u>Fiber Signal</u> interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. • Signal timing plans for the signals in the coordination group The project sponsor shall fund <u>the cost of preparing and implementing these plans prepare, and install the approved plans and improvements.</u> After implementation of this measure, the intersection would operate at LOS E during the AM peak hour; reducing the project's impact to less than significant. No secondary impacts would result from implementation of this measure.	Significant and Unavoidable
Impact TRANS-17: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would add more than 10 trips to Intersection #39-Harrison Street / 29th Street (2035), which would meet peak-hour signal warrants under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-17: <u>None Recommended.</u> Signalization of this intersection was considered and rejected as a mitigation measure. The 29th Street corridor between Fairmount Avenue and Harrison Street is narrow (less than 30 feet wide) with on-street parking serving residential uses. The corridor, based on its design, was not intended to serve traffic traveling between the commercial corridors of Broadway and Telegraph Avenue and Harrison Street. Signalization could encourage additional traffic through the residential area along 29th Street.	Significant and Unavoidable
Impact TRANS-18: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would increase the average intersection vehicle delay by more than two seconds during the PM peak hour at Intersection #41-Oakland Avenue / Perry Place / I-580 Off-Ramp (2035), which would operate at LOS F during both peak hours under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-18: Implement the following measure at the Oakland Avenue / Perry Place / I-580 Off-Ramp intersection: • Optimize signal timing (i.e., <u>changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach</u>) for the AM and PM peak hours. • Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. This intersection is under the jurisdiction of Caltrans so any equipment or facility upgrades must be approved by Caltrans prior to installation.	Significant and Unavoidable This project impact would be significant and unavoidable because it is not certain that the measure could be implemented because the City of Oakland, as lead agency, could not implement Measure TRANS-18 without the approval of Caltrans. However, in the event that Mitigation Measure TRANS-18 could be implemented, the impact would be less than significant.

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-18 (cont.)	To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division and Caltrans for review and approval: • <u>An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards.</u> • Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal timing changes supporting vehicle travel and alternative modes travel consistent with Caltrans requirements. • Signal timing plans for the signals in the coordination group The project sponsor shall fund, ~~the cost of preparing and implementing these plans~~ <u>prepare, and install the approved plans and improvements.</u> ~~After implementation of this measure, the intersection would operate at LOS F during the PM peak hour but reduce the project impact to less than significant levels by improving intersection delay over the unmitigated condition. No secondary impacts would result from implementation of this measure.~~	Significant and Unavoidable
Impact TRANS-19: Under 2035 cumulative traffic conditions, ~~buildout of the proposed project would increase the average intersection vehicle delay by more than six seconds during the AM peak hour at Intersection #43-Piedmont Avenue / West MacArthur Boulevard (2035), which would operate at LOS E during the AM peak hour under 2035 Without Project conditions. (Significant)~~	Mitigation Measure TRANS-19: Implement the following measures at the Piedmont Avenue / West MacArthur Boulevard intersection: • Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the AM peak hour • Coordinate the signal timing changes at this intersection with the adjacent intersection that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • <u>An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards.</u>	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		
Impact TRANS-19 (cont.)	- Plans, Specifications, and Estimates (PS&E) to modify the intersection to accommodate the signal modifications. ~~The signal should~~ All elements shall be designed to City standards in effect at the time of construction <u>and all new or upgraded signals should include these enhancements.</u> All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: 2070L Type Controller - GPS <u>communication (clock) installation at locations that are not in the City's ITS Master Plan</u> <u>Accessible pedestrian crosswalks according to Federal and State Access Board guidelines</u> <u>City Standard ADA wheelchair ramps</u> - Full actuation (video detection, pedestrian push buttons, bicycle detection) <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> - Countdown Pedestrian Signals <u>Fiber S</u> signal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. - Signal timing plans for the signals in the coordination group	
	The project sponsor shall fund <u>the cost of preparing and implementing these plans prepare, and install the approved plans and improvements.</u> ~~If this measure were implemented, the intersection would worsen the LOS-E conditions (increase the vehicle delay) compared to the unmitigated condition during the AM peak hour. No other secondary impacts would result from implementation of this measure.~~	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		Significant and Unavoidable
Impact TRANS-20: Buildout of the proposed project would add more than 10 trips to Intersection #44-West Grand Avenue / Brush Street (2035), which would meet signal warrants under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-20: Implement Mitigation Measure TRANS-2 and TRANS-6. After implementation of this measure, the intersection would continue to operate at LOS F during the AM and PM peak hours primarily because of the substantial increase in east/west traffic volumes assumed in this study. As a result, the impact remains significant and unavoidable even with the stated mitigation measure. ~~No secondary impacts would result from implementation of this measure.~~	
Impact TRANS-21: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would increase the v/c ratio at Intersection #45-West Grand Avenue / San Pablo Avenue (2035), which would operate at LOS F during the PM peak hour under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-21: No feasible mitigations have been identified other than Mitigation Measure TRANS-2. ~~The West Grand Avenue / San Pablo Avenue intersection would be combined with the West Grand Avenue intersection at Brush Street (see Mitigation Measure TRANS-20). Intersection operations would remain at LOS F with the stated mitigation measure. This occurs because of the substantial increase in east/west traffic volumes assumed in this study. As a result, the impact remains significant and unavoidable even with the stated mitigation measure.~~	Significant and Unavoidable
Impact TRANS-22: <u>Under 2035 cumulative traffic conditions.</u> Buildout of the proposed project would increase the average intersection vehicle delay by more than two seconds during the PM peak hour at Intersection #50-17th Street / Castro Street (2035), which would operate at LOS F during the PM peak hour under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-22: Implement the following measures at the 17th Street / Castro Street intersection: - Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the PM peak hour - Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - An assessment of existing traffic signal facilities and coordination with City Transportation Services Division on the scope of improvements necessary to meet City standards. - Plans, Specifications, and Estimates (PS&E) to modify the intersection to ~~accommodate the signal modifications. The signal should~~ All elements shall be designed to City standards in effect at the time of construction and all new or	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-22 (cont.)	upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below: - 2070L Type Controller - <u>GPS communication (clock) installation at locations that are not in the City's ITS Master Plan</u> - Accessible pedestrian crosswalks according to <u>Federal and State Access Board guidelines</u> - <u>City Standard ADA wheelchair ramps</u> - Full actuation (video detection, pedestrian push buttons, bicycle detection) - <u>Accessible Pedestrian Signals, audible and tactile according to Federal Access Board guidelines</u> - Countdown Pedestrian Signals - <u>Fiber Signal</u> interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. • Signal timing plans for the signals in the coordination group The project sponsor shall fund, ~~the cost of preparing and implementing these plans~~ <u>prepare, and install the approved plans and improvements.</u> After implementation of this measure, the intersection would operate at an acceptable LOS D during the PM peak hour. No secondary impacts would result from implementation of this measure.	Less than Significant
Impact TRANS-23: Under 2035 cumulative traffic conditions, buildout of the proposed project would increase the v/c ratio at Intersection #52 West MacArthur Boulevard / Market Street (2035), which would operate at LOS F during both peak hours under 2035 Without Project conditions. (Significant)	Mitigation Measure TRANS-23: Implement the following measures at the West MacArthur Boulevard / Market Street intersection: • Optimize signal timing (i.e., <u>changing the amount of adjust the allocation of green time assigned to each lane of traffic approaching the intersection for each intersection approach</u>) for the AM and PM peak hour.	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.) Impact TRANS-23 (cont.)	- Coordinate the signal timing changes at this intersection with the adjacent intersections that are in the same signal coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - An assessment of existing traffic signal facilities and coordination with <u>City Transportation Services Division on the scope of improvements necessary to meet City standards.</u> - Plans, Specifications, and Estimates (PS&E) to modify the intersection ~~to accommodate the signal modification. The signal should~~ <u>All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction. Current City Standards call for ~~among other items~~ the elements listed below:</u> 2070L Type Controller - GPS communication (clock) ~~installation at locations that are not in the City's ITS Master Plan~~ - Accessible pedestrian crosswalks according to <u>Federal and State Access Board guidelines</u> - City Standard ADA wheelchair ramps - Full actuation (video detection, pedestrian push buttons, bicycle detection) - Accessible Pedestrian Signals, audible and tactile according to <u>Federal Access Board guidelines</u> - Countdown Pedestrian Signals - Fiber ~~S~~signal interconnect for corridors identified in the City's ITS Master Plan for a maximum of 600 feet. - Signal timing plans for the signals in the coordination group	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.3 Transportation, Circulation and Parking (cont.)		
Impact TRANS-23 (cont.)	The project sponsor shall fund, the cost of preparing and implementing these plans prepare, and install the approved plans and improvements. After implementation of this measure, the intersection would operate at LOS E during both the AM and PM peak hours. LOS E is an unacceptable service level, but conditions would be better than the LOS F conditions under the 2035 Without Project condition. No secondary impacts would result from implementation of this measure.	
	Impact TRANS-24: Parking Garage Driveways at 30th Street Conflict at Mid-Block Pedestrian Crossing. (Significant)	Less than Significant
	Impact TRANS-25: The planned pedestrian pathway connecting 30th Street and Hawthorne Avenue increases the "desire line" for pedestrians to cross 30th Street at the existing Mid-Block Pedestrian Crossing Area. (Significant)	Less than Significant
	Impact TRANS-26: The project will increase auto and bike traffic on Webster Street between the freeway ramp and 30th Street. Because Webster Street will be a bike boulevard, auto traffic and bike traffic will share the same space. (Significant)	Less than Significant
	Impact TRANS-27: Summit Street Closure Conflicts with AC Transit Line 59. (Significant)	Less than Significant
4.4 Air Quality		
Impact AIR-1: Activities associated with demolition, site preparation, and construction would generate short-term emissions of criteria pollutants, including suspended inhalable particulate matter and equipment exhaust emissions. (Less than Significant under existing BAAQMD Thresholds. If proposed BAAQMD Thresholds are adopted, Potentially Significant Phase I NOx emissions under proposed project and under the MOB Concurrent with Phase 1 scenario)	Standard Conditions of Approval AIR-1, Dust Control, AIR-2, Construction Emissions, and AIR-3, Asbestos Removal in Structures.	Less than Significant under Existing BAAQMD Thresholds
	Mitigation Measure AIR-1: Implement Mitigation Measure AIR-8.	Significant and Unavoidable in Phase 1 if Proposed BAAQMD Thresholds are adopted. (See Mitigation Measure AIR-8)

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.4 Air Quality (cont.)		
Impact AIR-2: Operation of the proposed project would result in increased long-term emissions of criteria pollutants. (Less than Significant under existing BAAQMD Thresholds. If proposed BAAQMD Thresholds are adopted, Potentially Significant Phase I NOx emissions under the MOB Concurrent with Phase 1 scenario)	Standard Condition TRANS-1, <i>Transportation and Parking Demand Management</i> . Mitigation Measure AIR-2: None required. The applicant shall determine and conduct routine testing of the two proposed new emergency generators proposed by the project on separate days or for a shorter duration rather than "both generators tested for one hour on the same day." The applicant shall prepare and submit to the City of Oakland a Generator Testing and Operations Plan. The Generator Testing and Operations Plan, in combination with implementation of the required Transportation and Parking Demand Management Plan pursuant to Standard Condition TRANS-8, can effectively reduce emission levels to less than significant according to applicable thresholds. The applicant shall implement the Plan.	Less than Significant
Impact AIR-3: The proposed project would expose persons to substantial levels of PM2.5 and toxic air contaminants (TACs) which may lead to adverse health effects. (Less than Significant)	None Required	
Impact AIR-4: The proposed project would not frequently create substantial objectionable odors affecting a substantial number of people. (Less than Significant)	None Required	
Impact AIR-5: The proposed project would not contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour. (Less than Significant)	None Required	
Impact AIR-6: The proposed project would result in a cumulatively considerable contribution to a cumulative air quality impact from criteria pollutant emissions. (Less than Significant under existing BAAQMD Thresholds. If proposed BAAQMD Thresholds are adopted, Potentially Significant Phase I NOx emissions under proposed project and under the MOB Concurrent with Phase 1 scenario)	Standard Conditions of Approval AIR-1, <i>Dust Control</i> , AIR-2, <i>Construction Emissions</i> , and AIR-3, <i>Asbestos Removal in Structures</i> . Mitigation Measure AIR-6: Implement Mitigation Measure AIR-8.	Less than Significant under Existing BAAQMD Thresholds Significant and Unavoidable in Phase 1 if Proposed BAAQMD Thresholds are adopted. (See Mitigation Measure AIR-8)
Impact AIR-7: Cumulative impacts from existing sources of pollution would expose sensitive receptors at the project site to substantial levels of TACs. (Less than Significant)	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.4 Air Quality (cont.)		
Impact AIR-8: Construction and operation of the project would result in a cumulatively considerable increase in GHG emissions. (Significant if proposed BAAQMD Thresholds are adopted)	Standard Condition TRANS-1, <i>Transportation and Parking Demand Management</i> Mitigation Measure AIR-8: Implement the Greenhouse Gas Reduction Plan.	Significant and Unavoidable if Proposed BAAQMD Thresholds are adopted This cumulative impact would be significant and unavoidable because, while the measures in Mitigation Measure AIR-8, in addition to Standard Condition TRANS-1, <i>Transportation and Parking Demand Management</i>, could reduce the cumulative GHG emissions associated with the project, the actual reduction would depend on the combination and extent of the measures employed. Therefore, the extent of potential reduction cannot be known at this time, and as a result, the residual impact of the proposed project's CO₂e cumulative contribution would continue to be significant and unavoidable. Even if maximum mitigation reductions are assumed for energy-based measures, no other feasible mitigation measures are specified that would reduce GHG emissions to a less-than-significant level.
Impact AIR-9: The project would conflict with an applicable plan, policy or regulation of an appropriate regulatory agency adopted for the purpose of reducing greenhouse gas emissions. (Significant if proposed BAAQMD Thresholds are adopted)	Standard Condition TRANS-1, <i>Transportation and Parking Demand Management</i> Mitigation Measure AIR-9: Implement Mitigation Measure AIR-8.	Significant and Unavoidable if Proposed BAAQMD Thresholds are adopted (See Mitigation Measure AIR-8, above)
4.5 Noise		
Impact NOI-1: Construction activities associated with the proposed project would temporarily generate noise levels that could conflict with standards established in the City noise ordinance. (Less than Significant)	Standard Conditions of Approval NOI-1, <i>Days/Hours of Construction Operation</i> , NOI-2, <i>Noise Control</i> , NOI-3, <i>Noise Complaint Procedures</i> , and NOI-5, <i>Pile Driving and Other Extreme Noise Generators</i>	Less than Significant
Impact NOI-2: Noise levels from Project generated traffic would increase roadside ambient noise levels. (Less than Significant)	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.5 Noise (cont.)		
Impact NOI-3: Operational noise sources generated by HVAC equipment, emergency generators, ambulance sirens, proposed parking structures, and truck loading/unloading may impact nearby noise-sensitive receptors. (Less than Significant)	None Required	
Impact NOI-4: The interior noise levels within hospital buildings, especially in rooms used for overnight use such as patient wards, could exceed L_{dn} 45 dBA, the interior noise standard for hospitals according to the City of Oakland General Plan Noise Element. (Less than Significant)	Standard Condition of Approval NOI-4, <i>Interior Noise</i>	Less than Significant
Impact NOI-5: The proposed project, together with past, present, existing, approved, pending, and reasonably foreseeable future development in the area, could result in long-term traffic increases that could cumulatively increase noise levels. (Less than Significant)	Standard Conditions of Approval ~~AIR-1, Dust Control, AIR-2, Construction Emissions, AIR-3, Asbestos Removal in Structures, AIR-4, Indoor Air Quality, NOI-1, Days/Hours of Construction Operation, NOI-2, Noise Control, NOI-3, Noise Complaint Procedures, and NOI-5, Pile Driving and Other Extreme Noise Generators.~~	Less than Significant
4.6 Biological Resources		
Impact BIO-1: The proposed project could result in the take of protected birds or their nests or bats. (Potentially Significant)	Standard Condition of Approval BIO-1, <i>Tree Removal During Breeding Season</i>	Less than Significant
Impact BIO-2: Project construction and operations, as well as the final building structures, have the potential to affect migratory and breeding birds through building collisions. This may occur due to both construction activities and the final building configurations. (Potentially Significant)	Standard Condition of Approval BIO-5, <i>Bird Collision Reduction</i>	Less than Significant
Impact BIO-3: Impacts to migratory or breeding birds and other special-status species due to lighting conditions. (Potentially Significant)	Standard Condition VIS-1, <i>Lighting Plan</i>	Less than Significant
Impact BIO-4: Impacts of noise on migrating and breeding birds, and other special-status species. (Potentially Significant)	Standard Conditions of Approval NOI-1, <i>Days/Hours of Construction</i> , NOI-2, <i>Noise Control</i> , and NOI-5, <i>Pile Driving and Other Extreme Noise Generators</i>	Less than Significant
Impact BIO-5: The proposed project will result in damage to, or removal of, protected trees that are within or adjacent to the project site. (Potentially Significant)	Standard Conditions of Approval BIO-2, <i>Tree Removal Permit, BIO-3, Tree Replacement Plantings</i> , and BIO-4, <i>Tree Protection During Construction</i>	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.6 Biological Resources (cont.)		
Impact BIO-6: Project construction activity and operations, in conjunction with other past, present, existing, approved, pending, and reasonably foreseeable future development in the project area, could result in impacts on special-status species, habitats, wetlands, and other waters of the U.S. (Less than Significant)	None Required	
4.7 Cultural Resources		
Impact CUL-1: Phase 1 of the proposed project would have no significant impact on historic architectural resources. (No Impact)	None Required	
Impact CUL-2: Phase 1 of the project would construct new and substantially larger medical facilities in the vicinity of historical resources, but would not directly affect their historic setting. (Less than Significant)	None Required	
Impact CUL-3: The project would cast new shadow on to the sanctuary windows of the Parks Chapel A.M.E. Church, a City of Oakland Landmark in the project vicinity. (Less Than Significant)	None Required	
Impact CUL-4: Future phases of the proposed project would demolish the potentially historical resource at 418 30th Street. (Conservatively Assumed to be Significant <u>Less than Significant</u>)	None Required Mitigation Measure CUL-4: The following mitigation measures would help to reduce the impact of the loss of 418 30th Street: Mitigation Measure CUL-4a: Archival Documentation. Alta Bates Summit Medical Center shall document the building at 418 30th Street prior to its demolition through the use of large-format black and white photography and a brief historical report, meeting the specifications of the Historic American Building Survey (HABS). The historic report should briefly describe the building and its historic significance to the City of Oakland. The documentary photographs and report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Digital copies of the photographs would be forwarded to the Oakland Cultural Heritage Survey. This mitigation would satisfy Policy 3.8.1 (7) of the Historic Preservation Element of the City of Oakland General Plan (Documentation in a Historic American Building Survey report or other appropriate format: photographs, oral history, video, etc.). Mitigation Measure CUL-4b: Interpretive Materials. Alta Bates Summit Medical Center shall prepare interpretive materials as	Conservatively assumed to be Significant and Unavoidable

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.7 Cultural Resources (cont.)		
Impact CUL-4 (cont.)	directed by the City, including, but not limited to on-site interpretive signage, brochures, or any combination thereof. Planning Staff recommends that the project sponsor appropriate a dollar amount of approximately \$10,000 for these interpretive materials. This mitigation would satisfy Policy 3.8.1 (8) of the Historic Preservation Element of the City of Oakland General Plan (Placement of a plaque, commemorative marker, or artistic or interpretive display on the site providing information on the historical significance of the resource.) Mitigation Measure CUL-4c: Salvage Program. The Project Applicant shall undertake a salvage program to save and reuse historically significant materials and features from the building at 418 30th Street, such as the terra cotta tile roofing, columned porch, or possibly other materials or features not yet identified herein. As such the Project Applicant shall conduct a full survey of all historic architectural elements and elements suitable for re-use at the site, develop a reuse/salvage plan, whose goal is to maximize reuse of materials at the site, and submit such for Landmarks Preservation Advisory Board (LPAB) consideration. The LPAB would make advisory recommendations either to the Planning Commission or Development Director. The applicant shall implement the approved plan. Implementation of a salvage program would satisfy Policy 3.8.1 (5) of the Historic Preservation Element of the City of Oakland General Plan (Salvage and preservation of significant features and materials of the structure in a local museum or within the new project). Mitigation Measure CUL-4d: Financial Contributions: The Project Applicant shall make a financial contribution to the City of Oakland, which can be used to fund other historic preservation projects at the Project Site or in the immediate vicinity. Contributions to the fund shall be determined by Planning Staff based on the linear feet of the facades to be demolished. This mitigation would satisfy Policy 3.8.1 (9) of the Historic Preservation Element of the City of Oakland General Plan (Contribution to a Facade Improvement Fund, the Historic Preservation Revolving Loan Fund, the Oakland Cultural Heritage Survey, or other program appropriate to the character of the resource.)	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.7 Cultural Resources (cont.)		
Impact CUL-5: Construction of the project could cause substantial adverse changes to the significance of currently unknown cultural resources at the site, potentially including an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), or the disturbance of any human remains, including those interred outside of formal cemeteries. (Significant)	Standard Conditions of Approval CUL-1, <i>Archaeological Resources</i> and CUL-2, <i>Human Remains</i>	Less than Significant
Impact CUL-6: The project may adversely affect unidentified paleontological resources at the site. (Potentially Significant)	Mitigation Measure CUL-6: Prior to construction, the applicant will retain a qualified paleontologist to design a monitoring and mitigation program that is consistent with Society of Vertebrate Paleontology Guidelines (SVP, 1995, 1996), and should include: 1. a pre-construction assessment to review and refine areas of high paleontological potential; 2. monitoring of all subsurface excavations by one or more paleontological monitors; 3. emergency discovery procedures including specimen significance evaluation, data recovery, and if needed, museum curation; and 4. reporting. The mitigation and monitoring program can be modified to reduce or eliminate construction monitoring if, after 50 percent of the earthwork is complete, the project paleontologist can demonstrate that full-time monitoring is not needed.	Less than Significant
Impact CUL-7: The proposed project, in combination with past, present, existing, approved, pending, and reasonably foreseeable future development in the project area that would involve demolition of other historical resources, could form a significant cumulative impact to historical resources. (Less than Significant)	None Required	
Impact CUL-8: Construction of the proposed project in combination with construction from other past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity could cause a significant cumulative impact to currently unknown cultural resources at the site, potentially including an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), or the disturbance of any human remains, including those interred outside of formal cemeteries, as well as paleontological resources (Less than Significant)	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.8 Geology, Soils, and Geohazards		
Impact GEO-1: Redevelopment in the project area could expose people or structures to seismic hazards such as groundshaking or liquefaction. (Less than Significant)	Standard Condition of Approval GEO-4, <i>Geotechnical Report</i>	Less than Significant
Impact GEO-2: Redevelopment in the project area could be subjected to geologic hazards, including expansive soils, subsidence, seismically induced settlement and differential settlement. (Less than Significant)	Standard Condition of Approval GEO-4, <i>Geotechnical Report</i>	Less than Significant
Impact GEO-3: The development proposed as part of the project, when combined with past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity, would not result in significant cumulative impacts with respect to geology, soils or seismicity. (Less than Significant)	Standard Conditions of Approval GEO-1, <i>Erosion and Sedimentation Control Plan</i> , GEO-2, <i>Vibrations Adjacent to Historic Structures</i> , GEO-3, <i>Soils Report</i> , and GEO-4, <i>Geotechnical Report</i>	Less than Significant
4.9 Hazardous Materials and Hazards		
Impact HAZ-1: Demolition of existing structures that contain hazardous building materials, such as lead-based paint, asbestos, and PCBs could expose workers, the public, or the environment to these hazardous materials and would generate hazardous waste. (Potentially Significant)	Standard Conditions of Approval HAZ-3, <i>Lead-base Paint Remediation</i> , and AIR-3, <i>Asbestos Removal in Structures</i>	Less than Significant
Impact HAZ-2: Implementation of the proposed project would disturb soil and groundwater potentially impacted by historic hazardous material use, which could expose construction workers, the public, or the environment to adverse conditions related to hazardous materials handling. (Potentially Significant)	Standard Conditions of Approval HAZ-5, <i>Best Management Practices for Soil and Groundwater Hazards</i> , and HAZ-6, <i>Radon or Vapor Intrusion from Soil or Groundwater Sources</i>	Less than Significant
Impact HAZ-3: The project would involve the transportation, use, and storage of hazardous chemicals, which could present public health and/or safety risks to facility workers, patients and visitors, and the surrounding area. (Less than Significant)	None Required	
Impact HAZ-4: Hazardous materials used onsite during construction activities (i.e., solvents) could be spilled through improper handling or storage, potentially increasing public health and/or safety risks to ABSMC workers, patients and visitors, and the surrounding area. (Potentially Significant)	Standard Condition of Approval HAZ-1, <i>Hazards Best Management Practices</i>	Less than Significant
Impact HAZ-5: Hazards at the project site in combination with past, present, existing, approved, pending, and reasonably foreseeable future development could contribute to cumulative hazards in the vicinity of the project site. (Less than Significant)	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.10 Hydrology and Water Quality		
Impact HYD-1: Project construction activities would involve disturbance of site soils from excavation, soil stockpiling, and grading that could come in contact with stormwater causing sedimentation that violates water quality standards or waste discharge requirements or otherwise substantially degrade water quality. (Less than Significant)	Standard Conditions of Approval HYD-1, <i>Erosion and Sedimentation Control Plan</i> , and HYD-2, <i>Stormwater Pollution Prevention Plan</i>	Less than Significant
Impact HYD-2: The project would result in new development that could substantially alter existing drainage pattern of the project site or the surrounding area. (Less than Significant)	Standard Condition of Approval HYD-5, <i>Stormwater and Sewer</i>	Less than Significant
Impact HYD 3: The proposed project would not violate any water quality standards or waste discharge requirements during the operational phase of the project. (Less than Significant)	Standard Conditions of Approval HYD-3, <i>Post-Construction Stormwater Pollution Management Plan</i> , and HYD-4, <i>Maintenance Agreement for Stormwater Treatment Measures</i>	Less than Significant
Impact HYD-4: The increased construction activity and new development resulting from the project, in conjunction with past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity of the project area, would not result in cumulatively considerable impacts on hydrology and water quality conditions. (Less than Significant)	None Required	
4.11 Population, Housing and Employment		
Impact POP-1: The project would displace existing housing, businesses and jobs, but not in substantial numbers necessitating construction of replacement facilities elsewhere, in excess of that anticipated in the City's General Plan. (Less than Significant)	None Required	
Impact POP-2: The project would not induce substantial population growth in a manner not anticipated by the General Plan, either directly by proposing new housing or businesses, or indirectly through infrastructure improvements. (Less than Significant)	None Required	
Impact POP-3: In combination with other past, present, existing, approved, pending, and reasonably foreseeable future development, the proposed project would not cumulatively induce substantial population growth in a manner not anticipated by the General Plan, either directly by proposing new housing or businesses, or indirectly through infrastructure improvements. (Less than Significant)	None Required	

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.12 Public Services and Recreation		
Impact PUB-1: The proposed project could result in an increase in calls for police protection services, but would not require new or physically altered police facilities in order to maintain acceptable performance objectives. (Less than Significant)	None Required	
Impact PUB-2: The proposed project could increase the number of calls for fire protection services and emergency medical assistance, but would not require new or physically altered fire facilities in order to maintain acceptable performance objectives. (Less than Significant)	None Required	
Impact PUB-3: The proposed project could result in new students for local schools, but would not require new or physically altered school facilities to maintain acceptable performance objectives. (Less than Significant)	None Required	
Impact PUB-4: The proposed project could increase the demand for parks, recreational facilities, and library facilities, but would not result in substantial physical deterioration of such facilities or require new or physically altered facilities in order to maintain acceptable performance objectives. (Less than Significant)	None Required	
Impact PUB-5: The proposed project, when combined with other past, present, existing, approved, pending, and reasonably foreseeable future development in the vicinity, could result in cumulative impacts to the provision of public services. (Less than Significant)	None Required	
4.13 Utilities, Service Systems and Energy		
Impact UTIL-1: The proposed project would not exceed water supplies available to serve the project from existing entitlements and resources, nor require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects. (Less than Significant)	None Required	
Impact UTIL-2: The increased generation of wastewater by the proposed project would not result in the construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Less than Significant)	Standard Condition of Approval HYD-5, <i>Stormwater and Sewer</i>	Less than Significant
Impact UTIL-3: The proposed project would not require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects. (Less than Significant)	Standard Conditions of Approval HYD-2, <i>Stormwater Pollution Prevention Plan</i> , HYD-3, <i>Post-Construction Stormwater Management Plan</i> , HYD-5, <i>Stormwater and Sewer</i>	Less than Significant

TABLE 2-1 (Continued)
SUMMARY OF IMPACTS, STANDARD CONDITIONS OF APPROVAL, MITIGATION MEASURES, AND RESIDUAL IMPACTS

Environmental Impact	Standard Conditions of Approval and Mitigation Measures	Level of Significance after application of Standard Conditions of Approval and Mitigation
4.13 Utilities, Service Systems and Energy (cont.)		
Impact UTIL-4: The proposed project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, and would not require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects. Additionally, the project would not impede the ability of the City to meet the waste diversion requirements of the California Integrated Waste Management Act or the Alameda County Waste Reduction and Recycling Initiative or cause the City to violate other applicable federal, state, and local statutes and regulations related to solid waste. (Less than Significant)	Standard Condition of Approval UTIL-1, <i>Waste Reduction and Recycling</i>	Less than Significant
Impact UTIL-5: The proposed project would not violate regulations relating to energy standards; exceed available capacity of the local energy provider; or require construction or expansion of existing facilities, the construction of which could cause significant environmental effects. (Less than Significant)	None Required	
Impact UTIL-6: The proposed project in combination with other past, present, existing, approved, pending, and reasonably foreseeable future development, would not result in cumulative impacts on utilities and service systems. (Less than Significant)	None Required	

2935 Telegraph Avenue
(Courthouse Condominiums)



ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED

The environmental factors checked below would be potentially affected by this project, involving at least one impact that is a “Potentially Significant Impact” as indicated by the checklist on the following pages and will be further studied in an Environmental Impact Report (EIR). The environmental factors that are not checked will not be studied in the EIR.

☐ Aesthetics, Shadow, & Wind	☐ Agricultural Resources	☐ Air Quality
☐ Biological Resources	☒ Cultural Resources	☐ Geology/Soils
☐ Hazards/Hazardous Materials	☐ Hydrology/Water Quality	☐ Land Use/Planning
☐ Mineral Resources	☐ Noise	☐ Population/Housing
☐ Public Services	☐ Recreation	☒ Transportation/Traffic
☐ Utilities/Service Systems	☒ Mandatory Findings of Significance	

DETERMINATION

On the basis of this initial evaluation:

I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared. ☐

I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because mitigation measures have been added to the project. A MITIGATED NEGATIVE DECLARATION will be prepared. ☐

I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required for selected environmental factors. ☒

I find that the proposed project MAY have a “potentially significant impact” or “potentially significant unless mitigated” impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed. ☐

I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required. ☐

Signature

Joann Pavlinec, Planner III

For: Claudia Cappio
Director of Development

Date

EVALUATION OF ENVIRONMENTAL IMPACTS

CEQA requires that an explanation of all answers except “No Impact” answers be provided along with this checklist, including a discussion of ways to mitigate any significant effects identified. As defined here, a significant effect is considered a substantial adverse effect.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
I. AESTHETICS -- Would the project:					
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state or locally designated scenic highway?	☐	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☐	☐	☒

Comments to I.a, b, c and d:

The relatively flat project site is located just south of Interstate I-580 and east of Interstate I-980 in the Telegraph Corridor district of Oakland's Central / Chinatown planning area. The 50-foot tall project, located east of the elevated Interstate I-980, would not block views of the hills to the east, as these hills are not immediately visible from the site. Nor would the project obstruct views of Lake Merritt, the shoreline or open space visual resources. In addition, views looking southward along Telegraph offer clear sight of Oakland's downtown high-rise development which would not be disrupted by the project. Finally, the proposed project would not become a prominent feature in long range views looking west from hillside locations such as Grizzly Peak Road or Skyline Boulevard.

The proposed project would not be located within or near a state scenic highway; therefore it would not damage scenic resources within a state scenic highway.

The project would result in a visual change to the project site since it would result in construction of a 50-foot-tall mixed-use building on approximately 95 percent of the project site replacing a smaller (2-story, approximately 30,000 square foot) structure surrounded by surface parking. However, the project would be located on an in-fill site in an area that is already well developed and has been targeted for increased community and economic development in the General Plan.

The proposed architecture includes a combination of modern and traditional design elements, which would be compatible with existing development within the project vicinity as well as promote a more urban aesthetic. The project's mix of exterior building materials includes cement plaster (stucco), wood siding, metal railings and aluminum-framed window units. Built to the street, the project's nearly continuous, small scale commercial use along Telegraph Avenue would be consistent with design goals established in the General Plan and the Planning Code Design Review Criteria and would enhance the desirable existing characteristics of the Telegraph Avenue Corridor. Direct access to ground floor residential townhouses and flats along Telegraph Avenue, 29th and 30th Streets would also contribute to the project's ability to increase

pedestrian activity and promote a safe and attractive neighborhood environment. Consistent with the zoning classifications for the site, the proposed project would be subject to the City's Design Review process, during which the Landmarks Preservation Advisory Board and the Planning Commission would influence specific building designs and materials. Therefore, while the project would result in a change to the visual quality of the project site, the proposed building would not degrade the visual character or quality of the site or its surroundings.

Sources of light and glare in the project vicinity would include interior and exterior building lights, as well as light and glare associated with increased vehicular traffic in the project vicinity. The existing level and sources of light and glare are typical of those in a developed urban setting. The project is not anticipated to create a significant or substantial new source of light or glare, nor would it adversely affect day or nighttime views in the area. In addition, the project applicant shall be required to implement and comply with the following uniformly-applied standard conditions of approval, which would help reduce the potential for impacts associated with light and glare to a less than significant level.

Standard Condition A-1: The project applicant will submit a plan for exterior lighting that is visible from the exterior of the building for review and approval by the Electrical Services Division. The plan shall include the design and location of all lighting fixtures or standards. The plan shall indicate lighting fixtures that are adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. All lighting shall be architecturally integrated into the site.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
e) Introduce landscape that would now or in the future cast substantial shadows on existing solar collectors (in conflict with California Public Resource Code Section 25980-25986)?	☐	☐	☐	☒	☐
f) Cast shadow that substantially impairs the function of a building using passive solar heat collection, solar collectors for hot water heating, or photovoltaic solar collectors?	☐	☐	☐	☒	☐
g) Cast shadow that substantially impairs the beneficial use of any public or quasi-public park, lawn, garden, or open space?	☐	☐	☐	☒	☐
h) Cast shadow on an historic resource, as defined by CEQA Section 15064.5(a), such that the shadow would materially impair the resource's historical significance by materially altering those physical characteristics of the resource that convey its historical significance and that justify its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local register of historical resources or a historical resource survey form (DPR Form 523) with a rating of 1-5?	☐	☐	☐	☒	☐
i) Require an exception (variance) to the policies and regulations in the General Plan, Planning Code, or Uniform Building Code, and the exception causes a fundamental conflict with policies					

and regulations in the General Plan, Planning Code, and Uniform Building Code addressing the provision of adequate light related to appropriate uses?

☐ ☐ ☐ ☒ ☐

j) Create winds exceeding 36 mph for more than 1 hour during daylight hours during the year, for projects 100 or more feet tall and either Downtown or adjacent to a substantial water body?

☐ ☐ ☐ ☒ ☐

Comments to I.e, f, g, h, i and j:

In the morning and afternoon of the winter solstice in December, the sun is at its lowest and the project shadows would be at their longest. Shadows on any other day of the year would be within the range of shadows cast between the spring and fall equinoxes in March and September respectively, when shadows are midway through a period of shortening and lengthening. In general, new shadows from the project would fall in a westerly to northwesterly direction during the morning hours and sweep eastward to terminate in a northeasterly and then easterly direction as the afternoon progresses. Overall, the extent of new shadowing by the project would affect existing uses to the west and north of the project site.

The site reconnaissance conducted for this analysis did not identify any passive solar heat collectors, solar collectors for hot water heating, or photovoltaic solar collectors in the areas adjacent to the project site. The project and proposed landscaping would not cast a shadow on a public building using passive solar heat collection, solar collectors for hot water heating or photovoltaic solar collectors; on any public or quasi-public park, lawn, garden or open space.

The St. Augustine's Episcopal Church, located on the southwest corner of 29th Street and Telegraph Avenue, is a City of Oakland Historical Landmark and is therefore considered an historic resource as defined by CEQA section 15064.5(a). However, as this resource is located to the south of the project site, it is not anticipated that the project shadow would reach the Church at any point during the year. Therefore, the project would not result in a significant physical effect such that the shadow would materially impair the resource's historical significance by precluding its inclusion on or eligibility for listing in the National Register of Historic Places, California Register of Historical Resources, Local register of historical resources or a historical resource survey form (DPR Form 523) with a rating of 1-5.

The project would reach a maximum height of approximately 50 feet. Buildings of this height are unlikely to generate ground force winds enough to create wind hazards and are therefore exempt from wind analysis testing requirements.

Source:

Field Survey.

List of Officially Designated State Scenic Highways, Caltrans website, accessed January 14, 2006, at <http://www.dot.ca.gov/hq/LandArch/scenic/schwy1.html>.

Open Space, Conservation, and Recreation (OSCAR) Element of the General Plan
Project Description and Plans.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

II. AGRICULTURAL RESOURCES -- Would the project:

a) Convert Prime Farmland, Unique Farmland or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?

☐	☐	☐	☒	☐

b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?

☐	☐	☐	☒	☐

c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland to non-agricultural use?

☐	☐	☐	☒	☐

Comments to II.a, b and c:

The proposed project would be located in a built-out urban area and there are no agricultural or farmland uses within or adjacent to the project site. The site is not zoned for agricultural use nor is it within a Williamson Act contract. The project would not result in the conversion of farmland to non-agricultural uses. Therefore, the proposed project would not affect any agricultural resources.

Source:

Oakland General Plan, Land Use and Transportation Element, March 24, 1998.

Oakland General Plan: Open Space, Conservation and Recreation Element, June 1996.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
III. AIR QUALITY -- Would the project:					
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐	☐
c) Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?	☐	☐	☒	☐	☐
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☐	☐	☒
e) Frequently create substantial objectionable odors affecting a substantial number of people?	☐	☐	☒	☐	☐
f) Contribute to CO concentrations exceeding the State AAQS of 9 ppm averaged over 8 hours and 20 ppm for 1 hour?	☐	☐	☒	☐	☐
g) Result in total emissions of ROG, NOx, or PM10 of 15 tons per year or greater, or 80 pounds (36 kilograms) per day or greater?	☐	☐	☒	☐	☐
h) Result in a potential to expose persons to substantial levels of Toxic Air Contaminants (TAC) such that the probability of contracting cancer for the Maximally Exposed Individual (MEI) exceeds 10 in one million?	☐	☐	☒	☐	☐
i) Result in ground level concentrations of non-carcinogenic TACs such that the Hazard Index would be greater than 1 for the MEI?	☐	☐	☒	☐	☐
j) Result in a substantial increase in diesel emissions?	☐	☐	☒	☐	☐

Comments to III.a:

The Bay Area is currently designated as a nonattainment area for state and national ozone standards and as a nonattainment area for the state particulate matter (PM-10 and PM-2.5) standards. The 2001 Bay Area Ozone Attainment Plan and the Bay Area 2005 Ozone Strategy have been prepared to address ozone nonattainment issues. No PM-10 or PM-2.5 plan has been prepared or is required under state air quality planning law.

Demolition of existing structures at the site and construction of the proposed structures would involve use of equipment and materials that would emit ozone precursor emissions (i.e., reactive organic gases, or ROG, and nitrogen oxides, or NO_x).

The regional agency primarily responsible for developing the regional ozone plans is the Bay Area Air Quality Management District (BAAQMD). BAAQMD is also the agency with permit authority over most types of stationary sources in San Francisco Bay Area. BAAQMD exercises permit authority through its *Rules and Regulations*. Both federal and state ozone plans rely heavily upon stationary source control measures set forth in BAAQMD's *Rules and Regulations*. The overall stationary source control program that is embodied by the BAAQMD *Rules and Regulations* has been developed such that new stationary sources can be allowed to operate in the Bay Area without obstructing the goals of the regional air quality plans.

With respect to the construction phase of the project, applicable BAAQMD regulations would relate to portable equipment (e.g., Portland concrete batch plants, and gasoline- or diesel-powered engines used for power generation, pumps, compressors, pile drivers, and cranes), architectural coatings, and paving materials. Project construction would be subject to the requirements of BAAQMD Regulation 2 (Permits), Rule 1 (General Requirements) with respect to portable equipment unless exempt under Rule 2-1-105 (Exemption, Registered Statewide Portable Equipment); BAAQMD Regulation 8 (Organic Compounds), Rule 3 (Architectural Coatings); and BAAQMD Regulation 8 (Organic Compounds), Rule 15 (Emulsified and Liquid Asphalts).

With respect to the operational-phase of the project, emissions would be generated primarily from motor vehicle trips to the project site and emissions from stationary equipment, to a lesser extent. However, the number of average daily trips generated by the project would only marginally increase daily emissions of ozone precursors and PM-10 and would be well below BAAQMD established thresholds for consideration of a significant impact (refer to response to III.g) . Consequently, the project would not affect air quality in the region or conflict with or obstruct implementation of the applicable Air Quality Attainment Plans. Any stationary sources on site would be subject to the BAAQMD Rules and Regulations. Compliance with BAAQMD *Rules and Regulations* would ensure that the project would not conflict with or obstruct implementation of the applicable air quality plans.

Comments to III. b, c, f, and g:

The project site is located in the City of Oakland, within the San Francisco Bay Area Air Basin (Bay Area). The Bay Area experiences occasional violations of ozone and particulate matter (PM-10 and PM-2.5) standards. Although the regional monitoring network no longer records violations of the carbon monoxide standard, congestion on busy roadways and intersections could lead to local carbon monoxide hotspots, particularly during peak traffic hours.

The proposed project would result in up to 142 dwelling units, 2,900 square feet of retail and 204 parking spaces. The project would affect local pollutant concentrations in two ways. First, during project construction, the project would affect local particulate concentrations by generating dust. Over the long term, the project would result in an increase in emissions due to related motor vehicle trips associated with the residential and commercial uses proposed by the project, and the increase in motor vehicle trips would affect carbon monoxide concentrations along the local road network. In addition, any on-site stationary and area sources associated with the project may also affect local pollutant concentrations, but since they would likely be subject to BAAQMD permit requirements, they can be presumed to have a less-than-significant effect on local pollutant concentrations.

During construction, the project would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions. Project-related construction activities would include demolition, site preparation, earthmoving and general construction activities. Emissions generated from these activities include dust (including PM-10 and PM-2.5)² primarily from "fugitive" sources, such as soil disturbance; combustion emissions of criteria air pollutants (reactive organic

² Particles that are 10 microns or less in diameter and 2.5 microns or less in diameter, respectively

gases [ROG], nitrogen oxides [NOx], carbon monoxide [CO], sulfur oxides [SOx], and PM-10) primarily from operation of construction equipment and from worker vehicles; and evaporative emissions (ROG) from asphalt paving and architectural coating applications.

Construction-related fugitive dust emissions would vary from day to day, depending on the level and type of activity, silt content of the soil, and the weather. In the absence of mitigation, construction activities may result in significant quantities of dust, and as a result, local visibility and PM-10 and PM-2.5 concentrations may be adversely affected on a temporary and intermittent basis during the construction period. In addition, the fugitive dust generated by construction would include not only PM-10, but also larger particles, which would fall out of the atmosphere within several hundred feet of the site and could result in nuisance-type impacts.

The BAAQMD CEQA Guidelines recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans. Therefore, construction emissions of ROG and NOx are not expected to impede attainment or maintenance of ozone standards in the Bay Area. The impact of construction equipment exhaust emissions would therefore be less than significant and would not obstruct implementation of regional air quality plans.

The BAAQMD's approach to analyses of fugitive dust emissions from construction is to emphasize implementation of effective and comprehensive dust control measures rather than detailed quantification of emissions. The District considers any project's construction related impacts to be less than significant if the required dust-control measures are implemented. Without these measures, the impact is generally considered to be significant, particularly if sensitive land uses are located in the project vicinity. In the case of this project, residential land uses are located as close as 10 feet from the boundaries of the project site. The proposed project would be subject to the measures recommended by the BAAQMD (listed below), which are uniformly applied by the City as standard conditions of approval, and which would reduce construction-related PM-10 and PM-2.5 emissions to a less than substantial contribution level.

Standard Condition AQ-1: During construction, the project sponsor shall require the construction contractor to implement the following measures required as part of BAAQMD's basic and enhanced dust control procedures required for all construction sites. These include:

- **Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible.**
- **Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer).**
- **Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.**
- **Sweep daily (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites.**
- **Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day if visible soil material is carried onto adjacent paved roads.**
- **Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used.**

- **Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the BAAQMD prior to the start of construction as well as posted on-site over the duration of construction.**
- **Clean off the tires or tracks of all trucks and equipment leaving any unpaved construction areas.**
- **Install appropriate wind breaks at the construction site to minimize wind blown dust.**

Once complete and occupied, the proposed project would generate emissions of criteria air pollutants, primarily as a result of increased motor vehicle traffic. The project could affect localized carbon monoxide (CO) concentrations at nearby intersections. However, CO levels have been declining for a number of years and are expected to continue to do so in the future, and the relatively small number of vehicle trips that the project would generate (initially estimated to be approximately 85³ vehicle trips in the p.m. peak hour, even when not subtracting existing trips generated by the fitness club currently operating on the project site), would be unlikely to result in violation of the state CO standard at any local intersections. Therefore, the project would not be expected to result in a violation of the state or federal standards for CO.

Based on analysis of the proposed project using the URBEMIS air quality model, project vehicle traffic would generate levels of criteria pollutants far below the significance criteria in Item III.g (80 lbs./day), which are the thresholds identified by the BAAQMD. Maximum emissions of reactive organic gases (ROG), nitrogen oxides (NOx), and fine particulate (PM-10) generated by project traffic would be approximately 9 pounds per day, 18 pounds per day, and 7 pounds per day, respectively, even without accounting for a reduction in auto travel due to transit access, or the number of existing trips to and from the fitness club. Therefore, the project would not be expected to result in a violation of the state or federal standards ozone standards.

Comments to III.d:

The project proposes to develop residential dwelling which would be considered sensitive receptors for the purposes of air quality impact assessment. The proposed project is located in a mixed use area with no substantial stationary sources of criteria pollutants in the vicinity. A review of the BAAQMD's most recent air toxics annual report indicates that there are no identified sources of toxic air contaminants in the project vicinity.

The project is located approximately 500 feet from I-980 based on measurement using Google-Earth. In April 2005, the California Air Resources Board (ARB) published *Air Quality And Land Use Handbook: A Community Health Perspective*. This handbook is intended to give guidance to local governments in the siting of sensitive land uses near sources of air pollution. Recent studies have shown that public exposure to air pollution can be substantially elevated near freeways and certain other facilities. Specifically, the document focuses on risks from emissions of diesel particulate matter, a known carcinogen, to establish recommended siting distances. The proposed project would just conform with the general guidelines of this handbook regarding freeways, which is:

- Avoid siting new sensitive land uses within 500 feet of a freeway, urban roads with 100,000 vehicles/day, or rural roads with 50,000 vehicles/day.

³ Korve Engineering, *Draft Transportation Impact Analysis, Courthouse Condominium Project*, June, 2006.

Consequently, the proposed project would not be considered to expose sensitive receptors to substantial pollutant concentrations.

Comments to III.e:

As a general matter, the types of land use development that pose potential odor problems include wastewater treatment plants, refineries, landfills, composting facilities and transfer stations. No such uses would occupy the project site. Therefore the project would not create objectionable odors that would affect a substantial number of people. Also, there are no existing odor sources in the vicinity of the project site that would impact future occupants of the project site.

Comments to III.f:

Please see Comment III.b and c.

Comments to III.g:

Please see Comment III.b and c.

Comments to III.h and III.I:

Demolition of existing structure may result in airborne entrainment of asbestos, a toxic air contaminant, particularly where structures built prior to 1980, such as the existing building on the project site, are being demolished.

As required for all development projects involving demolition of existing buildings, the project applicant shall be required to implement and comply with the following uniformly-applied standard conditions of approval, which would help reduce the potential for public health hazards associated with airborne asbestos fibers or lead dust to a less than significant level.

Standard Condition AQ-2: If asbestos is found to be present in building materials to be removed, demolition and disposal is required to be conducted in accordance with procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD's regulations.

No other toxic substantial emissions of air contaminants would typically result from a project such as that proposed.

Comments to III.j:

As a primarily residential development, the project would generate a limited number of truck trips, and would not be expected to result in a substantial increase in emissions of diesel particulate, identified by the California Air Resources Board as a toxic air contaminant.

Source:

Bay Area Air Quality Management District, *Toxic Air Contaminant Control Program, Annual Report*, 2004.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

IV. BIOLOGICAL RESOURCES - - Would the project:

a) Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

☐ ☐ ☐ ☒ ☐

b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?

☐ ☐ ☐ ☒ ☐

c) Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?

☐ ☐ ☐ ☒ ☐

d) Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites?

☐ ☐ ☐ ☒ ☐

f) Fundamentally conflict local policies or ordinances protecting biological resources, such as the City of Oakland Tree Preservation and Removal Ordinance (Oakland Municipal Code (OMC) Chapter 12.36) by removal of protected trees under certain circumstances and/or the City of Oakland Creek Protection Ordinance (OMC Chapter 13.16) intended to protect biological resources?

☐ ☐ ☐ ☐ ☒

f) Fundamentally conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?

☐ ☐ ☐ ☒ ☐

Comments to IV.a - f:

The proposed project site is an in-fill site located in an area that has been urbanized for at least 100 years. Urban development has replaced any former natural biotic habitats and natural vegetation. The project site is currently occupied by a paved surface parking lot and a fitness club. Given the existence of substantial urban development in the vicinity and motor vehicle traffic in the area, the site is unlikely to be a part of an established native resident or migratory wildlife corridor, and is unlikely to be located within a designated habitat area.

There are street trees along the east side of Telegraph Avenue, the south side of 29th Street as well as a few trees on the north side of 30th Street; all of which are across the street from the project block. There is also a small corridor of vegetation and trees to the west of the project site, adjacent to Interstate I-980. The only

vegetation on the site other than ornamental landscaping around portions of the building's exterior are two mature redwood trees; one on the southern boundary of the site (Tree No.1) and the other in the western half of the parking lot (Tree No. 2). See Figure 2 for tree locations.

In accordance with standard city practices, any removal of "protected" trees as a result of the proposed project would be subject to the Oakland Tree Preservation Ordinance and standard city tree protection/removal permit procedures. A "protected" tree includes "on any property, *Quercus agrifolia* (California or Coast Live Oak) measuring four inches diameter at breast height or larger, and any other tree measuring nine inches diameter at breast height (DBH) or larger except *Eucalyptus* and *Pinus radiata* (Monterey Pine)." Tree No.1 has a DBH of 40 inches and is considered to be in fair condition with some dieback in the branches and foliage and root damage from the parking lot. Tree No. 2 has a DBH of 51 inches and is considered to be in fair to poor condition with some minor deadwood and dieback in foliage and concrete to the base of the trunk. Because both existing redwood trees have DBH of more than nine inches, they are defined as protected trees per the City of Oakland Municipal Code (see Figure 2).

The proposed project would include a concrete podium that is two stories high (one level below ground and one above) which covers the entire site. Both of the redwood trees on the site fall within the footprint of the proposed concrete podium. The podium (and therefore project) would have to be redesigned in order to accommodate the two trees, which would compromise the economic viability of the project and the city's vision for the site's development. In order to retain Tree No. 2 located at the center of the site, the project's internal corridor system and interior courtyard network would have to be redesigned. The internal parking structure also would have to be significantly altered due to the tree's central location. Consequently, a considerable amount of parking would be lost, triggering the need for a larger and less functional parking garage that could accommodate the number of parking spaces required by the City. This could result in ground floor parking that is no longer hidden from the streetscape, an attractive benefit of the current project's plans. To accommodate Tree No. 1, which also falls within the area of proposed concrete podium, the podium and the project would also have to be redesigned, including the City-required ingress and egress locations. The preservation of the redwood trees would result in a reduction of approximately 20 units (or 14 percent of the proposed 142 units), which would affect the project in terms of both its design and financial viability. Finally, because both trees are in marginal health, especially Tree No. 2 which is in fair to poor condition, these existing trees may pose a safety threat to the property and its residents should tree branches fall to the ground, or should the trees become compromised in any way. Therefore, the project would necessitate the removal of the redwood trees to accommodate the project. The project sponsor intends to replace these two existing trees with approximately 20 deciduous trees to be planted within the project site courtyards, not including approximately 20 new trees to be planted along the street.

The project applicant shall be required to implement the following uniformly-applied standard conditions of approval, including acquisition of a Tree Removal Permit and adherence to its terms and conditions. Compliance with these standard conditions, as well as consultation with the City on any new street tree planting along the perimeter of the site, would ensure that the project does not conflict with any local ordinances, plans or policies and would reduce the potential for impacts associated with biological resources to a less than significant level.

Standard Condition BIO-1: To the extent feasible, removal of the large trees and other vegetation suitable for nesting shall not occur during the breeding season of March 15 and August 15. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting birds or raptors. If the survey indicates that potential presences of nesting birds or raptors, the results would be coordinated with CDFG and suitable avoidance measures would be developed and implemented. Construction shall observe the CDFG avoidance guidelines which are a minimum 500-foot buffer zone surrounding active raptor nests and a 250-foot buffer zone surrounding nests of other birds. Buffer zones shall remain until young have fledged.

Standard Condition BIO-2: Replacement plantings shall be required in order to prevent excessive loss of shade, erosion control, groundwater replenishment, visual screening and wildlife habitat in accordance with the following criteria:

- No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.
- Replacement tree species shall consist of *Sequoia sempervirens* (Coast Redwood), *Quercus agrifolia* (Coast Live Oak), *Ancutis merciesii* (Madrone), *Aesculus californica* (California Buckeye) or *Umbelluiana californica* (California Bay Laurel).
- Replacement trees shall be of twenty-four (24) inch box size, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate.
- Minimum planting areas must be available on site as follows:
 - For *Sequoia sempervirens*, three hundred fifteen square feet per tree;
 - For all other species listed above, seven hundred (700) square feet per tree.
- In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians.
- Plantings shall be installed prior to the issuance of a certificate of occupancy, subject to seasonal constraints, and shall be maintained by the applicant until established. The Tree Reviewer may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the applicant's expense.

Standard Condition BIO-3: Workers compensation, public liability, and property damage insurance shall be provided by any person(s) performing tree removal work authorized by a tree removal permit.

Standard Condition BIO-4: Prior to receiving building permit, the applicant must secure a tree removal permit, and abide by the conditions of that permit, prior to removal of any trees located on the project site or in the public right-of-way adjacent to the project.

Source:

Environmental Science Associates, *Arborist Report for Courthouse Condominiums, Oakland California*, August 2006.

Oakland General Plan: Open Space, Conservation and Recreation Element, June 1996.

Oakland Municipal Code Title 12, Chapter 12.36 (Oakland Tree Ordinance).

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

V. CULTURAL RESOURCES -- Would the project:

a) Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?

☒	☐	☐	☐	☐

Comments to V.a:

The building on the project site is a former residence dating from the turn of the nineteenth century that was transformed into a mortuary in the 1940s. The mortuary was remodeled into a fitness club in the early 1980s, which is its current use. The building was assigned a preliminary (field) survey rating of “B+3” by Oakland Cultural Heritage Survey (OCHS) as part of its citywide historic resources inventory survey in 1996. This existing rating indicates that the building is of ‘major importance, not in an area of primary or secondary importance.’ As buildings or structures that are designated City landmarks or have existing ratings of ‘A’ or ‘B’ qualify on the City of Oakland’s local register of historical resources for purposes of CEQA (pursuant to Policy 3.8 of the Historic Preservation Element of the General Plan), the proposed demolition of the B-rated former mortuary would constitute a significant impact under CEQA. Therefore, impacts to historical architectural resources will be analyzed in the EIR. The existing building was also reviewed for its potential historic significance in a historic resources evaluation technical report; the findings of which will also be presented in the EIR.

Adjacent historic resources include St. Augustine’s Episcopal Church, a City of Oakland Landmark on the southwest corner of 29th Street and Telegraph Avenue. Three blocks south of the project site along Broadway is the 25th Street Garage District, a City-identified Area of Primary Importance (API), or National Register quality district. The EIR will additionally address potential effects to the setting of nearby historic resources.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

b) Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?

☐	☐	☐	☐	☒

Comments to V.b

The area of the project site and vicinity is disturbed and surface evidence of any cultural or archeological resource is non-existent due to development. Although no extant cultural resources within the project area are apparent or have been recorded, no intensive survey with subsurface testing has been conducted. Moreover, heavily paved, urbanized environment throughout the project area precluded adequate surface examination. Therefore, the nonexistence of subsurface cultural resources cannot be demonstrated and unidentified, buried archaeological remains could be present along the corridor. Buried archaeological remains such as prehistoric midden deposits, flaked and ground stone artifacts, bone, shell, building foundations and walls, and other buried cultural resource materials could be damaged during grading, trenching, and other construction related activities. The project would involve excavation for one subsurface floor level and foundations. The potential exists for such disturbance, including of archaeological resources (as identified in CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g)), which could cause substantial adverse changes to the significance of such resources, thereby resulting in a significant impact. Accordingly, the following standard condition would be implemented by the project sponsor and included as a condition of approval by the City.

Implementation of this standard condition would reduce the impact from potential discovery of subsurface cultural resources to a less-than-significant level.

Standard Condition Cul-1: In the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the City shall consult with a qualified archaeologist to assess the significance of the find. If any find is determined to be significant, representatives of City and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the CEDA Development Director. All significant cultural materials recovered shall be, as necessary, subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards.

In considering any suggested mitigation proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the City shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☐	☒

Comments to V.c:

Paleontological resources are the fossilized evidence of past life found in the geologic record. Despite the tremendous volume of sedimentary rock deposits preserved worldwide, and the enormous number of organisms that have lived through time, preservation of plant or animal remains as fossils is an extremely rare occurrence. Because of the infrequency of fossil preservation, fossils – particularly vertebrate fossils – are considered to be nonrenewable resources. Because of their rarity, and the scientific information they can provide, fossils are highly significant records of ancient life.

The project site has a relatively thin (3 to 8.5 feet thick) heterogeneous fill material of very stiff to hard clay with some fine to medium sand. Natural alluvial deposits, identified by the U.S.G.S as the Alameda formation, underlie the fill and consist of medium stiff to hard sandy clay interbedded with gravelly sand layers. These types of alluvial sediments have been known to yield significant paleontologic remains because they are formations considered as fossil-bearing rock units. Because the proposed project would result in excavation of up to 12 feet, significant paleontological discoveries could be made. Excavation activities related to the proposed project could damage or destroy significant paleontological resources that could result in a significant effect. Accordingly, the following standard condition would be implemented by the project sponsor and included as a condition of approval by the City. Implementation of this standard condition would reduce the impact from potential discovery of paleontological resources to a less-than-significant level.

Standard Condition Cul-2: In the event of unanticipated discoveries paleontologic discoveries, the project sponsor shall notify a qualified paleontologist who shall document the

discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in CEQA Guidelines Section 15064.5. In the event of an unanticipated discovery of a brea (a seep of natural petroleum that preserved and fossilized remains of trapped animals) or of fossils during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995). The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval by the Director of Development.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☐	☐	☐	☒

Comments to V.d:

There is no indication that a particular site has been used for burial purposes in the recent or distant past. Thus, it is unlikely that human remains would be encountered during project construction. However, in the event of the accidental discovery of any human remains, including those interred outside of formal cemeteries, during project construction, the following standard condition, which would be included as a condition of approval by the City, would be implemented by the project sponsor, and reduce the impact from accidental discovery of human remains to a less-than-significant level.

Standard Condition Cul-3: In the event that human skeletal remains are uncovered during construction activities for the Proposed Project, the project contractor shall immediately halt work, contact the Alameda County Coroner to evaluate the remains, and follow the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, City shall contact the California Native American Heritage Commission, pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease until appropriate arrangements are made.

Source:

California Department of Parks and Recreation, Primary Record, 2395 Telegraph Avenue/501 30th Street, September 30, 1996.

Project Description and Plans

URS Corporation, *Limited Phase II Environmental Site Investigation*. Prepared for Trammell Crow Residential, May 25, 2006.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

VI. GEOLOGY AND SOILS -- Would the project:

a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:

i) Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42 and 117 and PRC Section 2690.

☐ ☐ ☒ ☐ ☐

ii) Strong seismic ground shaking?

☐ ☐ ☐ ☐ ☒

iii) Seismic-related ground failure, including liquefaction?

☐ ☐ ☐ ☐ ☒

Comments to VI.a.i, ii, and iii:

The project site is not located within a Fault-Rupture Hazard Zone as designated by the Alquist-Priolo Earthquake Fault Zoning Act of 1972, and no known active faults have been mapped on or in the immediate vicinity.^{4 5} The closest active fault is the Hayward fault, located approximately 4 miles east. Other notable active faults include the San Andreas fault (14 miles southwest), the Calaveras fault (15 miles east), and the Rodgers Creek fault (19 miles north). As the site is not located on an active or potentially active fault, potential for surface fault rupture is low and the impact is considered less than significant.

The San Francisco Bay Area is considered a seismically-active region. The project site is located in an area subject to “very strong” groundshaking (Modified Mercalli Intensity VIII) from a characteristic earthquake along the Hayward Fault, according to the Association of Bay Area Governments (ABAG).⁶ Groundshaking can result in significant structural damage or structural failure in the absence of appropriate seismic design. Seismic shaking can also trigger ground-failures caused by liquefaction.⁷

The proposed project site is located within an area designated by the California Division of Mines and Geology (CDMG) Seismic Hazards Mapping Act as a “Seismic Hazard Zone” for liquefaction. The Seismic Hazards Mapping Act (SHMA) was enacted in 1990 to protect the public from the effects of strong ground shaking, liquefaction, landslides, or other ground failure, and from other hazards caused by earthquakes. This act requires the State Geologist to delineate various seismic hazard zones and requires cities, counties, and other local permitting agencies to regulate certain development projects within these zones. In accordance with standard City practices, before a development permit is granted for a site within a seismic

⁴ California Geological Survey (CGS), formerly the California State Department of Conservation, Division of Mines and Geology (CDMG) *Cities and Counties Affected by Alquist-Priolo Earthquake Fault Zones as of May 1, 1998*, [http://www.consrv.ca.gov], November 16, 1998, and CDMG, *Fault Rupture Hazard Zones in California* Alquist Priolo Earthquake Zoning Act, Special Publication 42, Revised 1997

⁵ URS Corporation, *Final Geotechnical Characterization 2935 Telegraph Avenue Oakland, California*, Prepared for TCR Northern California Construction, Inc., May 19, 2006.

⁶ Available on ABAG website (viewed May 15, 2006) at: <http://www.abag.ca.gov/bayarea/eqmaps/mapsba.html>.

⁷ Liquefaction is the process by which saturated, loose, fine-grained, granular, soil, like sand, behaves like a dense fluid when subjected to prolonged shaking during an earthquake.

hazard zone, a geotechnical investigation must be conducted and appropriate measures incorporated into the project design.

A geotechnical investigation performed for the proposed project characterized the surface and subsurface conditions.⁸ The proposed project site has a relatively thin (3 to 8.5 feet thick) heterogeneous fill material of very stiff to hard clay with some fine to medium sand. Natural alluvial deposits, identified by the U.S.G.S as the Alameda formation, underlie the fill and consist of medium stiff to hard sandy clay interbedded with gravelly sand layers. Some contaminated soils and no bedrock were encountered during field exploration. Groundwater depth was found to be between 9 to 12 feet below grade. Accordingly, the geotechnical investigation recommends that to restrict foundation settlements to tolerable movements, the proposed project be founded in the alluvium. The project sponsor has indicated that the foundation will be constructed of a concrete slab, but that no pile driven or drilled piers will be utilized in the foundation construction. The geotechnical report also recommends that once the proposed project foundation load is determined, two to three additional soil borings to further assess the subsurface conditions are suggested to finalize the foundation recommendation. A final decision on the project foundation would be made in conjunction with the project civil engineer. The project structures would be designed and constructed to meet the 1997 Unified Building Code (UBC) standards which require a seismic evaluation and particular seismic design criteria to reduce ground-shaking effects in structures. Although the potential for injury and damage from seismic ground shaking cannot be eliminated, adherence to the recommendations in the geotechnical investigation, the UBC and other applicable local construction codes would reduce the potential impact to a less-than-significant level.

In accordance with standard City practices, complying with the UBC standards, and incorporating a foundation design intended to minimize effects of ground shaking and seismically related ground failures such as liquefaction, the applicant shall be required to submit an engineering analysis report along with detailed engineering drawings to the Oakland Building Services Division prior to excavation, grading, or construction activities on the site. To ensure that buildings are designed and built in conformance with the seismic requirements of the City of Oakland Building Code, the project applicant shall be required to implement and comply with the following uniformly-applied standard conditions of approval: ,

Standard Condition GEO-1: A site-specific, design level geotechnical investigation for each construction site within the project area shall be required as part of this project. Specifically:

- **Each investigation shall include an analysis of expected ground motions at the site from known active faults. The analyses shall be in accordance with applicable City ordinances and policies, and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from known active faults.**
- **The investigations shall determine final design parameters for the walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks).**
- **The investigations shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer, and geotechnical engineer, as approved by the City will be included in the final design.**

⁸ URS Corporation, *Final Geotechnical Characterization* 2935 Telegraph Avenue Oakland, California, Prepared for TCR Northern California Construction, Inc. May 19, 2006.

- **Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the project design phase, shall be incorporated in the project.**
- **Final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to the commencement of the project.**

Considering that the proposed project would be constructed in conformance with the UBC, the City of Oakland Building Code, and the project applicant would implement Standard Condition GEO-1, the risks of injury and structural damage from a known earthquake fault, ground shaking, or seismic-related ground failure would be reduced and the impacts would be less than significant.

Source:

State of California Seismic Hazard Zones Map, Oakland West Quadrangle, February 13, 2003
 URS Corporation, *Final Geotechnical Characterization 2935 Telegraph Avenue Oakland, California*,
 Prepared for TCR Northern California Construction, Inc. May 19, 2006.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
iv) Landslides?	☐	☐	☒	☐	☐

Comments to VI.a.iv:

The project site is relatively level and is not located on or adjacent to a hillside. In addition, the proposed project site is not located within an area designated by the California Division of Mines and Geology (CDMG) Seismic Hazards Mapping Act as a “Seismic Hazard Zone” for earthquake-induced landslides. Potential impacts associated with landslides are not significant.

Source:

State of California Seismic Hazard Zones Map, Oakland West Quadrangle, February 13, 2003

b) Result in substantial soil erosion or the loss of topsoil, creating substantial risks to life, property, or creeks/waterways? ☐ ☐ ☐ ☐ ☒

Comments to VI.b:

The project site is currently completely occupied by the existing building and asphalt parking lot. As such, no soil erosion or substantial loss of topsoil is anticipated. With development of the proposed project, the site would similarly be fully occupied by the proposed structure. Subsurface construction would include one basement level with the addition of the foundation slab and extend to a maximum depth of approximately 12 feet. Approximately 22,200 cubic yards of soil would be excavated and groundwater is expected to be encountered between 9 and 12 feet below ground surface. To address the shallow groundwater table, the geotechnical report recommends that basement walls be designed for hydrostatic lateral forces, basement floors for hydrostatic uplift forces, and waterproofing techniques applied to watertight the basement structure. A drainage system may be required below the basement slab.

To minimize wind or water erosion on the site during construction, the applicant shall be required in accordance with standard City practices, to submit a construction period erosion control plan to the Building Services Division for approval prior to the issuance of grading and building permits. The plan shall be in

effect for a period of time sufficient to stabilize the construction site throughout all phases of the project. Long-term erosion potential shall be addressed through installation of project landscaping and storm drainage facilities, both of which shall be designed to meet applicable regulations. In addition, the following standard measures shall be implemented as conditions of approval to avoid adverse long-term erosion impacts:

Standard Condition GEO-2: To erosion impacts, the project applicant shall implement the following measures:

- **Construction operations, especially excavation and grading operations, shall be confined as much as possible to the dry season, in order to avoid erosion of disturbed soils; and**
- **Final project landscaping plans shall be submitted to the Planning Director for review and approval.**

With the implementation of these standard conditions and the recommendations in the geotechnical report, the proposed project would not result in significant impacts with respect to erosion or loss of topsoil.

Source:

Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.

Project Description and Plans.

URS Corporation, *Final Geotechnical Characterization 2935 Telegraph Avenue Oakland, California*, Prepared for TCR Northern California Construction, Inc. May 19, 2006.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
c) Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994, as it may be revised), creating substantial risks to life or property?	☐	☐	☒	☐	☐

Comments VI.c and d:

Landsliding (section VI.a.iv), liquefaction ground failures including lateral spreading (Section VI.a.i through iii), soil subsidence, and soil collapse have been determined to be less than significant because the project design would incorporate foundation recommendations of the project geotechnical evaluation, comply with applicable City regulations, be constructed to applicable UBC standards, adhere to, where appropriate, guidelines of the CDMG Special Publication 117, and would incorporate the proposed measure to address potential liquefaction hazards.

According to the U.S.D.A. Natural Resource Conservation Service soils classification, the soils in the project area are characterized as Urban Land-Danville complex, which have some development limitations, including expansive behavior. Four borings to a depth of 40 feet each at the approximate locations of the four corners of the proposed building were taken as part of a geotechnical investigation prepared for the project site. The borings revealed that soils underlying the site consists predominantly heterogeneous fill material of very stiff to hard clay with some fine to medium sand underlain by natural alluvial deposits of

medium stiff to hard sandy clay interbedded with gravelly sand layers, identified by the U.S.G.S as the Alameda formation. Depth to groundwater is between about 9 feet and 12 feet below ground surface.

As noted above, in the discussion under Section VI.a.i through iii, the geotechnical investigation identified various options for foundation systems would be feasible at the project site, and the project sponsor has indicated that it is not likely that drilled piers will be used to support a concrete slab.

In accordance with standard City practices, and in conformance with current codes and regulations, the project sponsor shall be required to submit detailed engineering drawings and materials to the Building Services Division prior to excavation, grading, or construction on the site. This measure would ensure that the building is designed and built in conformance with the requirements of the City of Oakland Building Code and the applicable provisions of the UBC. Therefore, the proposed project would not result in substantial risks to life or property due to unstable or expansive soil.

Source:

Oakland General Plan, Environmental Hazards Element, September 1974.

Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.

URS Corporation, *Final Geotechnical Characterization 2935 Telegraph Avenue Oakland, California*,

Prepared for TCR Northern California Construction, Inc. May 19, 2006.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
e) Be located above a well, pit, swamp, mound, tank vault, or unmarked sewer line, creating substantial risks to life or property?	☐	☐	☐	☒	☐
f) Be located above landfills for which there is no approved closure and post-closure plan, or unknown fill soils, creating substantial risk to life or property?	☐	☐	☐	☒	☐

Comments to VI.e and f:

The project site is not located on a site subject to the conditions identified in Item VI.e, nor is it located on a current or former known landfill.

g) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?

☐	☐	☐	☒	☐

Comments to VI.g:

Because the project site is located in an urban area and has been previously developed, the proposed project would be able to connect to the existing central sewer system, which provides wastewater collection service for the City of Oakland. Therefore, the project would not result in any significant impacts due to soils incapable of adequately supporting septic tanks or alternative wastewater disposal systems since neither septic tanks nor alternative wastewater disposal are found in this part of Oakland.

Source:

Site Observation.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

VII. HAZARDS AND HAZARDOUS MATERIALS -- Would the project:

a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?

☐	☐	☐	☐	☒

b) Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?

☐	☐	☐	☐	☒

c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?

☐	☐	☐	☐	☒

d) Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?

☐	☐	☐	☒	☐

Comments to VII.a, b, c and d:

The project, as a residential development would not involve the transport, use, storage, or disposal of hazardous materials, other than routine use of minor quantities of household cleaning products, commercial products used in cleaning and maintenance of the building, and, potentially, pesticides and fertilizers for care of on-site landscaping. These materials would not pose a significant hazard to the public. The project would not produce emissions other than from natural gas for space and water heating.

A Phase I Environmental Site Assessment prepared for the project site identified two sources of potential soil or groundwater contamination; a former gas station and auto repair facility which occupied the southeastern corner of the property prior to 1975, and former mortuary uses within the existing facility. No regulatory agency files were found regarding the presence or removal of underground storage tanks (UST) associated with the gas station. A small fuel UST was reported removed from the northern boundary of the project site, however, no regulatory agency information was found regarding this UST and its removal. The former presence of a gas station and auto repair facility suggests the presence of underground storage tanks. In addition, embalming chemicals, such as formaldehyde and petroleum hydrocarbons, associated with the existing buildings' former use as a mortuary are considered potential sources of soil and groundwater contamination on the project site.

In terms of off-site sources of soil or groundwater contamination, a former Shell Gas Station at 2800 Telegraph Avenue is located approximately 500 feet south of the subject property. Although this site is at a lower elevation and cross-gradient to the subject property, monitoring wells located within one block south of the subject property have historically been reported to contain petroleum hydrocarbons, BTEX, and MTBE. Due to historical groundwater contamination, the proximity to the subject property, and the limited local groundwater flow direction information, this site is considered an off-site Recognized Environmental Condition (REC) property, relative to the subject site.

A limited Phase II Site Assessment was conducted in January 2006 to determine the extent of potential soil and groundwater contamination. The assessment included the collection of seven soil borings using direct-

push techniques and four soil borings using rotary mud drilling techniques. In addition, the assessment sampled groundwater from temporary wells installed at six locations selected based on proximity to evaluated RECs, probable groundwater flow direction and field screening results. Petroleum hydrocarbons, formaldehyde, Volatile Organic Compounds (VOC) and heavy metals impacted soils from collected samples. The petroleum hydrocarbon concentrations identified were below the Environmental Screening Levels (ESLs) established by the Regional Water Quality Control Board Region 2 (RWQCB). However, visible staining and odors suggest 'hot spots' of petroleum hydrocarbon contamination may exist on the project site. Groundwater samples were found to have petroleum hydrocarbons from diesel and gasoline above their respective ESLs. One groundwater sample contained 2-methylnaphthalene above its ESL.

Formaldehyde was detected above its ESL in one groundwater sample and below its ESL in several soil samples. The assessment postulated that higher concentrations of formaldehyde are likely to exist under the building, where sampling was not conducted due to drill rig access limitations. Arsenic was detected above its ESL in nine soil samples and barium and nickel were detected in the groundwater at levels above the applicable ESLs. However, these concentrations were in the range of naturally occurring concentrations. It should be noted that the presence of chemical concentrations above ESLs do not necessarily indicate a human health risk, but that further evaluation may be necessary.

In general, results from the Phase II investigation suggest that stockpile management and soils disposal may be impacted by elevated contaminant concentrations. Removal and disposal of contaminated soils may be required. Although on-site and off-site groundwater may require additional investigation and/or monitoring, since the shallow groundwater is not a source of drinking water, it is possible that a non-drinking-water cleanup level may be acceptable.

The project site is within one-quarter mile of the Oakland Emiliano Zapata Street Academy. However, it is not anticipated that the project would emit hazardous emissions or handle hazardous materials in a way that would pose a significant hazard to this school. Accordingly, the following standard conditions would be implemented by the project sponsor and included as conditions of approval by the City. Implementation of these standard conditions would reduce the impact from potential exposure of construction workers, the school, and the public to soil and/or groundwater contamination to a less-than-significant level.

Standard Condition HAZ-1: Prior to issuance of demolition, grading, or building permits the applicant shall submit the Phase 1 and Phase II reports for the existing buildings to determine if remediation of contaminated soil and groundwater are identified on the site. The Planning Director shall review and provide a determination on the completeness of the reports.

Standard Condition HAZ-2: If the Phase I and/or Phase II reports indicate that remediation is required, the applicant must submit the following:

- a. The project applicant shall ensure that environmental assessment and remediation would either be performed under the oversight of the ACDEH or other agencies, or be conducted by qualified professionals with experience in soil and groundwater contamination remediation. In cases where regulatory involvement is not necessary, soil and groundwater removal and disposal would still occur to mitigate the potential hazards that could result from removal of soil and/or groundwater during construction.**
- b. The project applicant submit a Soil Management Plan for review and approval by the appropriate agency, which shall be prepared to outline required procedures for handling and disposing impacted soil. All disposal and transportation of contaminated soil shall be done in accordance with state and federal agencies and under federal (RCRA) and state laws. All contaminated soil determined to be hazardous or non-hazardous waste must be adequately profiled for acceptable disposal before it can be removed from the site. The applicant shall ensure that impacted soil is handled in accordance with the approved Soil Management Plan.**

- c. Groundwater pumped from the subsurface would be contained onsite prior to treatment and disposal to ensure environmental and health issues are resolved pursuant to oversight agencies. Engineering controls shall be utilized, which include impermeable barriers to prohibit groundwater and vapor intrusion into the building.
- d. Written verification that the appropriate State, Federal or County authorities including but not limited to the Regional Water Quality Control Board and the Alameda County Public Health Department have granted all required clearances and confirmed that all applicable standards, regulations, and conditions are in compliance, for all previous contamination at the site.
- d. The applicant shall provide evidence from the City's Fire Department, Office of Emergency Services, indicating compliance with the City of Oakland Hazardous Material Assessment and Reporting Program, pursuant to City Ordinance No. 12323.
- e. Prior to issuance of any demolition, grading or building permits, the applicant shall demonstrate to the satisfaction of the Office of Fire Department, Office of Emergency Services, that the site has been investigated for the presence of lead and does not contain hazardous levels of lead.

The Phase I site assessment also noted the likelihood that asbestos-containing building materials and lead-based paint are present in the existing structure, given its age. Both of these materials could be harmful to construction workers and the public if treated improperly during demolition of the existing building. Section 19827.5 of the California Health and Safety Code requires that local agencies not issue demolition or alteration permits until an applicant has demonstrated compliance with notification requirements under applicable federal regulations regarding hazardous air pollutants, including asbestos. The Bay Area Air Quality Management District is vested by the California legislature with authority to regulate airborne pollutants, including asbestos, through both inspection and law enforcement, and is to be notified ten days in advance of any proposed demolition or abatement work.

Because of the likelihood that asbestos and lead-based paint are present in the existing building, the following standard conditions would be implemented by the project sponsor and included as conditions of approval by the City. Implementation of these standard conditions would reduce the impact from potential exposure of construction workers and the public to asbestos and lead-based paint to a less-than-significant level.

Standard Condition HAZ-3: Prior to issuance of any demolition, grading or building permit, the applicant shall submit for review and approval by the Planning and Zoning Division, written documentation that any asbestos containing materials (ACMs) have been removed from the project site prior to the start of any demolition activities. A licensed asbestos abatement firm in accordance with the BAAQMD's Regulation 11 shall conduct the removal of ACMs, Rule 2.

Standard Condition HAZ-4: Future demolition or renovation activities shall require the project sponsor to prepare an assessment for the potential presence of lead-based paint or coatings, asbestos, or PCB-containing equipment be prepared prior to commencing these activities.

Standard Condition HAZ-5: If the assessment required by Standard Condition 4 finds presence of lead-based paint, asbestos, and/or PCBs, the project sponsor shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition or renovation of affected structures.

Standard Condition HAZ-6: If the assessment required by Standard Condition 4 finds presence of lead-based paint, the project sponsor shall develop and implement a lead-based paint removal plan. The plan shall specify, but not be limited to, the following elements for implementation:

- **Develop a removal specification approved by a Certified Lead Project Designer.**
- **Ensure that all removal workers are properly trained.**
- **Contain all work areas to prohibit off-site migration of paint chip debris.**
- **Remove all peeling and stratified lead-based paint on building and non-building surfaces to the degree necessary to safely and properly complete demolition activities according to recommendations of the survey. The demolition contractor shall be responsible for the proper containment and disposal of intact lead-based paint on all equipment to be cut and/or removed during the demolition.**
- **Provide on-site personnel and area air monitoring during all removal activities to ensure that workers and the environment are adequately protected by the control measures used.**
- **Clean up and/or vacuum paint chips with a high efficiency particulate air (HEPA) filter.**
- **Collect, segregate, and profile waste for disposal determination.**
- **Properly dispose of all waste.**

Standard Condition HAZ-7: If the assessment required by Standard Condition 4 finds presence of asbestos, the project sponsor shall ensure that asbestos abatement shall be conducted prior to building demolition or renovation.

Standard Condition HAZ-8: If the assessment required by Standard Condition 4 finds presence of PCBs, the project sponsor shall ensure that PCB abatement shall be conducted prior to building demolition or renovation.

Standard Condition HAZ-9: Fire Safety: The project applicant and construction contractor will ensure that during project construction, all construction vehicles and equipment will be fitted with spark arrestors to minimize accidental ignition of dry construction debris and surrounding dry vegetation.

Standard Condition HAZ-10: Handling Misuse: The project applicant and construction contractor shall ensure that construction best management practices are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These shall include the following:

- **Follow manufacturer's recommendations on use, storage, and disposal of chemical products used in construction;**
- **Avoid overtopping construction equipment fuel gas tanks;**
- **During routine maintenance of construction equipment, properly contain and remove grease and oils;**
- **Properly dispose of discarded containers of fuels and other chemicals.**

Source:
Project Description and Plans

URS Corporation, *Limited Phase II Environmental Site Investigation*. Prepared for Trammell Crow Residential, May 25, 2006.

URS Corporation, *Phase I Environmental Site Assessment*. Prepared for Trammell Crow Residential, June 15, 2006.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
e) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	☐
f) For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?	☐	☐	☐	☒	☐

Comments to VII.e and f:

The project is not located within two miles of a public airport, and there are no private airstrips in the vicinity. Therefore the project would not result in any significant safety hazards for people residing or working in the project area.

Source:

Oakland General Plan, Land Use and Transportation Element, March 1998.

g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒	☐

Comments to VII.g:

Upon review of the City of Oakland's Multi-Hazard Functional Plan, ("City Emergency Plan"), the proposed project would not significantly interfere with emergency response plans or evacuation plans. The City of Oakland Fire Services Agency (Fire Department) is responsible for first response in an emergency. Standard notification procedures required by the City are designed to ensure that the Fire Department is notified if construction traffic would block any city streets. Specifically, the job site supervisor is required to call the Fire Department's dispatch center any day construction vehicles would partially or completely block a city street during the construction process. Therefore, assuming compliance with the City's notification requirements, project construction would not significantly interfere with emergency response plans or evacuation plans, nor adversely affect the City's response and operational procedures in the event of a large scale disaster or emergency.

Source:

City of Oakland, *Draft Multi-Hazard Functional Plan*, 1993.
Project Description and Plans.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
h) Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	☐	☐	☐	☒	☐

Comments to VII.h:

The project site is within downtown Oakland and not located adjacent to wildlands. Any new structures built on the site would be required to comply with all applicable Fire Code and fire suppression systems, as routinely required by the City. Therefore, the proposed project would not expose people or structures to significant risks associated with wildland fires.

Source:

Project Description and Plans.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
VIII. HYDROLOGY AND WATER QUALITY -- Would the project:					
a) Violate any water quality standards or waste discharge requirements?	☐	☐	☐	☐	☒
b) Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?	☐	☐	☐	☐	☒

Comments to VIII.a and b:

The proposed project would not increase the amount of impervious surface, since the site is currently entirely covered by the existing structure and surface parking. Hazardous materials associated with construction activities are likely to involve minor quantities of paint, solvents, oil and grease, and petroleum hydrocarbons. Construction activities on 10,000 square feet or more, such as the proposed project, that would discharge storm water to a municipally owned storm drain system would be required to comply with the Alameda County Clean Water Program (ACCWP) NPDES permit that includes the city of Oakland. Project applicants would also be required to apply for a NPDES General Construction Permit for discharges associated with project construction activities. These requirements are detailed in Standard Condition HYDRO-1 below. This uniformly-applied standard measure shall be implemented as conditions of approval to avoid impacts related to water quality:

Standard Condition HYDRO-1: Prior to and during project demolition, grading and construction activities, the project shall comply with all City of Oakland Grading Permit requirements and all NPDES Permit requirements as follows:

Grading Plan, Erosion and Sedimentation Control Plan, and Drainage Plan

City of Oakland Municipal Code Chapter 13.16 and Section 15.04.780 require that the project applicant prepare a grading plan for the proposed project. Because during project construction the volume of the excavated fill material would exceed 50 cubic yards and involve depths of excavation that exceed five feet, the project sponsor must prepare a grading plan, erosion and sedimentation control plan, and drainage plan.

- The required plan shall include drainage, erosion, and sediment control measures and incorporate construction BMPs to prevent pollutants from entering the storm sewer to the maximum extent practicable.
- The grading plan shall discuss existing, temporary, and final drainage facilities. Erosion and sediment control must combine interim and permanent measures to minimize erosion, stormwater runoff, and sedimentation. Such measures, at a minimum, shall include provision of filter materials at the catch basin to prevent debris or dirt from flowing into the storm drain system. According to the City Public Works Agency, such filter materials shall be applied to catch basins within private areas. As proposed by the project, filter protection at catch basins and inlets will include filter fabric covering the grates, straw bales or wattles circling the inlet, or some combination of these and/or other measures.
- The plan shall specify that, after construction is complete, the sponsor shall ensure that the storm drain system shall be inspected and that the sponsor shall clear the system of any debris or sediment.
- Preparation and implementation of the grading plan would include preparation of the construction stormwater pollution prevention plan (SWPPP) (discussed below).

NPDES Permit and Construction Stormwater Pollution Prevention Plan (SWPPP)

The project sponsor shall apply for and comply with all requirements of the ACCWP NPDES General Construction Permit. As required by the permit:

- The sponsor shall prepare a SWPPP in coordination with a project's grading plan. The SWPPP shall describe erosion and sedimentation control measures as recommended in the California Stormwater Best Management Practice Handbook (Stormwater Quality Task Force, 2003).
- The project sponsor shall prepare the SWPPP and submit a notice of intent to the RWQCB prior to construction activities, as required by the RWQCB. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project.
- At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; best management practices (BMPs), and inspection and monitoring program.

- **After construction is completed, the project sponsor shall submit a notice of termination to the RWQCB.**

Following the completion of construction activities, the application of pesticides and herbicides related to landscape maintenance are potential sources of polluted stormwater runoff. However, on-site landscaping would be minimal, and the proposed project would not significantly increase the use of pesticides or herbicides, compared to existing conditions. In addition, the proposed project would be required to comply with the City of Oakland and Alameda County stormwater quality protection requirements. Potential groundwater quality impacts associated with the proposed project are therefore considered less than significant.

As noted in Section VI, Geology and Soils, the depth to groundwater is between about 9 feet and 12 feet below grade, according to geotechnical characterization prepared for the project. The proposed project design may involve some dewatering of the site to accommodate one level of subsurface construction with the addition of the foundation slab. If dewatering is required, the water generated may contain Volatile Organic Compounds (VOC) and Total Petroleum Hydrocarbons (TPH) as diesel and gasoline, according to the Phase II site assessment. Barium and nickel, found in ground water samples at levels above their respective Environmental Screening Levels (ESL) established by the Regional Water Quality Control Board Region 2 (RWQCB), could also be found in water generated from dewatering. However these dissolved metals appear to be in the possible range of naturally occurring concentrations. Depending on discharge requirements, this water may be discharged into the City of Oakland sanitary sewer system or be temporarily stored and then transported to an appropriate disposal facility. In areas of the project site where the water table is higher than 12 feet below ground level, a permanent dewatering system may be required.

Water quality requirements associated with required permits would necessitate treatment of contaminated groundwater prior to discharge (see Standard Condition HAZ-2 in Section VII. Hazards and Hazardous Materials). Considering the permitting requirements for treatment and discharge of groundwater generated during temporary or ongoing dewatering, the project would not violate any water quality or waste discharge standards.

The shallow groundwater in the project area is not considered potable and is not used as a public drinking water supply. Permanent dewatering, as discussed above, may result in slight lowering of the groundwater table some areas of the project site but would not result in a substantial depletion of the groundwater supplies.

In accordance with standard City practices, the project sponsor shall be required to comply with all applicable regulatory standards and regulations pertaining to potential contaminants and to project-related grading and excavation prior to issuance of grading and building permits, consistent with standard City practices (see Section VI. Geology and Soils). Therefore, the project would not result in significant impacts on water quality or on groundwater supplies.

Source:

Project Description and Plans.

URS Corporation, *Final Geotechnical Characterization 2935 Telegraph Avenue Oakland, California*,

Prepared for TCR Northern California Construction, Inc. May 19, 2006.

URS Corporation, *Limited Phase II Environmental Site Investigation*. Prepared for Trammell Crow Residential, May 25, 2006.

URS Corporation, *Phase I Environmental Site Assessment*. Prepared for Trammell Crow Residential, June 15, 2006.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
c) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site that would affect the quality of receiving waters?	☐	☐	☒	☐	☐
d) Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding on- or off-site?	☐	☐	☒	☐	☐
e) Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	☐	☐	☐	☐	☒
f) Otherwise substantially degrade water quality?	☐	☐	☐	☐	☒

Comments to VIII.c, d, e and f:

The project site currently is occupied by an existing building and surface parking lot. There are no known streams or rivers on the project site or in the vicinity. Completion of the proposed project would not require the alteration of a stream or river course.

The site is currently fully developed with impervious surfaces and, therefore, the proposed project would not alter the volume of surface runoff, compared to existing conditions. The proposed project would be connected to the City of Oakland's stormwater drain system. Because the site is currently developed, the stormwater discharges are not expected to increase due to the project. Thus, the proposed project would not effect on the amount of runoff, and would not result in flooding on- or off-site. The proposed landscaping, although minimal, would absorb some storm water runoff, potentially reducing surface runoff.

In accordance with standard City practices, and in order to minimize any short-term (construction-related) or long-term impacts on surface water quantity (i.e. stormwater) or quality, the applicant shall be required to comply with applicable standards and regulations of the City of Oakland. In addition, the following standard measures shall be implemented as conditions of approval to avoid impacts related to stormwater or water quality:

Standard Condition HYDRO-2: The project sponsor shall implement site design/landscape characteristics as feasible, which maximize infiltration (where appropriate), provide retention or detention, slow runoff, and minimize impervious land coverage, so that post-development pollutant loads from the site have been reduced to maximum extent possible. Where feasible, the project shall introduce measures to help reduce the rate and volume of stormwater runoff.

Considering the above discussion, the proposed project would not result in significant impacts with respect to erosion, flooding, stormwater drainage system capacity, surface water quality or quantity.

Source:

City of Oakland, *Oakland Community Services Analysis, Technical Report #5*, October 1995.
Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.

Project Description and Plans.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
g) Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	☐	☐	☐	☒	☐
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒	☐
i) Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒	☐

Comments to VIII.g, h and i:

The proposed project site is located in Zone C, as shown on the Federal Emergency Management Agency Flood Insurance Rate Map. This zone is located in neither a 100-year nor in a 500-year flood boundary and is therefore considered a zone at minimal risk for flooding hazards. The project site is not located near a levee or a dam. Therefore, the project would not result in significant impacts by exposing people or structures to risk of flooding.

Source:

Flood Insurance Rate Map, Federal Emergency Management Administration.
Oakland Community Services Analysis, Technical Report #5, October 1995.
Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.

j) Result in inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐	☐

Comments to VIII.j:

Although seiches and tsunamis can occur and cause tidal surges in the San Francisco Bay, these events are extremely rare, and would not result in wave run-up capable of causing flood damage at the project site. The potential for mudslides to occur is low due to the developed urbanized nature of the surrounding area and the lack of exposed slopes. Regardless, the project sponsor would be required to comply with applicable City regulations and standards to address potential geologic and seismic impacts prior to the issuance of grading or building permits, consistent with standard City practices (also see Section VI. Geology and Soils). Therefore, the project would not result in significant impacts with respect to seismic-related flood hazards or unstable soils that result in mudflows.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
k) Fundamentally conflict with the elements of the City of Oakland Creek Protection (OMC Chapter 13.16) ordinance intended to protect hydrologic resources. Although there are no specific, numeric/quantitative criteria to assess impacts, factors					

to be considered in determining significance include whether there is substantial degradation of water quality through (a) discharging a substantial amount of pollutants into a creek; (b) significantly modifying the natural flow of the water or capacity; (c) depositing substantial amounts of new material into a creek or causing substantial bank erosion or instability; or (d) substantially endangering public or private property or threatening public health or safety.

☐ ☐ ☐ ☒ ☐

Comments to VIII.k:

No creek is located on or near the project site, and the project would not affect any creeks subject to the City of Oakland Creek Protection Ordinance 13.16.

Source:

Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval

IX. LAND USE AND PLANNING -- Would the project:

a) Physically divide an established community?	☐	☐	☒	☐	☐
b) Result in a fundamental conflict between adjacent or nearby land uses?	☐	☐	☒	☐	☐

Comments to IX.a and b:

The project site is located at 2935 Telegraph Avenue on approximately 1.4 acres of the block bounded by 29th Street, Telegraph Avenue, 30th Street and Interstate I-980. This project would be in the Telegraph Corridor district of Oakland's Central / Chinatown planning area, which is considered an essential urban center for the region. In this area of Oakland, a mix of institutional, commercial and residential uses characterize the project vicinity. Broadway Auto Row, an area noted for automobile-related sales and services, is to the east and north east of the project site. Institutional uses, primarily the Alta Bates Summit Medical Center, characterize the area to the north and north east of the project site. Three blocks south of the project site along Broadway is the 25th Street Garage District, a City-designated Area of Primary Importance (API) as an historic district. The Central Business District, approximately six blocks south of the project site, defines views down Telegraph Avenue. Interstates I-580 and I-980 border the project area to the north and west respectively.

The project site is surrounded by residential uses on 29th and 30th Streets, and primarily commercial uses fronting Telegraph Avenue. Telegraph Avenue is a four-lane arterial boulevard with a center turning lane and on-street parking, connecting downtown Oakland to the south with downtown Berkeley to the north. The residential uses in the project vicinity are mostly two-story, single-family detached residences, with smaller number of multi-family residential buildings range from three to five stories. The commercial uses opposite Telegraph Avenue from the project site are primarily two to three-story buildings with ground floor retail and office uses above, as well as a few older, single family homes that have been converted to office and/or commercial uses.

Land use in the Telegraph corridor is influenced by the nearby ‘Pill Hill’ area; Oakland’s largest concentration of hospitals and medical services. Medical retail and office uses occupy many of the retail spaces including the former church and mortuary on the northwest corner of 30th Street and Telegraph Avenue, which is now a medical office building. Other uses in the project vicinity include Alta Bates Summit Medical Center on the corner of 30th Street and Telegraph Avenue, diagonally across Telegraph Avenue from the project site, St. Augustine’s Episcopal Church, a City of Oakland Historical Landmark on the southwest corner of 29th Street and Telegraph Avenue, as well as a number of small restaurants, cafes and food markets. Interstate I-980 (Grove/Shafter Freeway) is located approximately 160 west from the western boundary of project site, separated by about three properties containing single-family homes.

Current uses on the project site include a two-story fitness club (Courthouse Athletic Club) approximately 30,000 square feet in size on the corner of 30th Street and Telegraph Avenue. Adjacent to the fitness club is surface parking lot which can accommodate approximately 93 automobiles. The parking lot is encircled by a chain link fence, with an entrance to the lot on Telegraph Avenue adjacent to the athletic club. The site is completely developed with the exception of two groupings of mature redwood trees located toward the westerly and southerly portions of the site. The proposed project would replace these uses with residential and commercial activities and associated parking. As these uses are consistent with the surrounding community, the proposed project would not physically divide an established community or demonstrably conflict with nearby land uses.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval

c) Fundamentally conflict with applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?

☐	☐	☒	☐	☐

Comments to IX.c:

Development on the project site is subject to the City of Oakland General Plan and zoning ordinance. The following General Plan policies and zoning ordinances applicable to the project are described below.

Land Use and Transportation Element. As identified in the Land Use and Transportation Element of the Oakland General Plan, which identifies policies for managing Oakland’s land uses, the project site is located within the both the “Community Commercial” and the “Urban Residential” areas. The eastern third of the project site, fronting along Telegraph Avenue, falls within the “Community Commercial” land use designation. The intent of the “Community Commercial” designation is “identify, create, maintain, and enhance areas suitable for a wide variety of commercial and institutional operations along the City’s major corridors and in shopping districts.” The rear (western) two thirds of the project site falls within the “Urban Residential” land use designation. The intent of the “Urban Residential” designation is to “create, maintain, and enhance areas of the City that are appropriate for multi-unit, mid-rise or high-rise residential structures in locations with good access to transportation and other services.”

The following policies in the Land Use and Transportation Element of the General Plan, without limitation, apply to the proposed project:

- Facilitating the construction of housing units should be considered a high priority for the City of Oakland (Policy N3.1, Facilitating Housing Construction).

- In order to facilitate the construction of needed housing units, infill development that is consistent with the General Plan should take place throughout the City of Oakland (Policy N3.2, Encouraging Infill Development).
- High-quality design standards should be required of all new residential construction. Design requirements and permitting procedures should be developed and implemented in a manner that is sensitive to the added costs of those requirements and procedures (Policy N3.8, Requiring High Quality Design).
- Residential developments should be encouraged to face the street and orient their units to desirable sunlight and views, while avoiding unreasonably blocking sunlight and views for neighboring buildings, respecting the privacy needs of residents of the development and surrounding properties, providing for sufficient conveniently located on-site open space, and avoiding undue noise exposure (Policy N3.9, Orienting Residential Development).
- Off-street parking for residential buildings should be adequate in amount and conveniently located and laid out, but its visual prominence should be minimized (Policy N3.10, Guiding the Development of Parking).
- Retail uses should be focused in “nodes” of activity, characterized by geographic clusters of concentrated commercial activity, along corridors that can be accessed through many modes of transportation (Policy I/C3.3, Clustering Activity in “Nodes”).
- The vitality of existing neighborhood mixed-use and community commercial areas should be strengthened and preserved (Policy I/C3.4, Strengthening Vitality).
- Neighborhood-serving commercial development should be promoted within one-quarter to one-half mile of established transit routes and nodes (Policy T2.3, Promoting Neighborhood Services).
- The city should make major efforts to improve the visual quality of streetscapes. Design of the streetscape, particularly in neighborhoods and commercial centers, should be pedestrian-oriented, including lighting, directional signs, trees, benches and other support facilities (Policy T6.2 Improving Streetscapes).
- Create a pedestrian-friendly downtown (Objective D3).
- Pedestrian-friendly commercial areas should be promoted (Policy D3.1, Promoting Pedestrians).
- New parking facilities for cars and bicycles should be incorporated into the design of any project in a manner that encourages and promotes safe pedestrian activity (Policy D3.2, Incorporating Parking Facilities).
- Increase the economic vitality of downtown (Objective D4).
- Enhance the safety and perception of safety downtown at all hours (Objective D5).
- Activities and amenities that encourage pedestrian traffic during the work week, as well as evenings and weekends should be promoted (Policy D5.1, Encouraging Twenty-Four Hour Activity).
- Eliminate blight caused by underutilized properties (Objective D6).

- Downtown residents should have access to goods and services to meet their daily and long term needs within the downtown area (Policy D9.2, Meeting Daily Needs).
- Maximize housing opportunities in the downtown to create a better sense of community (Objective D10).
- Housing in the downtown should be encouraged as a vital component of a 24-hour community presence (Policy D10.1, Encouraging Housing).
- Housing in the downtown should be encouraged in identifiable districts, within walking distance of the 12th Street, 19th Street, City Center, and Lake Merritt BART stations to encourage transit use, and in other locations where compatible with surrounding uses (Policy D10.2, Locating Housing).
- Downtown residential areas should generally be within the Urban Density Residential and Central Business District density ranges, where not otherwise specified. The height and bulk should reflect existing and desired district character, the overall city skyline, and the existence of historic structures or areas (Policy D10.3, Framework for Housing Densities).
- Housing in the downtown should be safe and attractive, of high quality design, and respect the downtown's distinct neighborhoods and its history (Policy D10.5, Designing Housing).
- Infill housing that respects surrounding development and the streetscape should be encouraged in the downtown to strengthen or create distinct districts (Policy D10.6, Creating Infill Housing).
- Foster mixed use developments to help create a diverse, lively, and vibrant downtown (Objective D11).
- Mixed use development should be encouraged in the downtown for such purposes as to promote its diverse character, provide for needed goods and services, support local art and culture, and give incentive to reuse existing vacant or underutilized structures (Policy D11.1, Promoting Mixed-Use Development).
- Mixed use development should be allowed in commercial areas, where the residential component is compatible with the desired commercial function of the area (Policy D11.2, Locating Mixed-Use Development).

The project would be generally consistent with the above policies because it would provide new infill housing near the downtown and close to transit routes at densities consistent with the General Plan. The project would also include commercial uses on a major commercial corridor, Telegraph Avenue. The project includes on-site parking to serve residents and the parking would be visually concealed behind the commercial and residential frontages. On-site open space would be provided on the podium (second) level in the form of nine courtyards totaling approximately 18,450 square feet. Over 6,000 square feet of open space would also be provided in the form of balconies for a total of about 24,530 square feet of project open space. The proposed new construction would be designed and oriented to minimize the blocking of sunlight and views from nearby buildings.

The "Urban Residential" and the "Community Commercial" areas allow a maximum residential density of 125 units per net acre. The "Community Commercial" area allows a maximum floor area ratio (FAR) of 5.0. The 142 units proposed on the 1.4-acre project site would be consistent with the maximum allowed General Plan density and allowable FAR.

Open Space, Conservation and Recreation Element. The Open Space, Conservation and Recreation Element (OSCAR) of the Oakland General Plan addresses the management of open land, natural resources, and parks in Oakland. The following OSCAR policies are most relevant to the proposed project:

- Continue to require new multifamily development to provide usable outdoor open space for its residents (Policy OS-4.1, Provision of Useable Open Space).
- Encourage site planning for new development which minimizes adverse visual impacts and takes advantage of opportunities for new vistas and scenic enhancement (Policy OS-10.2, Minimizing Adverse Visual Impacts).
- Provide better access to attractive, sunlit open spaces for persons working or living in downtown Oakland. The development of rooftop gardens is encouraged, especially on parking garages (Policy OS-11.1, Access to Downtown Open Space).

The project would be generally consistent with the above policies because it would provide accessible and useable group open space within the proposed development. The project design would be compatible with the surrounding area such that parking and loading as well as mechanical units would be screened from view from key vantage points along Telegraph Avenue.

The Cultural Resources analysis that will be included in the EIR will include analysis of the project with respect to consistency with policies in the Historic Preservation Element of the General Plan.

Zoning Regulations.

The project site is mapped with the C-40 Community Thoroughfare Commercial Zone and the R-80 High-Rise Apartment Zones. The C-40 Zone exists in the front (east) portion of the project site along Telegraph Avenue with the rear (west) portion of the site falling in the R-80 Zone. This arrangement is generally contiguous with the two land use designations on the site (“Community Commercial” and “Urban Residential”).

The C-40 zone is intended to “create, preserve, and enhance areas with a wide range of both retail and wholesale establishments serving both short and long term needs in convenient locations, and is typically appropriate along major thoroughfares” (Section 17.54.010). Residential, general retail sales and general personal service, the most likely uses that would be included in the project, are permitted in the C-40 zone. Residential uses in the C-40 zone are subject to the density regulations for the R-70 High Density Residential Zone, which allow approximately one regular dwelling unit for each 450 square feet of lot area (Section 17.54.130). The maximum floor area ratio for projects in the C-40 zone is 3.00 for projects containing both residential and nonresidential facilities (Section 17.54.140). This may also be exceeded by ten (10) percent on any corner, which applies to the project site. There is no maximum height for residential facilities in the C-40 zone, unless, per Section 17.108.010, it abuts a boundary of any of certain other zones, which the project does not. The proposed residential, parking and ground floor commercial uses along Telegraph Avenue would be consistent with the uses and densities allowed under the C-40 zone.

The R-80 zone is intended to “create, preserve, and enhance areas for high-rise apartment living at high densities in desirable settings, and is typically appropriate to areas near major shopping and community centers and rapid transit stations” (Section 17.30.010). Residential activities are permitted in the R-80 zone. Residential uses in the R-80 zone allow approximately one regular dwelling unit for each 300 square feet of lot area (Section 17.30.140). The maximum floor area ratio for projects in the R-80 zone is 3.50 for projects containing both residential and nonresidential facilities (Section 17.30.150). This may also be exceeded by ten (10) percent on any corner, which applies to the project site. There is no maximum height for residential facilities in the R-80 zone, unless, per Section 17.108.010, it abuts a boundary of any of certain other zones, which the project does not. The proposed residential and parking uses would be consistent with the use and density requirements of the R-80 zone.

The Oakland Tree Preservation Ordinance. The Oakland Tree Preservation Ordinance is intended to protect and preserve certain trees, prevent unnecessary tree loss, minimize environmental damage from improper tree removal, enforce tree preservation regulations, and promote the appreciation and understanding of trees (Section 12.36.020). The project site contains two groupings of mature redwood trees that are “protected” under the Oakland Tree Preservation Ordinance due to their size. In accordance with standard city practices, any removal of “protected” trees as a result of the proposed project would be subject to the standard city tree protection/removal permit procedures. Acquisition of a Tree Removal Permit and adherence to its terms and conditions would ensure that the project does not conflict with any local ordinances, plans or policies (See IV. Biological Resources).

Guidelines for Determining General Plan Conformity. As a general rule, whenever there is an express conflict between the General Plan and zoning regulations, a project must conform with the General Plan (Section 17.01.030). As required by Section 17.01.060 of the Planning Code, the Oakland City Planning Commission (May 6, 1998 and as amended through July 15, 2003) adopted Guidelines for Determining General Plan Conformity to determine if a project conforms to the General Plan. Pursuant to these Guidelines, in cases where the project clearly conforms to the General Plan but is not permitted by the Zoning and/or Subdivision Regulations, the project may be allowed upon the granting of a conditional use permit.

It is anticipated that the project would require Design Review pursuant to the C-40 zone (17.54.030) and the R-80 zone (17.30.030); a Tree Removal Permit (12.36.050); and Variance approvals pursuant to (17.148.)

In summary, the project would not conflict with any plans, policies, or regulations as discussed above.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
d) Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒	☐

Comments to IX.d:

The proposed project site is not located in an area that is governed by any habitat conservation plan or natural community conservation plan. Therefore, the proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan affecting the area.

Source:

Oakland General Plan, Land Use and Transportation Element, March 1998.
Oakland General Plan, Open Space, Conservation and Recreation Element, June 1996.
Oakland Municipal Code, accessed May 19, 2006 at <http://bpc.iserver.net/codes/oakland/>
Project Description and Plans.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

X. MINERAL RESOURCES -- Would the project:

a) Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?

☐	☐	☐	☒	☐

b) Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?

☐	☐	☐	☒	☐

Comments to X.a and b:

The proposed project would be located on an urban in-fill site and would replace an existing building with new construction. The project site has no known existing mineral resources. The project would not require quarrying, mining, dredging, or extraction of locally important mineral resources on site, nor would it deplete any nonrenewable natural resource. Therefore, the project would not impact any mineral resources.

Source:

Oakland General Plan, Open Space, Conservation, and Recreation Element, October 1995.
Project Description and Plans.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

XI. NOISE -- Would the project result in:

a) Expose persons to or generate noise levels in excess of standards established in the Oakland General Plan or other agencies (e.g., OSHA)?

☐	☐	☐	☐	☒

b) Violate the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding operational noise?

☐	☐	☐	☐	☒

c) Generate interior Ldn or CNEL greater than 45 dBA for multi-family dwellings, hotels, motels, dormitories and long-term care facilities (and may be extended by local legislative action to include single-family dwellings) per California Noise Insulation Standards (CCR Part 2, Title 24)?

☐	☐	☐	☐	☒

d) Result in a 5 dBA permanent increase in ambient noise levels in the project vicinity above levels existing without the project?

☐	☐	☒	☐	☐

e) Conflict with state land use compatibility guidelines for all specified land uses for determination of acceptability of noise

(Source: State of California, Governor’s Office of Planning and Research, General Plan Guidelines, 2003)?

☐☐☒☐☐

Comments to XI.a, b, c, d and e:

The existing ambient noise environment at the project site is dominated by traffic noise on Telegraph Avenue. Though the western boundary of the site is 160 feet away from the elevated Interstate I-980, noise from the freeway is barely audible due to the sound barrier along the freeway that blocks direct line of sight to the project site. Use of the parking lot associated with existing activities at the site also influence the noise environment. To provide the basis for evaluating potential noise impacts of the project, three short-term noise measurements were taken at different points on the project site during the morning peak hour. Where traffic dominates the ambient noise environment (such as the project site), the peak hour Leq approximately is the same the DNL.⁹ Table NOI-1 below summarizes the noise measurements:

TABLE NOISE-1

Existing Noise Levels at the Project Site (dBA)

	Peak Hour Leq	Location
ST-1	69.7 dBA	At the project site’s boundary along Telegraph Avenue approximately 30 feet from the curb.
ST-2	66.3 dBA	Along the site’s northern boundary along 30th Street, approximately 100 feet from Telegraph Avenue
ST-3	64.5 dBA	At the rear of the parking lot approximately 40 feet from the curb of 29th Street and approximately 250 feet from Telegraph Avenue

SOURCE: Environmental Science Associates, 2006.

The City of Oakland uses state noise guidelines for judging the compatibility between various land uses and their noise environments. For multifamily residential land uses, the guidelines indicate that a noise environment of DNL 65 dBA or less is “normally acceptable,” while a noise environment between DNL 60 and 70 dBA is considered “conditionally acceptable.” These standards are for outdoor noise levels.

Given the measured exterior noise levels in the vicinity of the project site, the interior noise levels within the project’s residential units could exceed DNL 45 dBA, the interior noise standard for dwelling units according to the City of Oakland General Plan Noise Element and the requirements of California Noise Insulation Standards found in California Code of Regulations, Title 24 (Building Standards Administrative Code), Part 2 (California Building Code), Appendix Chapters 12 and 12A. In order to meet the interior noise standard of 45 DNL dBA, building construction would need to reduce exterior noise levels by as much as 25 dBA from the external facades of the building. Conventional contemporary building construction methods and materials decrease outdoor noise by 12-18 dB (with partially open windows) which would not be adequate to meet the City’s interior noise standard. Therefore, the following standard condition would be applicable:

⁹ Sound pressure is measured in decibels (dB), with zero dB corresponding roughly to the threshold of human hearing, and 120 dB to 140 dB corresponding to the threshold of pain. Because sound pressure can vary by over one trillion times within the range of human hearing, a logarithmic loudness scale is used to keep sound intensity numbers at a convenient and manageable level. Owing to the variation in sensitivity of the human ear to various frequencies, sound is “weighted” to emphasize frequencies to which the ear is more sensitive, in a method known as A-weighting and expressed in units of A-weighted decibels (dBA). The L_{eq} is the constant sound level, which would contain the same acoustic energy as the varying sound level, during the same time period (i.e., the average noise exposure level for the given time period). The day-night noise level (DNL) is an average 24-hour noise level that accounts for the greater sensitivity of most people to nighttime noise by giving greater weight to nighttime noise.

Standard Condition NOISE-1: If necessary to comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an acceptable interior noise level, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) shall be incorporated into project building design. Final recommendations for sound-rated assemblies will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phase.

Implementation of standard condition of approval NOISE-1 would reduce interior noise levels to an acceptable level, and would render noise impacts less than significant.

In terms of project-generated traffic noise, ambient noise levels in the vicinity of the project are typical of noise levels in urban Oakland. The ambient noise is dominated by vehicular traffic, including trucks, cars, buses, and emergency vehicles along Telegraph Avenue as well as traffic on Interstates I-980 and I-580. Generally, traffic must double in volume to produce a noticeable increase in noise levels. Although traffic volumes would increase in the immediate project vicinity, it is not anticipated that these volumes would double on any nearby streets as a result of the proposed project; therefore, substantial increases in traffic noise levels would not be anticipated in the project area. Traffic noise will not be analyzed further in the EIR.

Building operations would not be expected to result in unusual or noticeably loud noises.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
f) Violate the City of Oakland Noise Ordinance (Oakland Planning Code Section 17.120.050) regarding construction noise, except if an acoustical analysis is performed and all feasible mitigation measures imposed, including the standard City of Oakland noise measures adopted by the Oakland City Council on January 16, 2001?	☐	☐	☐	☐	☒
g) Violate the City of Oakland Noise Ordinance (Oakland Municipal Code Section 8.18.020) regarding nuisance of persistent construction-related noise?	☐	☐	☐	☐	☒

Comments to XI.f and g:

The City of Oakland noise ordinance requires that any nighttime noise level received by any land use and produced by any construction or demolition activity between weekday hours of seven p.m. and seven a.m. or between eight p.m. and nine a.m. on weekends and federal holidays shall not exceed the applicable nighttime noise level standards outlined in Table NOISE-2 below.

TABLE NOISE-2

Maximum Allowable Receiving Noise Level Standards, (dBA)

Cumulative Number of Minutes in Nighttime One Hour Time Period	Residential, school, child care, health care or nursing home, public open space, and similar land uses	Commercial land uses
20	45	65
10	50	70
5	55	75
1	60	80
0	65	85

SOURCE: City of Oakland Planning Code Section 17.120.050 Noise.

Where technically and economically feasible, construction activities are required to be conducted in such a manner that the maximum daytime noise level received by any residential or commercial land use which is produced by repetitively scheduled and relatively long-term construction or demolition operation (ten days or more) shall not exceed noise level standards outlined in those listed in Table NOISE-3 below.

TABLE NOISE-3

Maximum Allowable Receiving Noise Level Standards for Temporary Construction or Demolition, (dBA)

Land Use	Daily 7 a.m. to 7 p.m.	Weekends 9 a.m. to 8 p.m.
Residential	65	55
Commercial, Industrial	70	60

SOURCE: City of Oakland Planning Code Section 17.120.050 Noise.

The project includes demolition of the fitness club and surface parking lot and construction of approximately 142 residential units, about 2,900 square feet of ground floor retail, and on-site parking for approximately 204 automobiles, in a five story building (four stories of residential construction above a two-level parking garage; one level of parking would be below ground and one at ground level). Project related construction activities would intermittently and temporarily generate noise levels above existing ambient levels in the project vicinity. During the construction period, a wide variety of construction and demolition equipment would be used, and material would be transported to and from the site by truck. Some equipment would generate relatively steady-state noise levels, such as the noise from diesel engines, and other equipment would generate impulse or impact noise. These activities would intermittently and temporarily increase ambient noise levels in the project vicinity over the duration of construction.

The receptors nearest to the proposed construction would be the residences located across 29th and 30th Streets from the project site as well as residences on the project block to the rear (west) of the project site. Receptors opposite Telegraph Avenue from the project site include commercial uses such as ground floor retail with office uses above and a few homes that have been converted to office and/or commercial uses. In addition, a medical office building on the northwest corner of 30th Street and Telegraph Avenue, Alta Bates Summit Medical Center on the corner of 30th Street and Telegraph Avenue, diagonally across Telegraph

Avenue from the project site and St. Augustine's Episcopal Church, on the southwest corner of 29th Street and Telegraph Avenue would receive noise from construction related activities.

Construction-related noise levels at and near locations on the project site would fluctuate depending on the particular type, number and duration of use of various pieces of construction equipment. The effect of construction noise would depend upon the level of construction activity on a given day and the related noise generated by that activity, the distance between construction activities and the nearest noise-sensitive uses, and the existing noise levels at those uses. The main noise sources associated with excavation are the operation of excavators removing and loading material and trucks hauling excavated materials away. The noisiest phase of construction would be likely during boring for cast concrete piers, which could generate noise levels of up to 95 L_{eq} at 50 feet. Pile driving would not be required as part of this construction. Table NOISE-4 shows typical noise levels generated by construction equipment typically used for commercial buildings.

TABLE NOISE-4

Typical Commercial Construction Equipment Noise Emission Levels

Equipment	Noise Level (L_{eq}) ^a
Shovel (Excavator)	82
Back Hoe	80
Concrete pumps	82
Jack Hammer	88
Pneumatic tools	85
Truck	88
Pile Driving	101

^a Estimates correspond to a distance of 50 feet from the piece of equipment.

SOURCE: U.S. Department of Transportation, Transit Noise and Vibration Impact Assessment , April 1994.

Given that sensitive residential receptors are located within 50 feet of the project site and that multiple piece of construction equipment could be operating simultaneously, resulting cumulative construction noise levels would have the potential to exceed the applicable standards of the City of Oakland as discussed previously (Table NOISE-3). Consequently, noise levels from project related construction activities would have the potential to exceed the maximum allowable receiving noise level standards for temporary construction or demolition as set forth in the City of Oakland Noise Ordinance. To reduce noise impacts of the project construction on adjacent sensitive receptors, the project applicant shall be required to implement and comply with the following uniformly-applied City standard conditions of approval throughout the duration of construction activity:

Standard Condition NOISE-2: The project sponsor shall require construction contractors to limit standard construction activities as required by the City Building Department.

- **Such activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, with pile driving and/or other extreme noise generating activities greater than 90 dBA limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.**
- **Any construction activity proposed to occur outside of the standard hours of 7:00 am to 7:00 pm for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a survey of resident's preferences for**

whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior authorization of the Building Services Division.

- **Construction activity shall not occur on Saturdays, with the following possible exceptions:**
 - **Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division. No extreme noise generating activities shall be allowed on Saturdays, with no exceptions.**
 - **After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed.**
- **No extreme noise generating activities shall be allowed on Saturdays, with no exceptions.**
- **No construction activity shall take place on Sundays or Federal holidays.**
- **For clarification, construction activities include but are not limited to: tuck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.**

Standard Condition NOISE-3: To reduce daytime noise impacts due to construction, the project sponsor shall require construction contractors to implement the following measures: site-specific noise reduction program, subject to city review and approval, which includes the following measures:

- **Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible).**
- **Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used**

where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible.

- Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible.
- If feasible, the noisiest phases of construction (such as pile driving) shall be limited to less than 10 days at a time.

Standard Condition NOISE-4: If pile driving, pile drilling or other extreme noise generating construction impacts were to occur, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the City to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the applicant, shall be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the applicant. A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be determined by the Building Official, and the deposit shall be submitted by the project sponsor concurrent with submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of the following measures. (Major projects only? These attenuation measures shall include as many of the following control strategies as feasible:

- Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings;
- Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions;
- Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site;
- The feasibility of temporarily improving the noise reduction capability of adjacent or nearby buildings, by the use of sound blankets for example, if acceptable to adjacent or nearby users.
- Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings; and
- Monitor the effectiveness of noise attenuation measures by taking noise measurements.

Standard Condition NOISE-4: Prior to the issuance of each building permit, along with the submission of construction documents, the project sponsor shall submit to the City Building

Department a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include:

- **A procedure for notifying the City Building Division staff and Oakland Police Department; (during regular construction hours and off-hours);**
- **A plan for posting signs on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem;**
- **A listing of telephone numbers (during regular construction hours and off-hours);**
- **The designation of an on-site construction complaint and enforcement manager for the project;**
- **Notification of neighbors within 300 feet of the project construction area at least 30 days in advance of pile-driving activities about the estimated duration of the activity; and**
- **A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.**

Based on the significance criteria used by the City of Oakland, compliance with the Noise Ordinance is achieved if the above measures are implemented.

Implementation of standard conditions of approval NOISE-2 through NOISE-5 would reduce the construction noise levels from the project to the extent feasible, and thus project construction impacts would be considered less than significant.

Source:

Environmental Science Associates, *Noise Analysis Report for Courthouse Condominiums, Oakland California*, June 2006.

Oakland General Plan, Noise Element, June 2005.

Project Description and Plans

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
h) Create a vibration which is perceptible without instruments by the average person at or beyond any lot line containing vibration-causing activities not associated with motor vehicles, trains, and temporary construction or demolition work, except activities located within the (a) M-40 zone or (b) M-30 zone more than 400 feet from any legally occupied residential property (Oakland Planning Code Section 17.120.060)?	☐	☐	☒	☐	☐

Comments to XI.h:

Project construction activities could result in some vibration, but these impacts would not be expected to be substantial, because pile-driving is not anticipated as part of the project. (See VI., Geology and Soils, above.)

In terms of operational impacts, as a residential project, the project would not result in substantial vibration perceptible at nearby locations.

Source:

Project Description and Plans.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
i) For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	☐
j) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?	☐	☐	☐	☒	☐

Comments to XI.i and j:

The proposed project site is not located within two miles of a public airport, or in the vicinity of a private airstrip. The Metropolitan Oakland International Airport is located approximately seven miles south of the project site, and the San Francisco International Airport is located approximately 18 miles southwest of the project site. Therefore, the project would not expose persons residing at the project site to excessive noise levels as a result of proximity to an airport or land strip.

Source:

Field Survey.

Oakland General Plan, Land Use and Transportation Element, March 1998.

Project Description and Plans.

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval

XII. POPULATION AND HOUSING -- Would the project:

a) Induce substantial population growth in a manner not contemplated in the General Plan, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure), such that additional infrastructure is required but the impacts of such were not previously considered or analyzed?

☐ ☐ ☒ ☐ ☐

b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?

☐ ☐ ☐ ☒ ☐

c) Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere in excess of that contained in the City's Housing Element?

☐ ☐ ☐ ☒ ☐

Comments to XII.a, b and c:

The proposed project would provide about 142 one- and two-bedroom residential units which would result in approximately 277 additional residents in the area.¹⁰ There are no existing residential units on the project site, and therefore no residents would be displaced by the proposed project.

The project also proposes up to 2,900 feet of commercial floor area resulting in approximately eight new employment opportunities.¹¹ The existing fitness club employs approximately 72 people in full and part-time positions. As a result, the approximately 64 jobs would be lost at the project site. However, these individuals could seek employment elsewhere in Oakland, and the project would not create a substantial loss of employment in the City's overall economy.

The proposed project is consistent with many policies in the General Plan Land Use and Transportation Element (LUTE). Specifically, the General Plan encourages additional in-fill urban housing projects in an effort to provide new housing opportunities in close proximity to the downtown and alternative transportation options.

According to the US Census, the City of Oakland's population in 2000 was approximately 400,000 persons. Based on the City projections, population in Oakland is anticipated to increase by approximately 13 percent, to about 453,000, by 2025.¹² The population increase generated by the project's proposed 142 new residential units and 2,900 square feet of new commercial space (a total of approximately 277 additional residents and eight new employees) would not result in a substantial contribution to this anticipated population growth. The population increase from the project would be an incremental portion of the anticipated new growth in persons and housing, therefore, the project would not result in any significant impacts related to population and housing.

¹⁰ Conservative estimates assume 1.5 residents per 1 bedroom unit and 2.5 residents per 2 bedroom unit.

¹¹ Employment estimates assume that each 350 square feet of retail/commercial use would generate approximately one employee.

¹² City of Oakland, *Oak to Ninth Mixed Use Development Draft EIR*, September 1, 2005. Case No. ER 04-0009 (State Clearinghouse Number 2004062013); p., IV.J-22. Available for review on the internet at <http://www.oaklandnet.com/government/ceda/revised/planningzoning/MajorProjectsSection/oaktoninth.html>.

Source:

Association of Bay Area of Bay Area Government (ABAG) projections, 2002
 Oakland General Plan, Housing Element, June 2004.
 Oakland General Plan, Land Use and Transportation Element, March 1998.
 Project Description and Plans
 US Census 2000

Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval

XIII. PUBLIC SERVICES - - Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, or the need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:

a) Fire protection?

☐ ☐ ☒ ☐ ☐

Comments to XIII.a:

The project site is located in a developed urban area already served by public services. Fire protection and emergency medical response services would be provided by the Oakland Fire Department. The nearest fire station, Station 15, is located less than one half mile (approximately 2.5 blocks southeast) from the project site at 455 27th Street at Telegraph Avenue. Station 15 serves a geographic area generally bounded by 37th Street to the north, 20th Street to the south, Perkins Street to the east, and Martin Luther King Jr. Way to the west. The response time to the project site is estimated to be within seven minutes – the Citywide response goal established by the City of Oakland. In accordance with standard City practices, the proposed project would be designed in compliance with Oakland's Building Code, and the Fire Services Agency would review the project plans at the time of building permit issuance to ensure that adequate fire and life safety measures are designed into the project and in compliance with all applicable state and city fire safety requirements. Therefore, there would not be any significant impacts on fire services. In particular, as a residential mid-rise structure, the project would be required to be of fire-resistive construction (Type 5-one hour fire rated) and fully sprinklered, and to have a firefighters' control room to allow responding crews to monitor building alarms and override elevator controls. The proposed project, with about 142 residential units and 2,900 square feet of commercial space would replace an existing fitness club. The increased on-site population would be expected to result in an incremental increase in the number of emergency medical calls at the project site. The project-generated increase in traffic to and from the site could also incrementally increase the number of motor vehicle accidents requiring Fire Department response. However, neither increase would be anticipated to be substantial in the context of existing development and response patterns, because the project would result in relatively little growth in the context of the greater downtown. Assuming compliance with building codes, the number of fire responses could be expected to show a slight, but not substantial, increase. Therefore, there would not be any significant impacts on fire services.

b) Police protection?

☐ ☐ ☒ ☐ ☐

Comments to XIII.b

Police protection services would be provided to the project site by the Oakland Police Department, headquartered in downtown Oakland at 455 Seventh Street, about 1.5 miles from the project site. The Police

Department has more than 700 officers and more than 300 civilian staff (City of Oakland, 2005; p. IV.L-1). As with fire and EMS services, the proposed project could incrementally increase the demand for police services, but the increased demand generated by 142 residential units and 2,900 square feet of commercial space would not be substantial, and therefore, the project is not anticipated to affect police response time or result in a significant impact on police services. The Police Department recommends that preventative design measures, such as landscaping, lighting and security alarms and door locks be incorporated into final project designs for new development projects. As part of standard development practices, project plans would be reviewed by the Police Department, and the project applicant shall be required to incorporate the Department's recommendations into the final project design.

	Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>
c) Schools?	☐	☐	☒	☐	☐

Comments to XIII.c:

The Oakland Unified School District (OUSD) operates public schools within the vicinity of the project site. The project site lies within the boundaries serviced by Hoover Elementary School located to the northwest on Brockhurst St. The project site also lies within the boundaries of Westlake Middle/Junior High School and Oakland Technical High School located on Harrison Street and Broadway and 42nd Street, respectively. School enrollment generated by the project could be expected to be approximately 100 students, based on the California State Department of Education student generation rate of approximately 0.7 students per residential unit. The project would develop about 142 residential units, about 55 percent of which would be studios and one-bedroom units. As studios and one-bedroom units are typically occupied by singles or couples without children, the proposed project would likely generate fewer than the 100 school-age children that would be expected for larger, especially detached, units. As a result, the project impact to schools would be less than significant. In addition, prior to issuance of building permits and as required by Senate Bill 50, the project sponsor would be required to pay school impact fees of \$2.63 per square foot for residential space and \$0.42 per square foot for commercial space to offset any impacts to school facilities from the proposed project. Senate Bill 50 implements Proposition 1A, approved by the voters on November 4, 1998; prohibits local agencies, such as the City of Oakland, from denying land use approvals on the basis that school facilities are inadequate; and establishes statewide school impact mitigation fees, adjusted biannually, that preempt local existing school impact fees. The project would not interfere with the operations of existing schools.

d) Parks?	☐	☐	☒	☐	☐

Comments to XIII.d:

The project would be located in a developed urban area served by existing parkland including a neighborhood park fewer than five blocks from the project site and Mosswood Recreation Center, a community park less than one mile from the project site. The project also would be served by parkland around Lake Merritt which includes Children's Fairyland, a boat house, a bird sanctuary and other recreational facilities. In addition, the project would include 24,530 square feet of open space in the form of nine courtyards on the podium level and private balconies accessible to most residents in all other dwelling units. Therefore, impacts on park facilities are anticipated to be less-than-significant.

e) Other public facilities?	☐	☐	☒	☐	☐

Comments to XIII.e:

Finally, the Community Services Analysis prepared for the Land Use and Transportation Element of the General Plan stated that future in-fill development through the General Plan horizon year of 2015 would not be likely to impose a burden on existing public services. The proposed project's increase in the on-site

population is assumed within the horizon year 2015. Thus, the proposed project is not anticipated to result in significant impacts on public services.

Source:

City of Oakland, *Broadway-West Grand Mixed-Use Project Draft EIR* (ER 03-0022), August, 2004.

City of Oakland, *Oak to Ninth Avenue Project Draft EIR* (ER04-0009), August 2005.

Oakland Community Services Analysis, Technical Report #5, October 1995.

Project Description and Plans.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

XIV. RECREATION - - Would the project:

a) Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?

☐	☐	☒	☐	☐

b) Include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?

☐	☐	☒	☐	☐

Comments to XIV.a and b:

The proposed project is not anticipated to result in significant impacts related to recreation. The project would include 24,530 square feet of open space in the form of nine courtyards on the podium level and private balconies accessible to most residents in all other dwelling units.

As described above, the project would be located in a developed urban area served by existing parkland including a neighborhood park fewer than five blocks from the project site and Mosswood Recreation Center, a community park less than one mile from the project site. In addition, the project would be served by parkland around Lake Merritt which includes Children's Fairyland, a boat house, a bird sanctuary and other recreational facilities.

As the project would not induce significant population growth, it is not anticipated to result in adverse effects on any of the existing parks or recreational facilities in the area. Therefore, the proposed project is not anticipated to result in significant impacts related to recreation.

Source:

City of Oakland, Office of Parks and Recreation (map)

General Plan: Open Space, Conservation, and Recreation Element, June 1996.

Project Description and Plans.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
XV. TRANSPORTATION/TRAFFIC - - Would the project:					
a) Cause an increase in traffic which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections) or change the condition of an existing street (i.e., street closures, changing direction of travel) in a manner that would substantially impact access or traffic load and capacity of the street system?	☒	☐	☐	☐	☐
b) Cause a roadway segment on the Metropolitan Transportation System to operate at LOS F or increase in V/C ratio by more than three (3) percent for a roadway segment that would operate at LOS F without the project?	☒	☐	☐	☐	☐
c) Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety?	☐	☐	☐	☒	☐
d) Substantially increase traffic hazards to motor vehicles, bicycles, or pedestrians due to a design feature (e.g., sharp curves or dangerous intersections) that does not comply with Caltrans design standards or incompatible uses (e.g., farm equipment)?	☐	☐	☐	☒	☐
e) Result in fewer than two emergency access routes for streets exceeding 600 feet in length?	☐	☐	☐	☒	☐
f) Fundamentally conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle routes)?	☐	☐	☐	☒	☐
g) Generate added transit ridership that would increase the average ridership on AC Transit lines by three (3) percent at bus stops where the average load factor with the project in place would exceed 125% over a peak thirty minute period; increase the peak hour average ridership on BART by three(3) percent where the passenger volume would exceed the standing capacity of BART trains; or increase the peak hour average ridership at a BART station by three (3) percent where average waiting time at fare gates would exceed one minute?	☒	☐	☐	☐	☐

Comments to XV.a, b, c, d, e, f and g:

The proposed construction of 142 residential units with parking for 204 automobiles plus 2,900 square feet of commercial uses would increase vehicular traffic in the project vicinity, may decrease the level of service (LOS) or V/C ratio of nearby roadway segments, and may generate added transit ridership in the area which

could result in significant impacts to transportation and traffic. Therefore, the project EIR will address the project's potential transportation impacts, including transit impacts and (non-CEQA) parking impacts.

Regarding Item XV.c, the project would result in no change in air traffic patterns.

Regarding Items XV.d and e, the project would not result unusual design features that could result in traffic hazards, nor would the project result in fewer than two emergency access routes. Regardless, the project EIR will analyze the project's effects on traffic hazards.

Regarding Item XV.f, the project would not fundamentally conflict with adopted policies supporting alternative transportation, as the project would be infill development on a site served by existing transit (AC Transit bus service). Regardless, the project EIR will analyze the project's potential conflict with adopted policies, plans, or programs supporting alternative transportation.

Source:

Project Description and Plans.

	Potentially Significant Impact	Potentially Significant Unless Mitigation Incorporated	Less Than Significant Impact	No Impact	Less Than Significant w/Standard Conditions of Approval
XVI. UTILITIES AND SERVICE SYSTEMS -- Would the project:					
a) Exceed wastewater treatment requirements of the San Francisco Bay Regional Water Quality Control Board?	☐	☐	☒	☐	☐
b) Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☐	☐	☒
c) Exceed water supplies available to serve the project from existing entitlements and resources, and require or result in the construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☒	☐	☐
d) Result in a determination by the wastewater treatment provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments and require or result in construction of new wastewater treatment facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☒	☐	☐
e) Be served by a landfill with insufficient permitted capacity to accommodate the project's solid waste disposal needs and require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects?	☐	☐	☒	☐	☐

- f) Violate applicable federal, state, and local statutes and regulations related to solid waste? ☐ ☐ ☐ ☐ ☒
- g) Violate applicable federal, state, and local statutes and regulations relating to energy standards? ☐ ☐ ☒ ☐ ☐
- h) Result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the provider's existing commitments and require or result in construction on new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects. ☐ ☐ ☒ ☐ ☐

Comments to XVI.a, b, c, d, e, f, g and h:

The proposed project site is located in an urban area already served by utilities and service systems. The Community Services Analysis prepared for the Land Use and Transportation Element (LUTE) of the General Plan states that future in-fill development through the General Plan horizon year of 2015, which assumes a certain degree of urban in-fill development such as that proposed for the project site, would not be likely to exceed the capacity of existing utilities and service systems.

With a proposed development of approximately 142 residential units and 2,900 square feet of commercial space, the project would not exceed the threshold for requiring a water supply assessment from the East Bay Municipal Utility District (EBMUD) per State Senate Bill 610 (which requires a water supply assessment for larger projects, including a 500-unit threshold for residential projects). The net increase in water consumption is estimated at about 18,000 gallons per day, after subtracting demand from the existing fitness club and pool on the project site.¹³ This increase would be negligible in the context of existing and projected future water demand in Oakland. Similarly, with regard to wastewater treatment, the net increase of approximately 16,000 gpd would also be negligible. However, if sufficient local distribution capacity in existing water, wastewater, and storm water drainage facilities were not available to serve the proposed project, the project sponsor would be required to provide infrastructure improvements and pay required installation and hookup fees to the affected service providers to ensure provision of adequate service, prior to service connection.

The project site currently generates demand for both potable water and wastewater treatment, as a result of the existing fitness club. Because the proposed project would result in an increase of more than 20 percent in wastewater generation over existing conditions (about 22,200 gpd proposed compared to approximately 6,300 gpd existing, for an increase of 16,000 gpd or about 250 percent), and because the project site is within a wastewater sub-basin (sub-basin number 52-06) where the growth allowance is 20 percent above existing conditions, the project sponsor would be required to pay for relief sanitary sewers in the basin or be required to upgrade any of the existing sewer lines from the project site to the interceptor. Improving the system elsewhere would reduce flows and is a methodology approved by the Oakland Public Works Agency for accommodating local growth in wastewater flow such as would occur with the project. Such improvements as would be required to be funded by the project sponsor would have relatively minor local construction impacts, typical of local utility improvements, and would not be expected to result in any significant environmental impact as defined by CEQA. In light of the above, the proposed project would not result in

¹³ Water demand estimates are based upon the average daily flow estimates of 150 gallons per day (gpd) per 1 bedroom condominium, 200 gpd per 2 bedroom condominium, 100 gpd per 1000 gross square feet of retail area as presented in the City of Oakland Public Works Agency Standards Sanitary Sewer Design Guidelines. Wastewater generation is based upon the conservative estimate of 90% of water demand. Existing water usage at the project site is estimated to be approximately 7,000 gpd (personal communication, Mike Schmitz, Courthouse Athletic Club, with Brad Brewster, ESA, June 8, 2006).

significant impacts related to the utilization of water supplies or wastewater treatment facilities. There would be little or no impact to storm water drainage facilities, because the project site would remain virtually entirely covered with impervious surfaces, as it is under existing conditions.

Assembly Bill 939 requires that all cities divert 50 percent of their solid waste from landfills by December 31, 2000. The waste diversion rate in the City of Oakland was 55 percent in 2004. The project sponsor shall be required to comply with the City's construction and demolition debris recycling ordinance, which requires submittal of a plan to divert at least 50 percent of the construction waste generated by the project from landfill disposal. Compliance with this ordinance would result in less than significant short-term impacts on solid waste. In addition, the following standard measure shall be implemented as a standard condition of project approval:

UTL-1: As feasible and applicable, the project sponsor shall implement the following water-efficient equipment and devices into building design and project plans, consistent with the Landscape Water Conservation section of the City of Oakland Municipal Code (Chapter 7, Article 10): low-, ultra-low, and dual flush flow toilets and showerheads; water efficient irrigation systems that include drip irrigation and efficient sprinkler heads; evapotranspiration (ET) irrigation controllers; drought-resistant and native plants for landscaping; and minimization of turf areas.

UTL-2: Prior to issuance of any building permits including the grading and/or demolition permit the project applicant will submit a demolition/construction waste diversion plan and operational waste reduction plan for review and approval by the Public Works Agency. The plan will specify the methods by which the development will make a good faith effort to divert 50% of the demolition/construction waste generated by the proposed project from landfill disposal. After approval of the plan, the project applicant will implement the plan. The operational diversion plan will specify the methods by which the development will make a good faith effort to divert 50% of the solid waste generated by operation of the proposed project from landfill disposal. After approval of the plan, the project applicant will implement the plan. Contact the City of Oakland Environmental Services Division of Public Works at (510) 238-7283 for information.

UTL-3: Prior to completing the final design for the project's sewer service, confirmation of the City's surrounding stormwater and sanitary sewer system capacity and state of repair shall be completed by a qualified civil engineer with funding from the project sponsor. The project sponsor shall be required to pay mitigation fees to improve stormwater and sanitary sewer infrastructure if required by the City. Improvements to the existing sanitary sewer collection system shall specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow associated with the proposed project. Additionally, the project sponsor shall be responsible for payment of the required installation or hook-up fees to the affected service providers.

Adherence to the above standard condition would reduce the potential long-term impacts of the proposed project on solid waste disposal to a less-than-significant level.

The project would increase energy consumption at the project site, but not to a degree that would require construction of new facilities. The project demand would be typical for a project of this scope and nature and would meet, or exceed, current state and local codes and standards concerning energy consumption,

including Title 24 of the California Code of Regulations enforced by the City of Oakland through its building permit review process.

Source:

California State Water Code

Cherinet, P.E., Mastewal, City of Oakland, Public Works Agency, personal communication, June 13, 2006.

City of Oakland, Public Works Agency, Design and Construction Division, March 6, 2006.

City of Oakland, Public Works Agency, *Draft Sanitary Sewer Design Guidelines*, November 2004.

City of Oakland, Public Works Agency, http://www.oaklandpw.com/Page34.aspx#recycling_goal

City of Oakland, *Oakland Community Services Analysis, Technical Report #5*, October 1995.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

XVII.MANDATORY FINDINGS OF SIGNIFICANCE

a) Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?



Comments to XVII.a:

As explained above, the proposed project would not affect natural habitat or fish or wildlife populations, threaten or otherwise restrict plant or animal communities or species. The project would eliminate a building important to local history, resulting in a potentially significant impact. The project EIR will analyze impacts related to historic resources.

b) Does the project have impacts that are individually limited, but cumulatively considerable? ("Cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)



Comments to XVII.b:

The additional traffic generated by the proposed project could contribute to a cumulative traffic impact. Potential cumulative impacts of the proposed project with respect to traffic generation will be analyzed in the project EIR.

Potentially Significant <u>Impact</u>	Potentially Significant Unless Mitigation <u>Incorporated</u>	Less Than Significant <u>Impact</u>	No <u>Impact</u>	Less Than Significant w/Standard Conditions of <u>Approval</u>

c) Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?

☐☐☐☒☐

Comments to XVII.c:

As described in the various analyses above, the project would not result in any direct or indirect effects that would result in substantial adverse effect on human beings.

TABLE I-1 REV
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE 2935 TELEGRAPH AVENUE (COURTHOUSE CONDOMINIUMS) PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
A. SIGNIFICANT AND UNAVOIDABLE IMPACTS (Remains Significant after Implementation of Mitigation Measures and/or Standard Conditions of Approval)		
A. Historic Resources		
A.1: The project would result in the demolition of the former Courthouse Athletic Club at 2935 Telegraph Avenue, a building that qualifies as a historic resource as defined by CEQA Section 15064.5.	Mitigation Measure A.1a: Archival Documentation. Trammell Crow Residential shall document the building at 2935 Telegraph Avenue prior to its demolition through the use of large-format black and white photography and a brief historical report, meeting the specifications of the Historic American Building Survey (HABS). The historic report should briefly describe the building and its historic significance to the City of Oakland. The documentary photographs and report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Digital copies of the photographs would be forwarded to the Oakland Cultural Heritage Survey. Mitigation Measure A.1b: Interpretive Materials: Trammell Crow Residential shall prepare interpretive materials as directed by the City, including, but not limited to on-site interpretive signage, brochures, or any combination thereof. Any such materials should address not only the history and architecture of the building, but also its contribution to a potential API of period revival style funeral homes in the project vicinity. Mitigation Measure A.1c: Relocation: In accordance with HPE Policy 3.7, the City will normally require that reasonable efforts be made to relocate the property to an acceptable site as a condition of approval for all discretionary projects involving demolition of existing or Potential Designated Historic Properties. Under this condition, the applicant is normally released from the relocation requirement after 90 days if the applicant demonstrates to the satisfaction of the Director of City Planning that all reasonable efforts have been made to relocate the building and that these efforts have been unsuccessful. Therefore, Trammell Crow Residential shall make reasonable efforts to relocate the project site building, and demonstrate to the satisfaction of the city why such efforts would be unsuccessful within 90 days of certification of this EIR. Mitigation Measure A.1d. <u>The project sponsor shall contribute financially to a Telegraph Avenue Façade Improvement Program. The amount shall be determined by the City of Oakland and commensurate with the level of impact of the proposed project.</u>	Significant and Unavoidable

TABLE II-1 REV (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE 2935 TELEGRAPH AVENUE (COURTHOUSE CONDOMINIUMS) PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B. LESS THAN SIGNIFICANT, OR NO IMPACT (No Mitigation Measures or Standard Conditions of Approval Required)		
A. Historic Resources		
A.2: The project would construct substantially larger and taller buildings in the vicinity of historic resources, which could alter their historic setting.	None Required.	
A.3: The proposed project would not combine with cumulative development that would involve demolition or substantial alteration of other historic buildings in the Central/Chinatown Planning Area of Oakland to form a significant cumulative impact to historic resources. The project would also have a less-than-significant cumulative impact to a potential period revival-style funeral home API.	None Required.	
A.2: The project would construct substantially larger and taller buildings in the vicinity of historic resources, which could alter their historic setting.	None Required.	
B. Traffic, Circulation, and Parking		
B.1: Traffic generated by the project would affect project driveways.	None Required.	
B.2: Traffic generated by the project would affect existing traffic levels of service at local intersections	None Required.	
B. 3: Traffic generated by the project would affect traffic levels of service at local intersections under cumulative conditions.	None Required.	
B.4: The project would increase ridership on public transit providers serving the area.	None Required.	
B 5: Development of the proposed project would potentially conflict with existing pedestrian and/or bicycle facilities.	None Required.	
B.6: Project construction would affect traffic flow and circulation, parking, and pedestrian safety.	None Required.	

Kaiser Permanente Oakland Medical Center Master Plan Project



TABLE II-1-rev

REVISED SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
A. SIGNIFICANT AND UNAVOIDABLE IMPACTS <i>(Remains Significant after Implementation of Mitigation Measures and/or Standard Conditions of Approval)</i>		
B. Transportation, Circulation, and Parking		
B.1a: (Near-Term 2010) The LOS F conditions at the signalized intersection of Broadway / 51st Street / Pleasant Valley Avenue (#3), which would prevail during the PM peak hour under 2010 baseline conditions, would worsen with the addition of traffic generated by the project. The project-generated increases in vehicle delay on a critical movement would exceed the two-second threshold of significance.	Mitigation B.1a: The following mitigation measures do not fully improve operations at Broadway / 51st Street / Pleasant Valley Avenue to acceptable levels. The following measures would reduce congestion at the intersection, but would not be sufficient to fully mitigate the impact. They are nevertheless imposed to reduce impacts to the maximum extent possible: - Change signal cycle length to 120 seconds and optimize traffic signal timing at the Broadway / 51st Street / Pleasant Valley Avenue intersection during the PM peak hour. Optimization of traffic signal timing shall include determination of green time allocation for each intersection approach relative to the approach traffic volumes, and coordination with signal phasing and timing of adjacent intersections. - To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. ~~The existing Transportation Demand Management (TDM) program shall be expanded to include more aggressive TDM measures that would encourage more Kaiser employees to switch from driving alone to other modes. Potential TDM measures include, but are not limited to, increasing transit ticket subsidies, employee awareness programs, direct transit sales, providing a guaranteed ride home program, and charging more for parking. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to better satisfy the needs of the medical center. Kaiser shall submit the TDM program to the City for its review and approval.~~ ~~The components of the expanded TDM program have not been determined yet, and their effectiveness on reducing project trip generation cannot be quantified. To present a conservative analysis, this study assumes that the intersection would continue to operate at LOS F with the~~	Significant and Unavoidable

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	~~implementation of this mitigation measure. Thus, this measure is not sufficient to fully mitigate the impact.~~ • <u>The City adopts as the Transportation Demand Management (TDM) program the recommendations made in the May 2006 Nelson/Nygaard Consulting Associates report entitled <i>Kaiser Oakland TDM Recommendations</i> (Appendix A to the Final EIR). As detailed in the TDM Recommendations report, the TDM program:</u> a) <u>contains certain TDM goals and specific travel mode-split goals.</u> b) <u>describes the current Kaiser TDM program and their current (Non-Single Occupancy Vehicle (SOV)) mode-split of 23.7%</u> c) <u>provides for mandatory TDM components to maintain, at a minimum, the current Non-SOV mode split of 23.7% into the future.</u> d) <u>contains goals for future, increased mode split to further achieve the TDM goals and to reduce to the maximum reasonable and feasible extent the significant and unavoidable impacts to air quality and traffic.</u> e) <u>describes mandatory components to be implemented in January 2007 to increase the current mode split.</u> f) <u>contains a menu of additional potential TDM components that may be implemented to further achieve TDM goals, and</u> g) <u>shall be funded, reported, evaluated, monitored, enforced and revised as necessary. Specifically, the effectiveness of the program shall be regularly monitored by Kaiser's TDM coordinator/consultant and the results reported in writing to the City. If determined necessary by the City, the written monitoring reports may be peer reviewed at</u>	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B.2a: (2025 Conditions – Project) The LOS F conditions at the signalized intersection of Broadway / 51st Street / Pleasant Valley Avenue (#3), which would prevail during the PM peak hour under 2010 baseline conditions, would worsen with the addition of traffic generated by the project. The project-generated increases in vehicle delay on a critical movement would exceed the two-second threshold of significance.	<u>Kaiser's sole cost and expense. The City may require adjustments/revisions to the TDM program to better achieve the stated TDM goals and Kaiser shall implement said adjustments /revisions.</u> Mitigation B.2a: No feasible mitigation measures are available that would fully improve operations at Broadway / 51st Street / Pleasant Valley Avenue to acceptable levels. The following measures would reduce congestion at the intersection, but would not be sufficient to fully mitigate the impact. They are nevertheless imposed to reduce impacts to the maximum extent possible: • Change signal cycle length to 120 seconds and optimize traffic signal timing at the Broadway / 51st Street / Pleasant Valley Avenue intersection during the PM peak hour. Optimization of traffic signal timing shall include determination of green time allocation for each intersection approach relative to the approach traffic volumes, and coordination with signal phasing and timing of adjacent intersections. To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. • ~~The existing Transportation Demand Management (TDM) program shall be expanded to include more aggressive TDM measures that would encourage more Kaiser employees to switch from driving alone to other modes. Potential TDM measures include, but are not limited to, increasing transit ticket subsidies, employee awareness programs, direct transit sales, providing a guaranteed ride home program, and charging more for parking. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to better satisfy the needs of the medical center. Kaiser shall submit the TDM program to the City for its review and approval.~~ • ~~The components of the expanded TDM program have not been determined yet, and their effectiveness on reducing project trip generation cannot be quantified. To present a conservative analysis, this study assumes that the intersection would continue to operate at LOS F with the implementation of this mitigation measure. Thus, this measure is not sufficient to fully mitigate the impact.~~	Significant and Unavoidable

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B.2b: (2025 Conditions – Project) The LOS E conditions at the signalized intersection of Broadway / West MacArthur Boulevard (#16) would continue during the PM peak hour. The project-generated increases in vehicle delay on a critical movement would exceed the six-second threshold of significance.	• <i>Same as Mitigation B.1a regarding the Transportation Demand Management (TDM) program</i> Mitigation B.2b: No feasible mitigation measures are available that would fully improve operations at Broadway / West MacArthur Boulevard to acceptable levels. The following measures would reduce congestion at the intersection, but would not be sufficient to fully mitigate the impact: • Change signal cycle length to 120 seconds and optimize traffic signal timing at the Broadway / West MacArthur Boulevard intersection during both the AM and PM peak hours. Optimization of traffic signal timing shall include determination of green time allocation for each intersection approach relative to the approach traffic volumes, and coordination with signal phasing and timing of adjacent intersections. In addition to the Broadway / West MacArthur Boulevard intersection, signal cycle lengths and phasing would also need to be modified and coordinated at Howe Street / MacArthur Boulevard, Broadway / Piedmont Avenue, and Broadway / Hawthorne Avenue and Brook Street intersections. To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. • ~~The existing Transportation Demand Management (TDM) program shall be expanded to include more aggressive TDM measures that would encourage more Kaiser employees to switch from driving alone to other modes. Potential TDM measures include, but are not limited to, increasing transit ticket subsidies, employee awareness programs, direct transit sales, providing a guaranteed ride home program, and charging more for parking. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to better satisfy the needs of the medical center. Kaiser shall submit the TDM program to the City for its review and approval.~~ • ~~The components of the expanded TDM program have not been determined yet, and their effectiveness on reducing project trip generation cannot be quantified. To present a conservative analysis, this study assumes that the intersection would continue to operate at LOS F with the implementation of this mitigation measure. Thus, this~~	Significant and Unavoidable

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	measure is not sufficient to fully mitigate the impact.	
	Same as Mitigation B.1a regarding the Transportation Demand Management (TDM) program	
<u>B.2c: The signalized intersection of Broadway and Hawthorne Avenue / Brook Street (#25) would degrade from LOS D to LOS E during the PM peak hour with the addition of traffic generated by the project.</u>	<u>Mitigation B.2c: Optimize the traffic signal timing for the PM peak period at the signalized intersection of Broadway and Hawthorne Avenue / Brook Street. Optimization of traffic signal timing shall include determination of allocation of green time for each intersection approach in tune with the relative traffic volumes on those approaches, and coordination with signal phasing and timing of adjacent intersections. To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. After implementation of this measure, the intersection would operate at an acceptable LOS C in both the AM and PM peak hours.</u>	<u>Less than Significant</u>
B.3a: (2025 Cumulative) Traffic generated by the project would contribute more than five percent of the cumulative traffic increases at the signalized intersection of Broadway / 51st Street / Pleasant Valley Avenue (#3) during the AM and PM peak hours, as measured by the difference between existing and cumulative (with project) conditions.	Mitigation B.3a: No feasible mitigation measures are available that would fully improve operations at Broadway / 51st Street / Pleasant Valley Avenue to acceptable levels. See discussion under Mitigation Measure B.2a.	Significant and Unavoidable
B.3d: (2025 Cumulative) Traffic generated by the project would contribute more than five percent of the cumulative traffic increases at the signalized intersection of Broadway / West MacArthur Boulevard (#16) during the AM and PM peak hours, as measured by the difference between existing and cumulative (with project) conditions.	Mitigation B.3d: No feasible mitigation measures are available that would fully improve operations at Broadway / West MacArthur Boulevard to acceptable levels. See discussion under Mitigation Measure B.2b.	Significant and Unavoidable
C. Air Quality		
C.2: The project would result in increased long-term emissions of criteria pollutants from vehicular traffic to and from the project site and from the operation of the Central Utility Plant. The increase in emissions would exceed Bay Area Air Quality Management District significance criteria for daily emissions of PM-10.	Mitigation C.2: ~~As required by Mitigation Measures B.1a, B.2a, and B.2b to address intersection impacts (Impacts B.1 and B.2), the existing Transportation Demand Management (TDM) program shall be expanded (beyond that already assumed to occur as part of the project) to include additional measures that would encourage more Kaiser employees to switch from driving alone to other modes. The project shall implement the TDM program, to the extent feasible, in an effort to reduce daily vehicle trips associated with the project. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to better satisfy the needs of the medical center.~~ Same as Mitigation B.1a regarding the Transportation	<u>Significant and Unavoidable</u>

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	<i>Demand Management (TDM) program</i>	
C.5: The proposed project together with anticipated future development in the area, could result in long-term traffic increases and could cumulatively increase regional air pollutant emissions and conflict with or obstruct implementation of the Bay Area Clean Air Plan.	Same as Mitigation B.1a regarding the Transportation Demand Management (TDM) program	
E. Cultural Resources		
E.3: The proposed project would result in the demolition of the building at 3741-47 Broadway which is conservatively assumed to be an historic resource under Section 15065.4 of the CEQA Guidelines, pending Landmarks Preservation Advisory Board review.	Mitigation E.3a: Archival Documentation: Kaiser Permanente shall document the building at 3741-47 Broadway prior to its demolition through the use of large format black and white photography and a brief historical report, meeting the specifications of the Historic American Building Survey (HABS). The historic report should briefly describe the building and its historic significance to the City of Oakland. The documentary photographs and report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Digital copies of the photographs would be forwarded to the Oakland Cultural Heritage Survey. Mitigation E.3b: Interpretive Materials: Kaiser Permanente shall prepare interpretive materials as directed by the City, including, but not limited to on-site interpretive signage, brochures, or any combination thereof. —	Conservatively assumed Significant and Unavoidable
E.5: The proposed project, in combination with cumulative development that would involve demolition of other automobile-related historic resources in Oakland, would result in cumulative impacts to automobile-related historic resources.	Mitigation E.5: Kaiser Permanente shall prepare or cause to be prepared a historic context report of Oakland's 1920s-era automobile dealerships in order to document this relatively rare and threatened building type. The context should be prepared by a qualified architectural historian. The context report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Copies would be forwarded to the Oakland Cultural Heritage Survey.	Conservatively assumed Significant and Unavoidable

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B. SIGNIFICANT IMPACTS <i>(Reduced to Less Than Significant, with Implementation of Project Mitigation Measures Only [except as noted])</i>		
B. Transportation, Circulation and Parking		
B.1b: (Near-Term 2010) Traffic generated by the project would cause the eastbound approach at the unsignalized intersection of Broadway / 38th Street (North) (#8) to degrade from LOS D to LOS F during the AM peak hour and LOS C to LOS F during the PM peak hour, would add more than ten vehicles to the intersection, and the peak-hour volumes would meet the Caltrans peak-hour traffic signal warrant.	Mitigation B.1b: Install traffic signals at the unsignalized intersection of Broadway / 38th Street (North). The signals shall have actuated controls with protected left-turn phasing, which would require a separate left-turn arrow. Installation of traffic signals shall include the traffic signal equipment and optimization of signal phasing and timing (i.e., allocation of green time for each intersection approach) in tune with the relative traffic volumes on those approaches, and coordination with signal phasing and timing of adjacent intersections. Traffic signal equipment shall include pedestrian signal heads (with adequate time for pedestrians to cross the streets). Signal installation shall meet City of Oakland design standards and be subject to review and approval of the City. Prior to the installation of this traffic signal, a complete traffic signal warrant analysis would be conducted at this location to verify that this location meets MUTCD signal warrants, which include both daily and peak-hour volume, accidents, and pedestrian volumes and be subject to review and approval of the City. The mitigation shall be implemented in conjunction with the West Broadway Garage. After implementation of this measure, the intersection would operate at LOS A during both AM and PM peak hours.	Less Than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B.1c: (Near-Term 2010) The signalized intersection of Broadway / West MacArthur Boulevard (#16) would degrade from LOS E to LOS F during the AM peak hour, and LOS D to LOS E during the PM peak hour with the addition of traffic generated by the project.	Mitigation B.1c: Change signal cycle length to 120 seconds and optimize traffic signal timing at the Broadway / West MacArthur Boulevard intersection during both the AM and PM peak hours. Optimization of traffic signal timing shall include determination of green time allocation for each intersection approach relative to the approach traffic volumes, and coordination with signal phasing and timing of adjacent intersections. In addition to the Broadway / West MacArthur Boulevard intersection, signal cycle lengths and phasing would also need to be modified and coordinated at Howe Street / MacArthur Boulevard, Broadway / Piedmont Avenue, and Broadway / Hawthorne Avenue and Brook Street intersections. To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. After implementation of this measure, the intersection would operate at LOS D during both AM and PM peak hours.	Less than Significant
B.1d: (Near-Term 2010) The LOS F conditions at the signalized intersection of Piedmont Avenue/West MacArthur Boulevard (#18), which would prevail during the AM peak hour under 2010 baseline conditions, would worsen with the addition of traffic generated by the project. The project-generated increases in vehicle delay on a critical movement would exceed the two-second threshold of significance.	Mitigation B.1d: Modify the signal at the Piedmont Avenue / West MacArthur Boulevard intersection to provide simultaneous protected left-turn phasing for the northbound and southbound approaches, and change signal cycle length to 120 seconds and optimize traffic signal timing during the AM peak hour. Optimization of traffic signal timing shall include determination of green time allocation for each intersection approach relative to the approach traffic volumes, and coordination with signal phasing and timing of adjacent intersections. To ensure that signal timing optimization occurs, the project applicant shall pay for this measure. After implementation of this measure, the intersection would operate at LOS D during both AM and PM peak hours.	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B.1e: (Near-Term 2010) The westbound approach at the proposed-created unsignalized intersection of Broadway / Main Hospital Entrance (#29) would operate at LOS E during the AM peak hour and LOS F during the PM peak hour, the project would add more than ten vehicles to the intersection, and the peak-hour volumes would meet the Caltrans peak-hour traffic signal warrant.	Mitigation B.1e: Install traffic signals at the unsignalized intersection of Broadway / Main Hospital Entrance. The signals shall have actuated controls with protected left-turn phasing, which would require a separate left-turn arrow. Installation of traffic signals shall include the traffic signal equipment and optimization of signal phasing and timing (i.e., allocation of green time for each intersection approach) in tune with the relative traffic volumes on those approaches, and coordination with signal phasing and timing of adjacent intersections. Traffic signal equipment shall include pedestrian signal heads (with adequate time for pedestrians to cross the streets). Signal installation shall meet City of Oakland design standards. Prior to the installation of this traffic signal, a complete traffic signal warrant analysis would be conducted at this location to verify that this location meets MUTCD signal warrants, which include both daily and peak-hour volume, accidents, and pedestrian volumes. The mitigation shall be implemented in conjunction with the occupancy of the Replacement Hospital or M/B Garage. After implementation of this measure, the intersection would operate at LOS B during both AM and PM peak hours.	Less than Significant
B.3b: (2025 Cumulative) Traffic generated by the project would contribute at least five percent of the cumulative traffic increases at the unsignalized intersection of Shafter Avenue / West MacArthur Boulevard (#14) during the AM peak hour, as measured by the difference between existing and cumulative (with project) conditions.	Mitigation B.3b: Extend the existing median on MacArthur Boulevard at the intersection of Shafter Avenue / West MacArthur Boulevard to eliminate left turns out and left turns into Shafter Avenue. Implementation of this measure would eliminate the stop-controlled left turns that cause the unacceptable delay at this intersection, and would improve intersection operations to LOS B during both AM and PM peak hours.	Less than Significant
B.3c: (2025 Cumulative) Traffic generated by the project would contribute at least five percent of the cumulative traffic increases at the unsignalized intersection of Manila Avenue / West MacArthur Boulevard (#15) during the AM peak hour, as measured by the difference between existing and cumulative (with project) conditions.	Mitigation B.3c: Extend the existing median on MacArthur Boulevard at the intersection of Manila Avenue / West MacArthur Boulevard to eliminate left turns out and left turns into Manila Avenue. Implementation of this measure would eliminate the stop-controlled left turns that cause the unacceptable delay at this intersection, and would improve intersection operations to LOS B during both AM and PM peak hours.	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
B.3e: : (2025 Cumulative) Traffic generated by the project would contribute more than five percent of the cumulative traffic increases at the signalized intersection of Broadway / Hawthorne Avenue / Brook Street (#29) during the PM peak hour, as measured by the difference between existing and cumulative (with project) conditions.	Mitigation B.3e: Implement Measure B.2c (optimize traffic signal timing).	Less than Significant
B.7: The project would increase the potential for conflicts among different traffic streams.	Mitigation B.7a: If the City selects Broadway Design Alternative A (West Broadway Garage driveway on Broadway would be unsignalized and left-turns out of the driveway would be prohibited), provide an unsignalized striped cross-walk just north of the West Broadway Garage driveway, with bulb-outs on both sides Broadway and a median with minimum landscaping. Mitigation B.7b: If the City selects Broadway Design Alternative B (West Broadway garage driveway on Broadway would be signalized and all vehicle movements would be allowed at the intersection), provide a signalized crosswalk across Broadway at the signalized Broadway / West Broadway Garage driveway intersection. Mitigation B.7c: If the City selectis Broadway Design Alternative C (Broadway would have a continuous median adjacent to the West Broadway Garage and movement at the West Broadway Garage driveway would be limited to right-in/right-out only), construct a barrier on the median of Broadway between 38th Street and MacArthur Boulevard. Mitigation B.7d: To the extent possible, driveways shall be designed to maximize the visibility of both pedestrians and vehicles. Mitigation B.7e: To the extent possible, driveways shall be designed to minimize vehicle speeds. Mitigation B.7f: If driveway intersections are signalized, then pedestrian signal heads and appropriate crossing times shall be provided for pedestrians crossing the driveway.	Less than Significant <i>See also "Recommendations Improvements for Consideration" for Impact B.7 (Section E, below).</i>

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Mitigation B.7g: If driveway intersections are not signalized and exiting vehicles do not have adequate sight distance, then an audio and/or visual warning system shall be installed to warn pedestrians when vehicles are exiting the garage. Mitigation B.7h: To the extent possible, large truck deliveries (60-foot trucks) should not be scheduled between 7:00 to 9:00 AM and 4:00 to 6:00 PM. Mitigation B.7i: Turning right from southbound Piedmont Avenue into the loading dock driveway, and turning left from the loading dock driveway into northbound Piedmont Avenue shall be prohibited for large trucks. Mitigation B.7j: Truck routes shall be established so that larger trucks accessing the site would turn into the loading driveway from northbound Piedmont Avenue and trucks leaving the loading driveway would turn onto southbound Piedmont Avenue.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
C. SIGNIFICANT IMPACTS <i>(Reduced to Less Than Significant, with Implementation of <u>Standard Conditions of Approval Only</u>)</i>		
B. Transportation, Circulation and Parking		
B.10: Project construction would temporarily affect traffic flow and circulation, parking, and pedestrian safety.	Condition B.10: Prior to the issuance of each building permit, the project applicant and construction contractor shall meet with the Traffic Engineering and Parking Division of the Oakland Public Works Agency and other appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project applicant shall develop a construction management plan for review and approval by the City Traffic Engineering Division. The plan shall include at least the following items and requirements: • A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur. • Location of construction staging areas for materials, equipment, and vehicles (must be located on the project site). • Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project applicant. • Temporary construction fences to contain debris and material and to secure the site. • Provisions for removal of trash generated by project	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	construction activity. - A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an onsite complaint manager. - Provisions for monitoring surface streets used for truck routes so that any damage and debris attributable to the trucks can be identified and corrected. <u>Subject to City review and approval, Kaiser shall fund a study that assess the pre and post-project condition of public streets to be used for construction trucks/vehicles/equipment routes, and shall correct any damage or loss of expected life to the public streets.</u> - Subject to City review and approval, prior to start of construction, a construction worker transportation demand management (TDM) program shall be implemented to encourage construction workers to carpool or use alternative transportation modes in order to reduce the overall number of vehicle trips associated with construction workers. <u>The Sears parking garage, located at Telegraph Avenue and 27th Street, with access from 27th Street, was recently acquired by Kaiser to provide construction worker parking. This garage has a capacity of about 560 striped parking spaces, with the potential to provide a minimum of 120 additional spaces with stacked, or valet parking, for a total of 680 parking spaces. Shuttles would transport workers between the parking garage and construction site.</u> - A detailed analysis of the parking layout of the Sears Garage shall be performed to maximize parking use at this location.	
C. Air Quality		
C.1: Activities associated with demolition, site preparation and construction would generate short-term emissions of criteria pollutants, including suspended and inhalable particulate matter and equipment exhaust emissions.	Condition C.1a: If asbestos were found to be present in building materials to be removed, demolition and disposal would be required to be conducted in accordance with procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of BAAQMD's regulations.	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Condition C.1b: During construction, the project sponsor shall require the construction contractor to implement the following measures required as part of BAAQMD's basic and enhanced dust control procedures required for sites larger than four acres. These include: • Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible. • Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer). • Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. • Sweep daily (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites. • Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day if visible soil material is carried onto adjacent paved roads. • Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more). • Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.). • Limit traffic speeds on unpaved roads to 15 miles per hour. • Limit the amount of the disturbed area at any one time, where feasible. • Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	are used. • Replant vegetation in disturbed areas as quickly as feasible. • Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph. • Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such persons shall be provided to the BAAQMD prior to the start of construction as well as posted on-site over the duration of construction. • <u>Wash off the tires or tracks of all trucks and equipment leaving any unpaved construction areas.</u> • <u>Install appropriate wind breaks at the construction site to minimize wind blown dust.</u> • <u>Demonstrate compliance with BAAQMD Regulation 2, Rule 1 (General Requirements) for all portable construction equipment subject to that rule. BAAQMD Regulation 2, Rule 1, requires an authority to construct and permit to operate certain types of portable equipment used for construction purposes (e.g., gasoline or diesel-powered engines used in conjunction with power generation, pumps, compressors, and cranes) unless such equipment complies with all applicable requirements of the "CAPCOA" Portable Equipment Registration Rule" or with all applicable requirements of the Statewide Portable Equipment Registration Program. This exemption is provided in BAAQMD Rule 2-1-105.</u> • <u>Perform low NOx tune-ups on all diesel-powered construction equipment greater than 50 horsepower (no more than 30 days prior to the start of use of that equipment). Periodic tune-ups (every 90 days) should be performed for such equipment used continuously during the construction period.</u>	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
D. Noise		
D.1: Construction activities would intermittently and temporarily generate noise levels above existing ambient levels in the project vicinity.	Condition D.1a: The project sponsor shall require construction contractors to limit standard construction activities as required by the City Building Department. Such activities are ~~generally~~ limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, with pile driving and/or other extreme noise generating activities greater than 90 dBA limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday. No construction activities shall be allowed on ~~weekends~~ Saturdays until after the building is enclosed, <u>and then only within the interior of the building with the doors and windows closed</u>, without prior authorization of the Building Services Division, and no extreme noise generating activities shall be allowed on ~~weekends and holidays~~ Saturdays. <u>Saturday construction activity prior to the building being enclosed, or occurring outside of the standard hours of 7:00 am to 7:00 pm for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case by case basis, with criteria including the proximity of residential uses and a survey of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. No construction activity shall take place on Sundays or Federal holidays. For clarification, construction activities include but are not limited to: tuck idling, moving equipment (including trucks, elevators, etc) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.</u>	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Standard Condition D.1b: To reduce daytime noise impacts due to construction, the project sponsor shall require construction contractors to implement the following measures: - Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible). - Impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used where feasible, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever feasible. - Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or other measures to the extent feasible. - If feasible, the noisiest phases of construction (such as pile driving) shall be limited to less than 10 days at a time to comply with the local noise ordinance.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Standard Condition D.1c: To further mitigate potential pier drilling, pile driving and/or other extreme noise generating construction impacts, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the City to ensure that maximum feasible noise attenuation will be achieved. These attenuation measures shall include as many of the following control strategies as feasible: • Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings; • Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions; • Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site; • Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings; and • Monitor the effectiveness of noise attenuation measures by taking noise measurements.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Condition D.1d: Prior to the issuance of each building permit, along with the submission of construction documents, the project sponsor shall submit to the City Building Department a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include: • A procedure for notifying the City Building Division staff and Oakland Police Department; • A plan for posting signs on-site pertaining to permitted construction days and hours and complaint procedures and who to notify in the event of a problem; • A listing of telephone numbers (during regular construction hours and off-hours); • The designation of an on-site construction complaint manager for the project; • Notification of neighbors within 300 feet of the project construction area at least 30 days in advance of pile-driving activities about the estimated duration of the activity; and • A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise mitigation and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed. Condition D.1e: Consistent with Standard Condition D.1b and D.1c and prior to the issuance of each building permit, the project sponsor shall install a sound-rated fence/barrier along the project site property line located closest to any noise-sensitive receiver(s), ~~to the extent feasible~~ <u>in accordance with the February 2006 Construction Noise Assessment Report prepared by Charles M. Salter Associates.</u> Standard Condition D.1f: Consistent with Standard Condition D.1b and D.1c and throughout all noise-generating construction activities, the project application shall locate removal areas for demolition debris as far as possible from noise-sensitive receptors <u>in accordance with the February 2006 Construction Noise Assessment Report prepared by Charles M. Salter Associates.</u>	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
D.4: Given the measured exterior noise levels in the vicinity of the project site, the interior noise levels within hospital buildings, especially in rooms used for overnight use such as patient wards, could exceed DNL 45 dBA, the interior noise standard for hospitals according to the City of Oakland General Plan Noise Element.	Condition D.4: To comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an interior noise level of less than 45 dBA, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) shall be incorporated into project building design. Final recommendations for sound-rated assemblies will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phase.	Less than Significant
E. Cultural Resources		
E.1: Construction of the project could cause substantial adverse changes to the significance of currently unknown cultural resources at the site, potentially including an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), or the disturbance of any human remains, including those interred outside of formal cemeteries.	Condition E.1a: Pursuant to CEQA Guidelines 15064.5 (f), "provisions for historical or unique archaeological resources accidentally discovered during construction" should be instituted. Therefore, in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project sponsor and/or lead agency shall consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist would meet to determine the appropriate avoidance measures or other appropriate mitigation, with the ultimate determination to be made by the City of Oakland. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards. In considering any suggested mitigation proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the project sponsor shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while mitigation for historical resources or unique archaeological resources is carried out.	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Should an archaeological artifact or feature be discovered on-site during project construction, all activities within a 50-foot radius of the find would be halted until the findings can be fully investigated by a qualified archaeologist to evaluate the find and assess the significance of the find according to the CEQA definition of a historical or unique archaeological resource. If the deposit is determined to be significant, the project sponsor and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate mitigation, subject to approval by the City of Oakland, which shall assure implementation of appropriate mitigation measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist would recommend appropriate analysis and treatment, and would prepare a report on the findings for submittal to the Northwest Information Center. Condition E.1b: In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
E.2: The project may adversely affect unidentified paleontological resources at the site.	Condition E.2: In the event of an unanticipated discovery of a brea true, and/or trace fossil during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995,1996)). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find under the criteria set forth in Section 15064.5 of the CEQA Guidelines. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.	Less than Significant
<u>E.4b: Increased shadow resulting from construction of the Replacement Hospital and Garage would result in increased shadow that, combined with poor existing soils conditions, may adversely impact six (6) Giant Sequoia Redwoods that contribute to the historic setting of the J. Mora Moss House, a historic resource, and that are currently in poor health.</u>	<u>Mitigation E.4b.1: Prior to start of construction, the project sponsor shall coordinate with the City Arborist and perform an initial assessment of the six Redwood trees to determine, after the City's consideration of the following possible treatments outlined in the Mosswood Park Shading – Tree Shading Impact Report (Batchelder, 2006), specific treatments that would result in the most positive impact on the existing and future health of the Giant Sequoia Redwood trees in poor existing condition and located within the area of new shadow cast by the Replacement Hospital and Garage. Possible Treatments include, but are not limited to, the following, subject to review and determination by the City Arborist:</u> <u>1. Water Audit – A water audit that would provide information on the amount of water being applied to and around the affected trees and the uniformity with which the watering occurs. The water audit would also evaluate soil type and infiltration rate, or consider adjustments to eliminate water spray within 10 to 20 feet from the base of affected trees.</u> <u>2. Mulch – Create mulch areas around affected trees to reduce soil compaction and restrict mowing equipment in areas where mower damage on the affected trees is evident. The mulch will further reduce the need for supplemental irrigation water.</u> <u>3. Soil Amendment – Implement a good-quality compost in the</u>	<u>Less than Significant</u>

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	<u>area of affected trees. Limit fertilization to areas where poor conditions are identified through soil and leaf tissue analyses.</u> 4. <u>Treatment of Soil Compaction – Possible treatments include, without exclusion:</u> 5. <u>Radial Trenching – A method used to mitigate and replace soil inside the tree root protection zone. Soil is removed from trenches that are 8-12 inches wide and 18-36 inches deep. Trenches are excavated in direct lines toward the base of the tree using air spade, hydraulic excavation or hand careful hand excavation. Backfill can be amended soil, structural soil, a mix of sand and compost, or any combination deemed to be appropriate for the situation.</u> 6. <u>Vertical Core Venting – A that procedure that creates vertical holes, usually about 2-inches in diameter, that extend down through compacted soil. The holes can be from 18-inches to over 3-feet deep. Holes are spaced from 6-inches to 2-feet depending upon the site soil conditions. Holes are crated with an augur, water jet or using an air spade.</u> 7. <u>Water Jet - A procedure that uses high-pressure water and a probe to create air passages in the soil. Primary reason for use is mitigation for compacted soil. Water Jet can be used in conjunction with liquid fertilization only when soil and leaf tissue analysis indicate nutrient limitation.</u> <u>The Project sponsor shall fund the evaluation and implementation of the approved treatment plan and shall pay for periodic monitoring of the effectiveness of the plan and implementation of any necessary revisions to the plan.</u>	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
F. Geology , Soils, and Seismicity		
F.1: In the event of a major earthquake in the region, seismic ground shaking could potentially injure people and cause collapse or structural damage to existing and proposed hospital structures.	Condition F.1: A site-specific, design level geotechnical investigation for each construction site within the project area (which is typical for any large, phased development project) shall be required as part of this project. Specifically: - Each investigation shall include an analysis of expected ground motions at the site from known active faults. The analyses shall be in accordance with applicable City ordinances and policies, OSHPD requirements, and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from known active faults. - The investigations shall determine final design parameters for the walls, foundations, foundation slabs, and surrounding related improvements (utilities, roadways, parking lots and sidewalks). - The investigations shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer, geotechnical engineer, and OSHPD will be included in the final design. - Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the project design phase, shall be incorporated in the project. - For structures not subject to OSHPD permitting, the final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to the commencement of the project.	Less than Significant
F.3: The development proposed as part of the project, when combined with other reasonably foreseeable development in the vicinity, could potentially injure people and cause collapse or structural damage to existing and proposed structures and result in significant cumulative impacts with respect to geology, soils, or seismic conditions.	See <i>Condition F.1</i> .	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
G. Hydrology and Water Quality G.1: Project construction would involve activities (excavation, soil stockpiling, pier drilling, grading, and dredging, etc.) that would generate loose, erodable soils that, if not properly managed, could violate any water quality standards or waste discharge requirements; result in substantial erosion or siltation; create or constitute substantial polluted runoff; or otherwise substantially degrade water quality.	Standard Condition G.1a: Prior to and during project demolition, grading and construction activities, the project shall comply with all City of Oakland Grading Permit requirements and all NPDES Permit requirements as follows: <i>Grading Plan, Erosion and Sedimentation Control Plan, and Drainage Plan</i> City of Oakland Municipal Code Chapter 13.16 and Section 15.04.780 require that the project applicant prepare a grading plan for the proposed project. Because during project construction the volume of the excavated fill material would exceed 50 cubic yards (estimated maximum 107,600² cu.yds. proposed) and involve depths of excavation that exceed five feet (estimated approximately 30 feet proposed) and involve pier drilling to a maximum dept of 70 feet, the project sponsor must prepare a grading plan, erosion and sedimentation control plan, and drainage plan. - The required grading plan shall include drainage, erosion, and sediment control measures and incorporate construction BMPs to prevent pollutants from entering the storm sewer to the maximum extent practicable. - The grading plan shall discuss existing, temporary, and final drainage facilities. Erosion and sediment control must combine interim and permanent measures to minimize erosion, stormwater runoff, and sedimentation. Such measures, at a minimum, shall include provision of filter materials at the catch basin to prevent debris or dirt from flowing into the storm drain system. According to the City Public Works Agency, such filter materials shall be applied to batch basins within private areas. As proposed by the project, filter protection at catch basins and inlets will include filter fabric covering the grates, straw bales or wattles circling the inlet, or some combination of these and/or other measures.	Less than Significant

² Total estimated excavation includes 69,000 cu.yds. for Phase 1 and 38,600 cu.yds. for Phase 2. No excavation is proposed for Phase 3.

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	- The plan shall specify that, after construction is complete, the sponsor shall ensure that the storm drain system shall be inspected and that the sponsor shall clear the system of any debris or sediment. - Preparation and implementation of the grading plan would include preparation of the construction stormwater pollution prevention plan (SWPPP) (discussed below). <i>NPDES Permit and Construction Stormwater Pollution Prevention Plan (SWPPP)</i> The project sponsor shall apply for and comply with all requirements of the ACCWP NPDES General Construction Permit. As required by the permit: - The sponsor shall prepare a SWPPP in coordination with a project's grading plan. The SWPPP shall describe erosion and sedimentation control measures as recommended in the California Stormwater Best Management Practice Handbook (Stormwater Quality Task Force, 2003). - The project sponsor shall prepare the SWPPP and submit a notice of intent to the RWQCB prior to construction activities, as required by the RWQCB. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. - At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; best management practices (BMPs), and inspection and monitoring program. - After construction is completed, the project sponsor shall submit a notice of termination to the RWQCB.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Condition G.1b: Prior to and during project demolition, grading and construction activities, the project shall comply with all Creek Protection Permit requirements and practices as follows: <i>Creek Protection Permit</i> • Project construction would occur within approximately 17 feet of the Glen Echo Creek centerline (at the closest point) and would involve construction activities in proximity to Glen Echo Creek, including creek bank repair and stabilization, and creek bank shoring to prevent bank failure (discussed also under Biological Resources Impact I.1, impacts on jurisdictional waters of the U.S.). Therefore, the project sponsor is required to obtain and comply with all requirements of a City of Oakland Category 4 Creek Protection Permit. • Consistent with the Category 4 Creek Protection Permit requirements outlined in the City's Guide to Oakland's Creek Ordinance, the project sponsor has prepared and submitted the following for review and approval by the City: a) Creek Protection Plan prepared by the project owner, an architect, engineer, or contractor, that describes proposed protection measure for the creek, creek banks, riparian vegetation, wildlife, surrounding habitat, and the creek's natural appearance during and after construction; b) Hydrology Report prepared by a licensed engineer with creek hydrology expertise, that shall at a minimum specify the quantity and quality of pre-and post-work creek flows; and c) Creek Restoration Plan (see Standard Condition I.1b)	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
~~G.1: Project construction would involve activities (excavation, soil stockpiling, pier drilling, grading, and dredging, etc.) that would generate loose, erodible soils that, if not properly managed, could violate any water quality standards or waste discharge requirements; result in substantial erosion or siltation; create or constitute substantial polluted runoff; or otherwise substantially degrade water quality.~~ G.4: The project would not result in a net increase in impervious surfaces and would not cause an increase in the volume of project-related stormwater runoff. The project would not violate any waste discharge requirements that would create substantial runoff and result in substantial flooding onsite or offsite. Nor would the project exceed the capacity of the stormwater drainage system.	Condition G.1c: For demolition and construction activities adjacent to Glen Echo Creek during the wet season ~~(as defined by the City generally October 15th to April 15th)~~,³ the project sponsor shall design for City review and approval, and implement a temporary bypass culvert for Glen Echo Creek. The bypass culvert shall involve rerouting rain water leaders to prevent direct drainage to the creek, which would ensure water quality and control erosion and sedimentation, consistent with the General NPDES Permit for Construction Activities (Standard Condition G.1a). The bypass culvert shall be removed immediately after completion of construction activities. Condition G.4a: Implement site design/landscape characteristics as feasible, which maximize infiltration (where appropriate), provide retention or detention, slow runoff, and minimize impervious land coverage, so that post-development pollutant loads from the site have been reduced to maximum extent possible. Where feasible, the project shall introduce measures to help reduce the rate and volume of stormwater runoff. Condition G.4b: For the proposed project, which will discharge directly to water bodies listed as impaired (under section 303(d) of CWA), ensure that post-project runoff does not exceed pre-project levels for such pollutants through implementation of the control measures addressed in the C.3 provision, to the maximum extent practicable.	Less than Significant
H. Public Health and Safety H.1: Demolition or renovation of existing structures that contain hazardous building materials, such as lead-based paint, asbestos, and PCBs could expose workers, the public, or the environment to these hazardous materials and would generate hazardous waste.	Condition H.1a: Future demolition or renovation activities shall require an assessment for the potential presence of lead-based paint or coatings, asbestos, or PCB-containing equipment be prepared prior to commencing these activities. Condition H.1b: If the assessment required by Standard Condition H.1a finds presence of lead-based paint, asbestos, and/or PCBs, the project sponsor shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition or renovation of	Less than Significant

³ ~~The “wet season” as generally November to March.~~

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	affected structures. Condition H.1c: If the assessment required by Standard Condition H.1a finds presence of lead-based paint, the project sponsor shall develop and implement a lead-based paint removal plan. The plan shall specify, but not be limited to, the following elements for implementation: • Develop a removal specification approved by a Certified Lead Project Designer. • Ensure that all removal workers are properly trained. • Contain all work areas to prohibit off-site migration of paint chip debris. • Remove all peeling and stratified lead-based paint on building and non-building surfaces to the degree necessary to safely and properly complete demolition activities according to recommendations of the survey. The demolition contractor shall be responsible for the proper containment and disposal of intact lead-based paint on all equipment to be cut and/or removed during the demolition. • Provide on-site personnel and area air monitoring during all removal activities to ensure that workers and the environment are adequately protected by the control measures used. • Clean up and/or vacuum paint chips with a high efficiency particulate air (HEPA) filter. • Collect, segregate, and profile waste for disposal determination. • Properly dispose of all waste. Condition H.1d: If the assessment required by Standard Condition H.1a finds presence of asbestos, the project sponsor shall ensure that asbestos abatement shall be conducted prior to building demolition or renovation. Condition H.1e: If the assessment required by Standard Condition H.1a finds presence of PCBs, the project sponsor shall ensure that PCB abatement shall be conducted prior to building	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
<u>H.2: Implementation of the project would disturb soil and groundwater impacted by historic hazardous material use, which could expose construction workers, the public, or the environment to adverse conditions related to hazardous materials handling.</u>	demolition or renovation. Condition H.2a: The project applicant shall ensure that environmental assessment and remediation would either be performed under the oversight of the ACDEH or other agencies, <u>(e.g. RWQCB and DTSC) or be conducted by qualified professionals with experience in soil and groundwater contamination remediation. In cases where regulatory involvement is not necessary, soil and groundwater removal and disposal would still occur to mitigate the potential hazards that could result from removal of soil and/or groundwater during construction.</u> Condition H.2b: To reduce environmental risks associated with encountering contaminated soil that is discovered during grading and construction <u>the project applicant shall ensure that impacted soil is handled in accordance with Kaiser's Soil Management Plan, which shall be prepared to outline required procedures for handling and disposing impacted soil. All disposal and transportation of contaminated soil shall be done in accordance with state and federal agencies and under federal (RCRA) and state laws. All contaminated soil determined to be hazardous or non-hazardous waste must be adequately profiled for acceptable disposal before it can be removed from the site.</u> Condition H.2c: Groundwater pumped from the subsurface would be contained onsite prior to treatment and disposal to ensure environmental and health issues are resolved pursuant to oversight agencies (Refer to Impact G.2). Engineering controls shall be utilized, <u>which include impermeable barriers to prohibit groundwater and vapor intrusion into the building.</u>	<u>Less than Significant</u>
I. Biological Resources / Wetlands I.1: Within the vicinity of Glen Echo Creek, demolition of existing structures and construction on Site 7 in Phase 1 (West Broadway MSB and parking structure) could result in impacts to potentially jurisdictional wetlands or waters of the U.S. under the jurisdiction of the U.S. Army Corps of Engineers under Section 404 of the Clean Water Act and waters of the state under the jurisdiction of the State Regional Water Quality Control Board (SWRCB) or Regional Water Quality Control Board (RWQCB) under Section 401 of the Clean Water Act and Porter-Cologne Act. This disturbance would affect both areas classified as wetland and channels that are considered "other	Condition I.1a: Prior to construction within the vicinity of Glen Echo Creek, the project sponsor shall obtain the necessary regulatory permits and authorizations from the Corps, RWQCB, CDFG and the City of Oakland, and, shall comply with all conditions issued by applicable agencies. Required permit approvals and certifications shall include, but not be limited to the following: • U.S. Army Corps of Engineers (Corps): Section 404. Permit approval from the Corps shall be obtained for the placement of dredge or fill material in waters of the U.S., if	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
waters of the U.S." No formal wetland delineation was conducted, however, Glen Echo Creek would be considered a Water of U.S. and fall under regulatory jurisdiction of the agencies identified above.	any, within the interior of the project site, pursuant to Section 404 of the federal Clean Water Act. - Regional Water Quality Control Board (RWQCB): Section 401 Water Quality Certification. Certification that the project will not violate state water quality standards is required before the Corps can issue a 404 permit, above. - California Department of Fish and Game (CDFG): Section 1602 Lake and Streambed Alteration Agreement. Work that will alter the bed or bank of a stream requires authorization from CDFG. - City of Oakland: Creek Protection Permit. Work within 20 feet of the center line of a creek within the City of Oakland requires a Category 4 Creek Protection Permit. As detailed in Standard Condition G.1a, information to be included in the City's permit application includes a Creek Restoration Plan and hydrologic analysis (per Mitigation Measure I.1b).	
	Standard Condition I.1b : The project sponsor shall prepare for review and approval by all applicable review and permitting agencies, a Restoration and Mitigation Plan (RMP) that shall outline specific measures to restore the daylighted portion of Glen Echo Creek. Specific measures proposed by the project and included in the RMP include, but would not necessarily be limited to, the following: - Upon completion of construction of the West Broadway parking garage in Phase 1 (Site 7), the eastern bank of Glen Echo Creek shall be regraded and recontoured to maximum 2:1 slope. - Native riparian vegetation shall be planted to provide bank stabilization and to restore the daylighted reach of the creek and to provide riparian habitat. The RMP shall outline what species of native plants shall be planted. - Plantings shall include trees and understory that are native to the area and that provide both bank stabilization and riparian habitat.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
I.2: Installation of the temporary bypass culvert within Glen Echo Creek waterway (Standard Condition G.1c) during Phase 1 (West Broadway MSB and parking structure) would result in temporary disturbance to pond turtle habitat.	- Monitoring of the restored areas shall continue for a period of five years after implementation of the restoration planting. The project sponsor or qualified designees shall prepare and submit annual monitoring reports to the Corps, RWQCB, CDFG, and City of Oakland. The RMP shall outline monitoring methods and success criteria for each of the monitoring years and at the end of the five-year monitoring period. - The RMP shall provide contingency measures to be implemented in the event one or more success criteria are not met. Condition I.1c: If required by permits and authorizations for the project, the project sponsor shall provide compensatory mitigation for temporary and/or permanent impacts to Glen Echo Creek. If deemed appropriate by the permitting agencies, mitigation can be provided by a donation of funds for off-site riparian restoration. If required, compensatory mitigation will be provided at a minimum of 1.1:1 ratio. Condition I.2: Prior to the installation of the temporary bypass culvert (Standard Condition G.1c) and construction activities, a qualified biologist shall perform pond turtle surveys within Glen Echo Creek. Surveys may include nests as well as individual turtles. The project biologist shall be responsible for the survey and for the relocation of adult turtles to an appropriate area with suitable habitat outside the project area. Construction shall not proceed until the project area can be deemed free of turtles. The temporary bypass culvert shall be screened both upstream and downstream to prevent individual turtles from entering the bypass culvert and project area.	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
I.3: Construction activities on Site 7 adjacent to Glen Echo Creek during Phase 1 (West Broadway MSB and parking structure) would result in disturbance to nesting habitat for breeding raptors and passerine birds including nesting Cooper's hawk.	Condition I.3: To the extent feasible, removal of the large trees and other vegetation suitable for nesting shall not occur during the breeding season of March 15 and August 15. If tree removal must occur during the breeding season, all sites shall be surveyed by a qualified biologist to verify the presence or absence of nesting birds or raptors. If the survey indicates that potential presences of nesting birds or raptors, the results would be coordinated with CDFG and suitable avoidance measures would be developed and implemented. Construction shall observe the CDFG avoidance guidelines which are a minimum 500-foot buffer zone surrounding active raptor nests and a 250-foot buffer zone surrounding nests of other birds. Buffer zones shall remain until young have fledged.	Less than Significant
I.4: The project would conduct construction activities near several protected trees and would potentially remove approximately 34 protected trees located within or adjacent to the project site and would conducted these activities in compliance with the City of Oakland's Tree Preservation and Removal Ordinance.	Condition I.4a: Adequate protection shall be provided during the construction period for any trees which are to remain standing. Measures deemed necessary by the Tree Reviewer in consideration of the size, species, condition and location of the trees to remain may include any of the following: - Before the start of any clearing, excavation, construction or other work on the site, every protected tree deemed to be potentially endangered by said site work shall be securely fenced off at a distance from the base of the tree to be determined by the Tree Reviewer. Such fences shall remain in place for duration of all such work. All trees to be removed shall be clearly marked. A scheme shall be established for the removal and disposal of logs, brush, earth and other debris which will avoid injury to any protected tree. - Where proposed development or other site work is to encroach upon the protected perimeter of any protected tree, special measures shall be incorporated to allow the roots to breathe and obtain water and nutrients. Any excavation, cutting, filing, or compaction of the existing ground surface within the protected perimeter shall be minimized. No change in existing ground level shall occur within a distance to be determined by the Tree Reviewer from the base of any protected tree at any time. No burning or use of equipment with an open flame shall occur near or within the protected perimeter of any protected tree. - No storage or dumping of oil, gas, chemicals, or other	Less than Significant

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	substances that may be harmful to trees shall occur within the distance to be determined by the Tree Reviewer from the base of any protected trees, or any other location on the site from which such substances might enter the protected perimeter. No heavy construction equipment or construction materials shall be operated or stored within a distance from the base of any protected trees to be determined by the tree reviewer. Wires, ropes, or other devices shall not be attached to any protected tree, except as needed for support of the tree. No sign, other than a tag showing the botanical classification, shall be attached to any protected tree. 4. Periodically during construction, the leaves of protected trees shall be thoroughly sprayed with water to prevent buildup of dust and other pollution that would inhibit leaf transpiration. 5. If any damage to a protected tree should occur during or as a result of work on the site, the applicant shall immediately notify the Office of Parks and Recreation of such damage. If, in the professional opinion of the Tree Reviewer, such tree cannot be preserved in a healthy state, the Tree Reviewer shall require replacement of any tree removed with another tree or trees on the same site deemed adequate by the Tree Reviewer to compensate for the loss of the tree that is removed. 6. All debris created as a result of any tree removal work shall be removed by the applicant from the property within two weeks of debris creation, and such debris shall be properly disposed of by the applicant in accordance with all applicable laws, ordinances, and regulations. Condition I.4b: Replacement plantings shall be required in order to prevent excessive loss of shade, erosion control, groundwater replenishment, visual screening and wildlife habitat in accordance with the following criteria: 1. No tree replacement shall be required for the removal of nonnative species, for the removal of trees which is required for the benefit of remaining trees, or where insufficient planting area exists for a mature tree of the species being considered.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	2. Replacement tree species shall consist of Sequoia sempervirens (Coast Redwood), Quercus agrifolia (Coast Live Oak), Aesculus californica (California Buckeye) or Umbellularia californica (California Bay Laurel). 3. Replacement trees shall be of twenty-four (24) inch box size, except that three fifteen (15) gallon size trees may be substituted for each twenty-four (24) inch box size tree where appropriate. 4. Minimum planting areas must be available on site as follows: a) For Sequoia sempervirens, three hundred fifteen square feet per tree; b) For all other species listed in #2 above, seven hundred (700) square feet per tree. 5. In the event that replacement trees are required but cannot be planted due to site constraints, an in lieu fee as determined by the master fee schedule of the city may be substituted for required replacement plantings, with all such revenues applied toward tree planting in city parks, streets and medians. 6. Plantings shall be installed prior to the issuance of a certificate of occupancy, subject to seasonal constraints, and shall be maintained by the applicant until established. The Tree Reviewer may require a landscape plan showing the replacement planting and the method of irrigation. Any replacement planting which fails to become established within one year of planting shall be replanted at the applicant's expense. Condition I.4c: Workers compensation, public liability, and property damage insurance shall be provided by any person(s) performing tree removal work authorized by a tree removal permit. Condition I.4d: The removal of extremely hazardous, diseased, and/or dead trees shall be required where such trees have been identified by the Tree Reviewer.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	Condition I.4e: Implement the following recommended General Tree Protection Activities, to the extent feasible and subject to review and approval by the City's Public Works Agency and Office of Parks and Recreation: 1. Completion of Tree Protection. All designated tree protection measures shall be in place and approved by the project arborist prior to the beginning of construction activity, subject to final approval by the City's Public Works Agency and Office of Parks. 2. Pre-Construction Meeting. Personnel working on site shall be provided an orientation to tree preservation measures and rules by the monitoring arborist. 3. Monitoring Tree Health and Stability. The need and frequency of monitoring will be determined by the extent to which the trees are compromised during pruning and construction activities. 4. Tree Protection to Remain During Construction. None of the recommended preservation guidelines or activities shall be removed before completion of construction activities with out approval of the project arborist. Heath Mitigation. Tree health mitigation treatments will depend on the level of pruning and root loss that occurs. Possible activities could include water application, the use of compost or compost tea and sugar water solution application. Procedures known as radial trenching and core venting can be used as well as structural soils, as described in the Tree Impact Report provided as Appendix E of the EIR. Standard Condition I.4f: Implement the following recommended London Plane Tree Preservation Guidelines, to the extent feasible and subject to review and approval by the City's Public Works Agency and Office of Parks and Recreation: 1. Pruning. Clearance pruning should be conducted for both London Plane Trees located within the City of Oakland right-of-way along Broadway (on Site 7). All pruning should be conducted in accordance with Appendix 2 to Pruning Standards, published by Western Chapter, International Society of Arboriculture. Pruning should be directed by a qualified project arborist, subject to review and approval by	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	the Oakland City Arborist.	
	2. Trunk and Scaffold Protection. The London Plane trees should be protected from mechanical damage as follows: a) Wrap trunk and all exposed limbs of each tree with orange plastic fencing to a thickness of two inches. b) Strap 2-inch by 4-inch boards to the trunk and scaffold branches of each tree in locations where damage is most likely to occur. c) Extra trunk protection can be provided by strapping one to four straw bales (place on end) around the base of each tree. 3. Root Protection. a) Allow the cement sidewalk to remain in place until the end of construction activity to provide the best root protection. b) If the cement sidewalk is removed, the treatment for all exposed areas within 15 feet of the base of each tree (surface roots and soils) must be protected with a 12-inch thick layer of wood chips, with a 1-1/8-inch piece of plywood placed on top of the wood chips. c) Excavation within 15 feet of the base of each tree is to be conducted under the supervision of a qualified arborist. Excavation within this area is to be conducted by hand digging or with the use of a tool referred to as the "air spade." This method of removing soils from around tree roots uses air pressure to minimize root damage. Generally requires a compressor with the minimum capacity of 150 cubic feet per minute and requires pre-wetting of soil for best results. 4. Pest Management Program. Health monitoring will determine if there are any serious problems with the London Plane trees. Potential problems include Powdery Mildew, anthracnose and sycamore scale. The presence of such pathogens and pests are an indication of low energy reserves (poor health). If pathogens or insects are found to	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	be present at a damaging level, appropriate measures can be prescribed for control by the project arborist until the tree's natural resistance returns, subject to review by the City Arborist. Standard Condition I.4g: Implement the following recommended Coast Redwood Tree Preservation Guidelines, to the extent feasible and subject to review and approval by the City's Public Works Agency and Office of Parks and Recreation: 1. Maintain Fence. Maintain the existing chain-link fencing in place during construction activities, to the extent feasible. 2. Protect Main Stem. Protect vulnerable areas by securing two-inch by four-inch board to the main upright stem(s) of the trees where possible damage could occur. 3. Root Protection. Cover the bank and exposed roots with four layers of burlap or other acceptable material and an outer layer of geotextile fabric. The burlap is used to a depth of three feet. [Clarify.] Alternatively, protected tree roots with a 12-inch thick layer of wood chips, with either a metal plate or 1-1/8-inch piece of plywood placed on top of the wood chips at critical root areas. The project arborist should direct placement of root protections. 4. Construction Details. Develop and consider specific construction details that aim to limit the amount of tree roots that would be cut to accommodate construction. Specific details would address a) the location and spacing of soldier piles at the perimeter of the excavation area; and b) the design and placement of shoring relative to the soldier beams. 5. Trenching. Consider trenching wide enough to allow for root inspection by the project arborist. 6. Root Pruning. Consider additional cutting of the bank to allow root pruning by hand. 7. Health Mitigation. Health mitigation treatments would be prescribed based on the site conditions and level of adverse impact suffered by the trees, but should be administered before adverse impacts occur. Possible treatments include	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	the following mulching (to prevent soil compaction); installation of temporary water system where roots are lost; compost and compost tea; sugar-water solutions applied to cut roots; removal of existing asphalt to expand soil surface; soil and leaf tissue analysis prior to fertilizing; and regular health monitoring for insects, disease, and soil moisture conditions.	
<i>D. LESS THAN SIGNIFICANT, BENEFICIAL, OR NO IMPACT</i> <i>(No Mitigation Measures or Standard Conditions of Approval Required)</i>		
A. Land Use, Plans and Policies		
A.1: The project would develop new and different uses and buildings adjacent to existing neighborhoods east and west of the project, but would not result in the physical division of an existing community.	None Required.	
A.2: The project generally would be consistent with the General Plan land use classifications and existing zoning district regulations that apply to the project site, but may require variances authorized by the Oakland Planning Code.	None Required. However the project sponsor has proposed to amend the Oakland Planning Code to add the "Kaiser Permanente Oakland Medical Center Zoning District" and associated regulations, and to amend the Oakland Zoning Map to apply the Kaiser Permanente OMC Zone to the geographic area of the project site.	
B. Transportation, Circulation, and Parking		
B.4: The project would generate demand for alternative transportation service for the area.	None Required.	
B.5: The project would create demand for bicycle parking.	None Required.	
B.6: The project would increase the potential for pedestrian safety conflicts.	None Required.	
B.8: The project would contribute to 2010 changes to traffic conditions on the regional and local roadways.	None Required.	
B.9: The project would contribute to 2025 changes to traffic conditions on the regional and local roadways.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
C. Air Quality		
C.3: Mobile emissions generated by project traffic would increase carbon monoxide concentrations at intersections in the project vicinity.	None Required.	
C.4: The proposed project could result in exposure of persons to substantial levels of Toxic Air Contaminants such that the probability of contracting cancer for the Maximally Exposed Individual exceeds 10 in one million.	None Required.	
D. Noise		
D.2: Noise from project-generated traffic would not significantly increase roadside ambient noise levels.	None Required.	
D.3: Operational noise sources generated by HVAC equipment, the Central Utility Plant, emergency generators, ambulance sirens, proposed parking structures, truck loading/unloading, etc., would not exceed the Oakland Noise Ordinance standards regarding operational noise and would not substantially impact nearby noise-sensitive receptors.	None Required.	
D.5: The proposed project, together with anticipated future development in the area as well as Oakland in general, could result in long-term traffic increases that could cumulatively increase noise levels.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
E. Cultural Resources		
E.3: <u>The proposed project would result in the demolition of the building at 3741-47 Broadway which is conservatively assumed to be an historic resource under Section 15065.4 of the CEQA Guidelines, pending Landmarks Preservation Advisory Board review.</u>	~~Mitigation E.3a:~~ <u>None Required. However, the project sponsor will implement the following measures:</u> <u>Archival Documentation. Kaiser Permanente shall document the building at 3741-47 Broadway prior to its demolition through the use of large-format black and white photography and a brief historical report, meeting the specifications of the Historic American Building Survey (HABS). The historic report should briefly describe the building and its historic significance to the City of Oakland. The documentary photographs and report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Digital copies of the photographs would be forwarded to the Oakland Cultural Heritage Survey.</u> ~~Mitigation E.3b:~~ <u>Interpretive Materials: Kaiser Permanente shall prepare interpretive materials as directed by the City, including, but not limited to on-site interpretive signage, brochures, or any combination thereof.</u>	~~Conservatively assumed Significant and Unavoidable~~
E.5: <u>The proposed project, in combination with cumulative development that would involve demolition of other automobile-related historic resources in Oakland, would not result in cumulative impacts to automobile-related historic resources.</u>	~~Mitigation E.5:~~ <u>None Required. However, the project sponsor will implement the following measures:</u> <u>Kaiser Permanente shall prepare or cause to be prepared a historic context report of Oakland's 1920s-era automobile dealerships in order to document this relatively rare and threatened building type. The context should be prepared by a qualified architectural historian. The context report would be archived locally at the Oakland History Room (OHR) of the Oakland Public Library along with a copy on archival paper. Copies would be forwarded to the Oakland Cultural Heritage Survey.</u>	~~Conservatively assumed Significant and Unavoidable~~
E.4a: <u>The project would construct new and substantially larger medical facilities in the vicinity of historic resources. Other than the issue of shadows from these buildings on Mosswood Park, but the size of these new larger facilities would not affect their historic setting.</u>	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
E.6: Construction of the proposed project in combination with construction from other known projects in the vicinity could cause a significant cumulative impact to currently unknown cultural resources at the site, potentially including an archaeological resource pursuant to CEQA Guidelines Section 15064.5 or CEQA Section 21083.2(g), or the disturbance of any human remains, including those interred outside of formal cemeteries.	None Required.	
F. Geology, Soils, and Seismicity		
F.2: Project construction, specifically in proximity to daylighted segments of Glen Echo Creek, would comply with all City and RWQCB requirements related to erosion control and water quality during construction, including compliance with the ACCQP NPDES permit; the City of Oakland Creek Protection, Stormwater Management, and Discharge Control Ordinance and Grading Ordinance; and compliance with requirements for preparation of a construction SWPPP. The project therefore would not result in substantial, long-term erosion or siltation that would increase the sediment load to Glen Echo Creek and Lake Merritt.	None Required.	
G. Hydrology and Water Quality		
G.2: Project excavation activities would not deplete groundwater supplies nor substantially interfere with groundwater recharge or cause contaminated groundwater discharge to contaminate surface water.	None Required.	
G.3: The project would result in new development that could substantially alter existing drainage pattern of the project site, the surrounding area, or the drainage course of Glen Echo Creek.	None Required.	
G.5: The project would not result in flooding due to its proximity to a 100-year flood hazard area, or expose people or structures to other substantial risk related to flooding, seiche, tsunami, or mudflow.	None Required.	
G.6: The increased construction activity and new development resulting from the project, in conjunction with other foreseeable development in the city, would not result in cumulatively considerable impacts on hydrology and water quality conditions.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
H. Public Health and Safety		
H.3: The project would involve the transportation, use, and storage of hazardous chemicals, which could present increased public health and/or safety risks to Kaiser workers, patients and visitors, and the surrounding area.	None Required.	
H.4: Hazardous materials used onsite during construction activities (i.e. solvents) could be spilled through improper handling or storage, potentially increasing public health and/or safety risks to Kaiser workers, patients and visitors, and the surrounding area.	None Required.	
H.5: The proposed project could increase the volume of hazardous materials and hazardous waste at Kaiser, subsequently increasing the risk of spillage and/or accidental release of hazardous substances.	None Required.	
H.6: Hazards at the project site could contribute to cumulative hazards in the vicinity of the project site.	None Required.	
I. Biological Resources / Wetlands		
I.5: Construction of project facilities could result in impacts to common plant and animal species.	None Required.	
I.6: The project would not make a contribution that is "cumulatively considerable" to any cumulative impact on biological resources.	None Required.	
J. Population, Housing, and Employment		
J.1: The project would displace existing housing and residents, but not in substantial numbers necessitating the construction of replacement housing elsewhere, in excess of that anticipated in the City's Housing Element.	None Required.	
J.2: The project would displace existing businesses and jobs, but not in substantial numbers necessitating construction of replacement facilities elsewhere, in excess of that anticipated in the City's General Plan.	None Required.	
J.3: The project would not induce substantial population growth in a manner not anticipated by the General Plan, either directly by proposing new housing or businesses, or indirectly through infrastructure improvements.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
K. Visual Quality and Wind		
K.1: The project would demolish existing buildings along major pedestrian and vehicular corridors and construct new buildings of varying height and bulk compared to existing buildings in the area. This would substantially but not adversely alter the existing visual character and quality of the project area.	None Required / Beneficial Effect	
K.2: Construction activities associated with the project may result in accidental damage to one or more trees within a state-designated scenic highway.	None Required.	
K.3: The project would construct new buildings, some of which would be taller and have more bulk than some existing buildings on the project site or nearby. This new construction would result in changes to views from public viewpoints but would not adversely affect scenic vistas.	None Required.	
K.4: The project would increase the amount of light and glare emitted from the project site but would not result in substantial adverse effects to day or nighttime views or adjacent residential uses.	None Required.	
K.5: The project would create additional shadow on adjacent areas, however, the project would not cast shadow on historic resources, would not introduce landscaping conflicting with the California Public Resource Code; would not cast shadow on buildings using passive solar heat, solar collectors for hot water heating, or photovoltaic solar collectors; and would not cast shadow that impairs the use of any public or quasi-public park, lawn, garden, or open space.	None Required.	
K.6: The proposed project would not increase the duration of hazardous wind conditions.	None Required.	
K.7: Development proposed as part of the project, when combined with other foreseeable development in the vicinity, could result in cumulative impacts related to aesthetics, shadow, light and glare, and wind.	None Required.	
L. Public Services and Recreation Facilities		
L.1: The project could result in an increase in calls for police protection services, but would not require new or physically altered police facilities in order to maintain acceptable performance objectives.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
L.2: The proposed project would increase the number of calls for fire protection services and emergency medical assistance, but would not require new or physically altered fire facilities in order to maintain acceptable performance objectives.	None Required.	
L.3: The proposed project could result in new students for local schools, but would not require new or physically altered school facilities to maintain acceptable performance objectives.	None Required.	
L.4: The project could increase the demand for parks and recreational facilities, and library facilities, but would not result in substantial physical deterioration of such facilities or require new or physically altered facilities in order to maintain acceptable performance objectives.	None Required.	
M. Utilities and Service Systems		
M.1: The project would not exceed water supplies available to serve the project from existing entitlements and resources, nor require or result in construction of water facilities or expansion of existing facilities, construction of which could cause significant environmental effects.	None Required. However, as required as standard conditions of approval by the City, as feasible and applicable, the project sponsor shall implement the following water-efficient equipment and devices into building design and project plans, consistent with the Landscape Water Conservation section of the City of Oakland Municipal Code (Chapter 7, Article 10): low-, ultra-low, and dual flush flow toilets and showerheads; water efficient irrigation systems that include drip irrigation and efficient sprinkler heads; evapotranspiration (ET) irrigation controllers; drought-resistant and native plants for landscaping; and minimization of turf areas.	
M.2: The project's projected wastewater demand would not result in the City of Oakland exceeding its citywide projected base flow allocation for Subbasins 52-09 and 50-05; nor would the project require or result in construction of new wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	None Required.	
M.3: The project would not require or result in construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
M.4: The project would be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs, and would not require or result in construction of landfill facilities or expansion of existing facilities, construction of which could cause significant environmental effects. Additionally, the project would not impede the ability of the City to meet the waste diversion requirements of the California Integrated Waste Management Act or the Alameda County Waste Reduction and Recycling Initiative or cause the City to violate other applicable federal, state, and local statutes and regulations related to solid waste.	None Required. Standard Condition M.4: The project sponsor shall prepare, and subjected to review and approval by the City, implement a Construction and Demolition Debris Waste Reduction and Recycling Plan (WRRP) to ensure diversion of at least 50 percent of the construction and demolition debris from each stage of project implementation as well as throughout operations of the project.	
M.5: The project would not violate applicable federal, state and local statutes and regulations relating to energy standards; nor would the proposed project result in a determination by the energy provider which serves or may serve the project that it does not have adequate capacity to serve the project's projected demand in addition to the providers' existing commitments and require or result in construction of new energy facilities or expansion of existing facilities, construction of which could cause significant environmental effects.	None Required.	
M.6: The increased development resulting from the proposed project, in conjunction with population and density of other foreseeable development in the city, would not result in cumulative impacts on utilities and service systems.	None Required.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
<i>E. RECOMMENDED IMPROVEMENTS FOR CONSIDERATION DURING PROJECT REVIEW</i>		
<i>Not Required to Mitigate Significant Impacts</i>		
B.7: The project would increase the potential for conflicts among different traffic streams.	<i>Replacement Hospital and M/B Garage</i> • <i>Extend median on Main Hospital Entrance to prevent traffic exiting the M/B garage from turning left.</i> • <i>Convert perpendicular parking spaces on Main Hospital Entrance to parallel parking spaces.</i> • <i>Limit parking in the parking spaces on Main Hospital Entrance to 15 minutes.</i> • <i>Move entrance gates for the M/B Garage driveway on Broadway inside the garage to reduce potential for queuing on Broadway to the degree it does not interfere with internal garage circulation.</i> <i>West Broadway MSB and Garage</i> • <i>Move entrance gates for the West Broadway Garage on Broadway inside the garage to reduce potential for queuing on Broadway.</i> • <i>The 38th Street driveway for West Broadway Garage shall be limited to employees only.</i> • <i>The West Broadway Lot at Manila Avenue shall have reserved spaces for employees only.</i> <i>To Reduce Potential Cut-through Traffic on Shafter Avenue and Manila Avenue:</i> • <i>Extend the existing median on MacArthur Boulevard at the intersections with Shafter Avenue and Manila Avenue to eliminate left turns to and from these roadways (See Impact B.3 and Mitigation Measures B.3b and B.3c).</i> • <i>Monitor traffic volumes and speeds on Manila Avenue and Shafter Avenue between MacArthur Boulevard and 38th Street after the West Broadway MSB and Garage are in full operation. In consultation with local residents, and in</i>	<i>See also Mitigation B.7 that reduces Impact B.7 to Less than Significant (Section B)</i>

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
	<i>accordance with all legal requirements, appropriate traffic calming measures, such as speed humps, or roadway closures, should be considered if and when excessive traffic volumes or speeding are observed.</i> <i>Install signage on major roadways in the area to direct patients/visitors to the appropriate Kaiser parking facilities.</i> <i>To Reduce Potential Cut-through Traffic on Richmond Boulevard:</i> <i>Extend the existing median on MacArthur Boulevard at this intersection to eliminate left turns from westbound MacArthur Boulevard to Richmond Boulevard to prohibit hospital traffic from using residential streets in this neighborhood. It is unlikely that northbound traffic from Piedmont Avenue would use Richmond Boulevard to access eastbound MacArthur Boulevard because there would be no time savings because Glen Echo Creek in the median of Richmond Boulevard would prevent vehicles traveling east from Westall Avenue and Croxton Avenue from turning left to northbound Richmond Boulevard.</i> <i><u>Monitor traffic volumes and speeds on Richmond Boulevard and other streets in the residential area east of Piedmont Avenue and south of MacArthur Boulevard after each phase of the project is full operations. In consultation with local residents, and in accordance with all legal requirements, appropriate traffic calming measures, such as replacement of existing speed bumps with speed humps, full or partial roadway closures, should be considered if and when excessive cut-through traffic volumes, vehicles traveling the wrong way on one-way street or speeding are observed.</u></i> <i>To Reduce Cut-through traffic on the Residential Portions of Howe Street (just north of the existing Kaiser Hospital)</i> <i>Monitor traffic volumes and speeds on Howe Street just north of the Kaiser Medical Center, after each phase of the project is in full operations. In consultation with local residents, and in accordance with all legal requirements, appropriate traffic calming measures, such as speed humps, or roadway closures, should be considered if and when excessive traffic volumes or speeding are observed.</i>	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
<i>Parking Effects on Surrounding Areas</i>	None Required. The following measures, subject to review and approval by the City, would help ensure that the provision of parking spaces in conjunction with measures to lessen parking demand would result in minimal adverse effects to project occupants and visitors, and surrounding neighborhoods (where there are no restrictions on on-street parking and on-street parking is free), and that any secondary effects (such as on air quality due to drivers searching for parking spaces) would be minimized: • In the interim Phase 1 period, before completion of the new garage in Phase 2, provide valet parking in the existing Howe and West Broadway Garages for employees. • Expand the existing Transportation Demand Management (TDM) program to encourage more use of alternative transportation modes and reduce parking demand. • Implement an automated parking space counting system into the overall design and construction of each of the major parking facilities, including the existing Howe Street Garage. Electronic changeable message signs shall be installed at parking entrances and at the major roadways providing access in the area to inform drivers of the location and number of available parking spaces. This would maximize utilization of all parking facilities, and reduce excessive circulation and driver frustration. • Designate and clearly sign or delineate parking areas for either employees or patients and visitors. In the multistory garages (Howe, West Broadway, and M/B Garages), patients and visitors should be assigned to the lower levels and employees to the upper levels. Since employees generally have lower turn-over rates, assigning them to the upper levels reduces overall vehicle circulation in the garages. • Provide separate entrances and exits for employees and patients/visitors where possible. • Regularly monitor parking occupancy for employees and patients/visitors and modify parking designations if necessary.	

TABLE II-1 (CONT.)
SUMMARY OF IMPACTS AND MITIGATION MEASURES FOR THE KAISER PERMANENTE OMC PROJECT

Environmental Impact	Mitigation Measures or Standard Conditions	Level of Significance after Mitigation or Standard Condition
<i>Permanent Satellite Parking Scenario (Alternatives Considered Infeasible)</i> No feasible, permanent site has been identified for feasible satellite parking locations for Kaiser. It is possible that potential sites could become available to Kaiser during the 14-year development period of the project.	• Provide preferential parking for employee carpools at the Howe, West Broadway and M/B Garages, and shall regularly monitor carpool parking demand and supply and modify the carpool parking supply if necessary. • Work with the City of Oakland to implement a Residential Parking Permit (RPP) program in the residential neighborhoods west of Broadway, north of MacArthur Boulevard, east of Telegraph Avenue and south of 42nd Street. The RPP restrict on-street parking by non-residents to less than two hours during the weekdays. The RPPs shall be implemented before the completion of the West Broadway MSB. • <u>Kaiser Permanente shall fund Residential Parking Permit (RPP) programs in the residential neighborhoods surrounding the existing Medical Center east of Broadway and north of MacArthur Boulevard and the Richmond neighborhood south of MacArthur Boulevard. The RPP restricts on-street parking by non residents to less than two hours during the weekdays. Kaiser funding is to be used for establishment efforts needed to create or expand the RPP area, as well as increased enforcement and maintenance of the program.</u> • Pursue the extension of the current lease at the Caltrans Parking Lot located under the I-580 freeway.	If possible satellite parking locations suitable for Kaiser are identified during development of the project, the project sponsor should conduct additional detailed analysis for the City to consider and evaluate at that time.

MacArthur Transit Village Project



Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
A. LAND USE			
<i>No significant land use impacts would occur.</i>			
B. PUBLIC POLICY			
<i>No significant public policy impacts would occur.</i>			
C. TRANSPORTATION, CIRCULATION AND PARKING			
<i>No significant construction period transportation-related impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA TRANS-1: Prior to the issuance of each building permit, the project sponsor and construction contractor shall meet with the Transportation Services Division and other appropriate City of Oakland agencies to determine traffic management strategies to reduce, to the maximum extent feasible, traffic congestion and the effects of parking demand by construction workers during construction of this project and other nearby projects that could be simultaneously under construction. The project sponsor shall develop a construction management plan for review and approval by the City Transportation Services Division. The plan shall also be submitted to BART and AC Transit for review and comment. The plan shall include at least the following items and requirements: • A set of comprehensive traffic control measures, including scheduling of major truck trips and deliveries to avoid peak traffic hours, detour signs if required, lane closure procedures, signs, cones for drivers, and designated construction access routes. • Notification procedures for adjacent property owners and public safety personnel regarding when major deliveries, detours, and lane closures will occur. • Location of construction staging areas for materials, equipment, and vehicles (must be located on the project site). • Identification of haul routes for movement of construction vehicles that would minimize impacts on vehicular and pedestrian traffic, circulation and safety; and provision for monitoring surface streets used for haul routes so that any damage and debris attributable to the haul trucks can be identified and corrected by the project applicant.	LTS

LTS = Less Than Significant , SU = Significant and Unavoidable, S = Significant

Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
COA TRANS-1 <i>continued</i>		- Temporary construction fences to contain debris and material and to secure the site. - Provisions for removal of trash generated by project construction activity. - A process for responding to, and tracking, complaints pertaining to construction activity, including identification of an on-site complaint manager. - Subject to City review and approval, prior to start of construction, a construction worker transportation demand management (TDM) program shall be implemented to encourage construction workers to carpool or use alternative transportation modes in order to reduce the overall number of vehicle trips associated with construction workers. - Identification and maintenance of vehicular, bicycle, pedestrian and transit access to and from the BART Station. It is anticipated that this Construction Traffic Management Plan would be developed in the context of a larger Construction Management Plan, which would address other issues such as hours of construction on-site, limitations on noise and dust emissions, and other applicable items.	
<u>TRANS-1</u> : The addition of project traffic would cause a significant impact at the Telegraph Avenue/51 st Street intersection (#3) under Cumulative Year 2015 Baseline Plus Project conditions. The project would contribute to LOS E operations during the PM peak hour and increase critical movement average delay by more than 6 seconds.	S	<u>TRANS-1</u> : Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Telegraph Avenue/51 st Street intersection and coordinate signal phasing and timing with the adjacent Telegraph Avenue/52 nd Street and Claremont Avenue intersection and other intersections in the same coordination group. To implement this measure, the project sponsor shall submit a signal optimization plan to City of Oakland's Transportation Services Division for review and approval. The plan shall consist of signal timing parameters for the signals in the coordination group. The project sponsor shall fund the cost of preparing and implementing the plan.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-1 <i>continued</i>		As shown in Table IV.C-15, after implementation of this measure, the intersection would continue to operate at LOS E during the PM peak hour. However, the increase in average delay for the critical movements would be reduced to less than the 6-second threshold of significance. No significant effects would result from implementation of this measure.	
TRANS-2: The addition of project traffic would cause a significant impact at the Market Street/MacArthur Boulevard intersection (#16) under Cumulative Year 2015 Baseline Plus Project conditions. The project would degrade intersection operations from LOS D to LOS E during the PM peak hour.	S	TRANS-2: Change the signal cycle length to 90 seconds and optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Market Street/MacArthur Boulevard intersection. To implement this measure, the project sponsor shall submit a signal optimization plan to City of Oakland's Transportation Services Division for review and approval. The plan shall consist of signal timing parameters for the Market Street/MacArthur Boulevard intersection. The project sponsor shall fund the cost of preparing and implementing the plan. As shown in Table IV.C-15, after implementation of this measure, the intersection would operate at LOS C during both AM and PM peak hours. No significant effects would result from implementation of this measure.	LTS
TRANS-3: The addition of project traffic would cause a significant impact at the Telegraph Avenue/52 nd Street and Claremont Avenue intersection (#2) under Cumulative 2030 Baseline Plus Project conditions. The project would contribute to LOS F operations and increase intersection average delay by more than 2 seconds during the AM peak hour; would contribute to LOS E operations and increase critical movement average delay by more than 6 seconds during the PM peak hour.	S	TRANS-3: Implement the following measures: - Prohibit left-turns from northbound Telegraph Avenue into westbound 52nd Street during the peak commute times (i.e., 7:00 a.m. to 9:00 a.m. and 4:00 p.m. to 6:00 p.m.). Currently, a small volume of traffic uses this movement (about 10 peak hour vehicles), which can be diverted to 51st Street. Thus, the peak hour prohibition on left-turns would not result in excessive and circuitous diversions. - Change signal cycle length to 120 seconds and optimizing signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Telegraph Avenue/52nd Street and Claremont Avenue intersection; coordinate signal timing and phasing with the adjacent Telegraph Avenue/51st Street intersection and other intersections in the same coordination group.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-3 <i>continued</i>		To implement these measures, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: - Signing plans to prohibit left-turns from northbound Telegraph Avenue into westbound 52nd Street. - Signal timing plans for the signals in the coordination group. The project sponsor shall fund the cost of preparing and implementing these plans. As shown in Table IV.C-17, after implementation of this measure, the intersection would continue to operate at LOS F during the AM peak hour. However, the increase in intersection average delay would be reduced to less than the two-second threshold of significance. The intersection would operate at LOS C during the PM peak hour after implementation of this measure. The increase in signal cycle length may result in additional delay for pedestrians and bicycles. However, no significant effects would result from implementation of this measure.	
TRANS-4: The addition of project traffic would cause a significant impact at the Telegraph Avenue/51 st Street intersection (#3) under Cumulative Year 2030 Baseline Plus Project conditions. The project would contribute to LOS F operations during both AM and PM peak hours; would increase critical movement average delay by more than 4 seconds during the AM peak hour; and would increase intersection average delay by more than 2 seconds during the PM peak hour.	S	TRANS-4: Implement the following measures: Change signal cycle length to 120 seconds and optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Telegraph Avenue/51st Street intersection and coordinate signal phasing and timing with the adjacent Telegraph Avenue/52nd Street and Claremont Avenue intersection and other intersections in the same coordination group. To implement this measure, the project sponsor shall submit a signal optimization plan to City of Oakland's Transportation Services Division for review and approval. The plan shall consist of signal timing parameters for the signals in the coordination group. The project sponsor shall fund the cost of preparing and implementing the plan.	SU

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-4 <i>continued</i>		As shown in Table IV.C-17, after changing the signal cycle and turns, the intersection would continue to operate at LOS F during the PM peak hour, and the increase in average delay for the critical movements would continue to be more than the 4-second threshold of significance. Thus, this measure is not sufficient to mitigate the impact to a less-than-significant level. In addition, the increase in signal cycle length may result in additional delay for pedestrians and bicycles. To help further minimize impacts at this intersection, a Transportation Demand Management (TDM) program shall be implemented at the project site to encourage more residents and employees to shift from driving alone to other modes of travel. Potential TDM measures may include, but are not limited to, transit ticket subsidies, awareness programs, direct transit sales, providing a guaranteed ride home program, and parking management strategies. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to meet its goals. The project applicant shall submit the TDM program to the City for its review and approval. The plan shall also be submitted to BART for review and comment. The project applicant shall also be responsible for funding and implementing the TDM program. The components of the proposed TDM program have not been finalized. Additionally, it is difficult to accurately predict a TDM program's effectiveness and to quantify the effects on reducing project trip generation. To present a conservative analysis, this study assumes that the intersection would continue to operate at LOS F with the implementation of this mitigation measure. Thus, these measures will partially mitigate the impact, but are not sufficient to mitigate the impact to a less-than-significant level.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-5: The addition of project traffic would cause a significant impact at the West Street/40 th Street intersection (#8) under Cumulative Year 2030 Baseline Plus Project conditions. The project would degrade intersection operations from LOS D to LOS E in the PM peak hour.	S	TRANS-5: Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the West Street/40th Street intersection. To implement this measure, the project sponsor shall submit a signal optimization plan to City of Oakland's Transportation Services Division for review and approval. The plan shall consist of signal timing parameters for the West Street/40th Street intersection. The project sponsor shall fund the cost of preparing and implementing the plan. As shown in Table IV.C-17, after implementation of this measure, the intersection would operate at LOS A during the PM peak hour. No significant effects would result from implementation of this measure.	LTS
TRANS-6: The addition of project traffic would cause a significant impact at the Telegraph Avenue/40 th Street intersection (#13) under Cumulative Year 2030 Baseline Plus Project conditions. During the PM peak hour, the project would contribute to LOS F operations and would increase critical movement average delay by more than 4 seconds.	S	TRANS-6: Implement the following measures: • Provide protected/permitted left-turn phasing on eastbound and westbound 40th Street approaches. • Change signal cycle length to 105 seconds during the PM peak hour, and optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Telegraph Avenue/40th Street intersection. The change in signal cycle length may also require coordination with other intersections in the same coordination group. To implement these measures, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • Plans, Specifications, and Estimates (PS&E) to modify intersection to provide left-turn phasing on eastbound and westbound 40th Street approaches. • Signal timing plans for the signals in the coordination group. The project sponsor shall fund the cost of preparing and implementing these plans.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-6 <i>continued</i>		As shown in Table IV.C-17, after implementation of these measures, the intersection would operate at LOS D during both AM and PM peak hours. The increase in signal cycle length may result in additional delay for pedestrians and bicycles. However, no significant effects would result from implementation of this measure.	
TRANS-7: The addition of project traffic would cause a significant impact at the Market Street/MacArthur Boulevard intersection (#16) under Cumulative Year 2030 Baseline Plus Project conditions. The project would contribute to LOS F operations, and would increase intersection average delay by more than 2 seconds, during both AM and PM peak hours.	S	TRANS-7: The impact shall be mitigated by the following: • Stripe a left-turn lane on northbound Market Street at MacArthur Boulevard. The left-turn lane can be accommodated within the existing right-of-way, but may result in loss of a few on-street parking and relocation of an AC Transit bus stop on northbound Market Street. • Change signal cycle length to 110 seconds during the AM peak hour and 90 seconds during the PM peak hour, and optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Market Street/MacArthur Boulevard intersection. To implement these measures, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • Plans, Specifications, and Estimates (PS&E) to stripe a left-turn lane on northbound Market Street at MacArthur Boulevard. • Signal timing plans for the Market Street/MacArthur Boulevard intersection. The project sponsor shall fund the cost of preparing and implementing these plans. As shown in Table IV.C-17, after implementation of these measures, the intersection would operate at LOS C during both AM and PM peak hours. The increase in signal cycle length may result in additional delay for pedestrians and bicycles. However, no significant effects would result from implementation of this measure.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-8: The addition of project traffic would cause a significant impact at the Telegraph Avenue/MacArthur Boulevard intersection (#20) under Cumulative Year 2030 Baseline Plus Project conditions. The project would degrade intersection operations from LOS D to LOS E in the AM peak hour.	S	TRANS-8: Implement the following measures: • Provide protected/permitted left-turn phasing on northbound and southbound Telegraph Avenue approaches. • Change signal cycle length to 120 seconds and optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) at the Telegraph Avenue/MacArthur Boulevard intersection. Signal phasing and timing shall also be coordinated with other intersections in the same coordination group. To implement this measure, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval: • Plans, Specifications, and Estimates (PS&E) to modify intersection to provide left-turn phasing on northbound and southbound Telegraph Avenue approaches. • Signal timing parameters for the signals in the coordination group. The project sponsor shall fund the cost of preparing and implementing the plan. As shown in Table IV.C-17, after implementation of this measure, the intersection would operate at LOS D during the AM peak hour and LOS E during the PM peak hour. The increase in signal cycle length may result in additional delay for pedestrians and bicycles. No significant effects would result from implementation of this measure.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
TRANS-9: The addition of project traffic would cause a significant impact at the Broadway/MacArthur Boulevard intersection (#22) under Cumulative Year 2030 Baseline Plus Project conditions. The project would contribute to LOS F operations and would increase intersection average delay by more than 2 seconds during the AM peak hour.	S	TRANS-9: Implement the following measures: To help further minimize impacts at this intersection, a Transportation Demand Management (TDM) program shall be implemented at the project site to encourage more residents and employees to shift from driving alone to other modes of travel. Potential TDM measures may include, but are not limited to, transit ticket subsidies, awareness programs, direct transit sales, providing a guaranteed ride home program, and parking management strategies. The effectiveness of the TDM program shall be regularly monitored, and if necessary adjusted to meet its goal. The project applicant shall submit the TDM program to the City for its review and approval. The plan shall also be submitted to BART for review and comment. The project applicant shall also be responsible for funding and implementing the TDM program. The components of the proposed TDM program have not been finalized. Additionally, it is difficult to accurately predict a TDM program's effectiveness and to quantify the effects on reducing project trip generation. To present a conservative analysis, this study assumes that the intersection would continue to operate at LOS F with the implementation of this mitigation measure. Thus, these measures will partially mitigate the impact, but are not sufficient to mitigate the impact to a less-than-significant level.	SU

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
D. AIR QUALITY			
<i>No significant construction-related air quality impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA AIR-1: Dust Control. <i>Prior to issuance of a demolition, grading, or building permit.</i> During construction, the project applicant shall require the construction contractor to implement the following measures required as part of BAAQMD basic and enhanced dust control procedures required for construction sites. These include: BASIC (Applies to ALL construction sites) a) Water all active construction areas at least twice daily. Watering should be sufficient to prevent airborne dust from leaving the site. Increased watering frequency may be necessary whenever wind speeds exceed 15 miles per hour. Reclaimed water should be used whenever possible. b) Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer). c) Pave, apply water three times daily, or apply (non-toxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites. d) Sweep daily (with water sweepers using reclaimed water if possible) all paved access roads, parking areas and staging areas at construction sites. e) Sweep streets (with water sweepers using reclaimed water if possible) at the end of each day if visible soil material is carried onto adjacent paved roads. f) Limit the amount of the disturbed area at any one time, where feasible. g) Suspend excavation and grading activity when winds (instantaneous gusts) exceed 25 mph.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Air Quality <i>continued</i>		h) Pave all roadways, driveways, sidewalks, etc. as soon as feasible. In addition, building pads should be laid as soon as possible after grading unless seeding or soil binders are used. i) Replant vegetation in disturbed areas as quickly as feasible. j) Enclose, cover, water twice daily or apply (non-toxic) soil stabilizers to exposed stockpiles (dirt, sand, etc.). k) Limit traffic speeds on unpaved roads to 15 miles per hour. l) Clean off the tires or tracks of all trucks and equipment leaving any unpaved construction areas.	
		ENHANCED (All "Basic" Controls listed above plus the following if the construction site is greater than 4 acres) a) All "Basic" controls listed above, plus: b) Install sandbags or other erosion control measures to prevent silt runoff to public roadways. c) Hydroseed or apply (non-toxic) soil stabilizers to inactive construction areas (previously graded areas inactive for one month or more). d) Designate a person or persons to monitor the dust control program and to order increased watering, as necessary, to prevent transport of dust offsite. Their duties shall include holidays and weekend periods when work may not be in progress. The name and telephone number of such person shall be provided to the BAAQMD prior to the start of construction as well as posted on-site over the duration of construction. e) Install appropriate wind breaks at the construction site to minimize wind blown dust.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Air Quality <i>continued</i>		COA AIR-2: Construction Emissions. <i>Prior to issuance of a demolition, grading, or building permit.</i> To minimize construction equipment emissions during construction, the project applicant shall require the construction contractor to: a) Demonstrate compliance with BAAQMD Regulation 2, Rule 1 (General Requirements) for all portable construction equipment subject to that rule. BAAQMD Regulation 2, Rule 1, provides the issuance of authorities to construct and permits to operate certain types of portable equipment used for construction purposes (e.g., gasoline or diesel-powered engines used in conjunction with power generation, pumps, compressors, and cranes) unless such equipment complies with all applicable requirements of the "CAPCOA" Portable Equipment Registration Rule" or with all applicable requirements of the Statewide Portable Equipment Registration Program. This exemption is provided in BAAQMD Rule 2-1-105. b) Perform low- NOx tune-ups on all diesel-powered construction equipment greater than 50 horsepower (no more than 30 days prior to the start of use of that equipment). Periodic tune-ups (every 90 days) shall be performed for such equipment used continuously during the construction period.	
E. NOISE AND VIBRATION			
<i>No significant construction-related noise and vibration impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA NOISE-1: Days/Hours of Construction Operation. <i>Ongoing throughout demolition, grading, and/or construction.</i> The project applicant shall require construction contractors to limit standard construction activities as follows: a) Construction activities are limited to between 7:00 a.m. and 7:00 p.m. Monday through Friday, except that pile driving and/or other extreme noise generating activities greater than 90 dBA limited to between 8:00 a.m. and 4:00 p.m. Monday through Friday.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Noise & Vibration <i>continued</i>		b) Any construction activity proposed to occur outside of the standard hours of 7:00 a.m. to 7:00 p.m. Monday through Friday for special activities (such as concrete pouring which may require more continuous amounts of time) shall be evaluated on a case-by-case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened and such construction activities shall only be allowed with the prior written authorization of the Building Services Division. c) Construction activity shall not occur on Saturdays, with the following possible exceptions: • Prior to the building being enclosed, requests for Saturday construction for special activities (such as concrete pouring which may require more continuous amounts of time), shall be evaluated on a case-by-case basis, with criteria including the proximity of residential uses and a consideration of resident's preferences for whether the activity is acceptable if the overall duration of construction is shortened. Such construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division. • After the building is enclosed, requests for Saturday construction activities shall only be allowed on Saturdays with the prior written authorization of the Building Services Division, and only then within the interior of the building with the doors and windows closed. d) No extreme noise generating activities (greater than 90 dBA) shall be allowed on Saturdays, with no exceptions. e) No construction activity shall take place on Sundays or Federal holidays. f) Construction activities include but are not limited to: truck idling, moving equipment (including trucks, elevators, etc.) or materials, deliveries, and construction meetings held on-site in a non-enclosed area.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Noise & Vibration <i>continued</i>		COA NOISE-2: Noise Control. <i>Ongoing throughout demolition, grading, and/or construction.</i> To reduce noise impacts due to construction, the project applicant shall require construction contractors to implement a site-specific noise reduction program, subject to city review and approval, which includes the following measures: a) Equipment and trucks used for project construction shall utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields or shrouds, wherever feasible). b) Except as provided herein, impact tools (e.g., jack hammers, pavement breakers, and rock drills) used for project construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10 dBA. External jackets on the tools themselves shall be used if such jackets are commercially available, and this could achieve a reduction of 5 dBA. Quieter procedures shall be used, such as drills rather than impact equipment, whenever such procedures are available and consistent with construction procedures. c) Stationary noise sources shall be located as far from adjacent receptors as possible, and they shall be muffled and enclosed within temporary sheds, incorporate insulation barriers, or use other measures as determined by the City to provide equivalent noise reduction d) The noisiest phases of construction shall be limited to less than 10 days at a time. Exceptions may be allowed if the City determines an extension is necessary and all available noise reduction controls are implemented.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Noise & Vibration <i>continued</i>		COA NOISE-3: Noise Complaint Procedures. <i>Ongoing throughout demolition, grading, and/or construction.</i> Prior to the issuance of each building permit, along with the submission of construction documents, the project applicant shall submit to the City Building Services Division a list of measures to respond to and track complaints pertaining to construction noise. These measures shall include: a) A procedure and phone numbers for notifying the City Building Services Division staff and Oakland Police Department; (during regular construction hours and off-hours); b) A sign posted on-site pertaining with permitted construction days and hours and complaint procedures and who to notify in the event of a problem. The sign shall also include a listing of both the City and construction contractor's telephone numbers (during regular construction hours and off-hours); c) The designation of an on-site construction complaint and enforcement manager for the project; d) Notification of neighbors and occupants within 300 feet of the project construction area at least 30 days in advance of extreme noise generating activities about the estimated duration of the activity; and e) A preconstruction meeting shall be held with the job inspectors and the general contractor/on-site project manager to confirm that noise measures and practices (including construction hours, neighborhood notification, posted signs, etc.) are completed.	LTS
		COA NOISE-4: Interior Noise. <i>Prior to issuance of a building permit.</i> If necessary to comply with the interior noise requirements of the City of Oakland's General Plan Noise Element and achieve an acceptable interior noise level, noise reduction in the form of sound-rated assemblies (i.e., windows, exterior doors, and walls) shall be incorporated into project building design, based upon recommendations of a qualified acoustical engineer. Final recommendations for sound-rated assemblies will depend on the specific building designs and layout of buildings on the site and shall be determined during the design phase; however, the following sound-rated assembly recommendations, based on	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Noise & Vibration <i>continued</i>		the conceptual project layout and design (described in Chapter III, Project Description) should be included in the final study and will be included in the Standard Condition of Approval: An alternate form of ventilation, such as air conditioning systems, shall be included in the design for all units located within 659 feet of the centerline of SR-24, or within 153 feet of the centerline of 40th Street, or within 166 feet of the centerline of MacArthur Boulevard to ensure that windows can remain closed for prolonged periods of time to meet the interior noise standard and Uniform Building Code Requirements. All residential building façades directly exposed to and within 240 feet of the centerline of SR-24 must be constructed to meet the interior DNL 45 dB requirement; this likely could be achieved with an overall STC-30 rating with windows having a minimum STC-34 rating. This could be achieved with a typical 1-inch insulated glazing assembly, possibly with one light being laminated (or other appropriate example assembly). Quality control must be exercised in construction to ensure all air-gaps and penetrations of the building shell are controlled and sealed.	
		COA NOISE-5: Pile Driving and Other Extreme Noise Generators. <i>Ongoing throughout demolition, grading, and/or construction.</i> To further reduce potential pier drilling, pile driving and/or other extreme noise generating construction impacts greater than 90 dBA, a set of site-specific noise attenuation measures shall be completed under the supervision of a qualified acoustical consultant. Prior to commencing construction, a plan for such measures shall be submitted for review and approval by the City to ensure that maximum feasible noise attenuation will be achieved. This plan shall be based on the final design of the project. A third-party peer review, paid for by the project applicant, may be required to assist the City in evaluating the feasibility and effectiveness of the noise reduction plan submitted by the project applicant. The criterion for approving the plan shall be a determination that maximum feasible noise attenuation will be achieved. A special inspection deposit is required to ensure compliance with the noise reduction plan. The amount of the deposit shall be	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Noise & Vibration <i>continued</i>		determined by the Building Official and the deposit shall be submitted by the project applicant concurrent with submittal of the noise reduction plan. The noise reduction plan shall include, but not be limited to, an evaluation of implementing the following measures. These attenuation measures shall include as many of the following control strategies as applicable to the site and construction activity: a) Erect temporary plywood noise barriers around the construction site, particularly along on sites adjacent to residential buildings; b) Implement "quiet" pile driving technology (such as pre-drilling of piles, the use of more than one pile driver to shorten the total pile driving duration), where feasible, in consideration of geotechnical and structural requirements and conditions; c) Utilize noise control blankets on the building structure as the building is erected to reduce noise emission from the site; d) Evaluate the feasibility of noise control at the receivers by temporarily improving the noise reduction capability of adjacent buildings by the use of sound blankets for example, and implement such measure if such measures are feasible and would noticeably reduce noise impacts; and e) Monitor the effectiveness of noise attenuation measures by taking noise measurements.	LTS
		COA NOISE-6: Vibrations Adjacent Historic Structures. <i>Prior to issuance of a demolition, grading or building permit.</i> The project applicant shall retain a structural engineer or other appropriate professional to determine threshold levels of vibration and cracking that could damage buildings adjacent to the project site and design means and methods of construction that shall be utilized to not exceed the thresholds.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
F. HYDROLOGY AND WATER QUALITY			
<i>No significant hydrology and water quality impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA HYDRO-1 (same as COA GEO-1): Erosion and Sedimentation Control Plan. Prior to any grading activities. a) The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment. <i>Ongoing throughout grading and construction activities.</i> b) The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Hydrology & Water Quality <i>continued</i>		COA HYDRO-2: Stormwater Pollution Prevention Plan (SWPPP). <i>Prior to and ongoing throughout demolition, grading, and/or construction activities.</i> The project applicant must obtain coverage under the General Construction Activity Storm Water Permit (General Construction Permit) issued by the State Water Resources Control Board (SWRCB). The project applicant must file a notice of intent (NOI) with the SWRCB. The project applicant will be required to prepare a stormwater pollution prevention plan (SWPPP). At a minimum, the SWPPP shall include a description of construction materials, practices, and equipment storage and maintenance; a list of pollutants likely to contact stormwater; site-specific erosion and sedimentation control practices; a list of provisions to eliminate or reduce discharge of materials to stormwater; Best Management Practices (BMPs), and an inspection and monitoring program. Prior to the issuance of any construction-related permits, the project applicant shall submit a copy of the SWPPP and evidence of approval of the SWPPP by the SWRCB to the Building Services Division. Implementation of the SWPPP shall start with the commencement of construction and continue through the completion of the project. After construction is completed, the project applicant shall submit a notice of termination to the SWRCB.	LTS
		COA HYDRO-3: Post-Construction Stormwater Pollution Management Plan. <i>Prior to issuance of building permit (or other construction-related permit.</i> The applicant shall comply with the requirements of Provision C.3 of the National Pollutant Discharge Elimination System (NPDES) permit issued to the Alameda Countywide Clean Water Program. The applicant shall submit with the application for a building permit (or other construction-related permit) a completed Stormwater Supplemental Form for the Building Services Division. The project drawings submitted for the building permit (or other construction-related permit) shall contain a stormwater pollution management plan, for review and approval by the City, to limit the discharge of pollutants in stormwater after construction of the project to the maximum extent practicable.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Hydrology & Water Quality <i>continued</i>		a) The post-construction stormwater pollution management plan shall include and identify the following: • All proposed impervious surface on the site; • Anticipated directional flows of on-site stormwater runoff; and • Site design measures to reduce the amount of impervious surface area and directly connected impervious surfaces; and • Source control measures to limit the potential for stormwater pollution; and • Stormwater treatment measures to remove pollutants from stormwater runoff. b) The following additional information shall be submitted with the post-construction stormwater pollution management plan: • Detailed hydraulic sizing calculations for each stormwater treatment measure proposed; and • Pollutant removal information demonstrating that any proposed manufactured/mechanical (i.e., non-landscape-based) stormwater treatment measure, when not used in combination with a landscape-based treatment measure, is capable of removing the range of pollutants typically removed by landscape-based treatment measures. All proposed stormwater treatment measures shall incorporate appropriate planting materials for stormwater treatment (for landscape-based treatment measures) and shall be designed with considerations for vector/mosquito control. Proposed planting materials for all proposed landscape-based stormwater treatment measures shall be included on the landscape and irrigation plan for the project. The applicant is not required to include on-site stormwater treatment measures in the post-construction stormwater pollution management plan if he or she secures approval from Planning and Zoning of a proposal that demonstrates compliance with the requirements of the City's Alternative Compliance Program.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Hydrology & Water Quality <i>continued</i>		<i>Prior to final permit inspection.</i> The applicant shall implement the approved stormwater pollution management plan.	
		COA HYDRO-4: Maintenance Agreement for Stormwater Treatment Measures. <i>Prior to final zoning inspection.</i> For projects incorporating stormwater treatment measures, the applicant shall enter into the “Standard City of Oakland Stormwater Treatment Measures Maintenance Agreement,” in accordance with Provision C.3.e of the NPDES permit, which provides, in part, for the following: • The applicant accepting responsibility for the adequate installation/ construction, operation, maintenance, inspection, and reporting of any on-site stormwater treatment measures being incorporated into the project until the responsibility is legally transferred to another entity; and • Legal access to the on-site stormwater treatment measures for representatives of the City, the local vector control district, and staff of the Regional Water Quality Control Board, San Francisco Region, for the purpose of verifying the implementation, operation, and maintenance of the on-site stormwater treatment measures and to take corrective action if necessary. The agreement shall be recorded at the County Recorder’s Office at the applicant’s expense.	LTS
G. GEOLOGY, SOILS AND SEISMICITY			
<i>No significant geology, soils and seismicity impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA GEO-1 (same as COA HYDRO-1): Erosion and Sedimentation Control Plan. <i>Prior to any grading activities.</i> a) The project applicant shall obtain a grading permit if required by the Oakland Grading Regulations pursuant to Section 15.04.780 of the Oakland Municipal Code. The grading permit application shall include an erosion and sedimentation control plan. The erosion and sedimentation control plan shall include all necessary measures to be taken to prevent excessive stormwater runoff or carrying by stormwater runoff of solid materials on to lands of adjacent property owners, public streets, or to creeks as a result of conditions created by grading operations. The plan shall include, but not be limited to, such measures as short-term erosion control planting, waterproof	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Geology, Soils and Seismicity <i>continued</i>		slope covering, check dams, interceptor ditches, benches, storm drains, dissipation structures, diversion dikes, retarding berms and barriers, devices to trap, store and filter out sediment, and stormwater retention basins. Off-site work by the project applicant may be necessary. The project applicant shall obtain permission or easements necessary for off-site work. There shall be a clear notation that the plan is subject to changes as changing conditions occur. Calculations of anticipated stormwater runoff and sediment volumes shall be included, if required by the Director of Development or designee. The plan shall specify that, after construction is complete, the project applicant shall ensure that the storm drain system shall be inspected and that the project applicant shall clear the system of any debris or sediment. <i>Ongoing throughout grading and construction activities.</i> b) The project applicant shall implement the approved erosion and sedimentation plan. No grading shall occur during the wet weather season (October 15 through April 15) unless specifically authorized in writing by the Building Services Division.	
		COA GEO-2: Soils Report. <i>Required as part of the submittal of a Tentative Tract or Tentative Parcel Map.</i> A preliminary soils report for each construction site within the project area shall be required as part of this project. The soils reports shall be based, at least in part, on information obtained from on-site testing. Specifically the minimum contents of the report should include: <i>A. Logs of borings and/or profiles of test pits and trenches:</i> a) The minimum number of borings acceptable, when not used in combination with test pits or trenches, shall be two (2), when in the opinion of the Soils Engineer such borings shall be sufficient to establish a soils profile suitable for the design of all the footings, foundations, and retaining structures. b) The depth of each boring shall be sufficient to provide adequate design criteria for all proposed structures.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Geology, Soils and Seismicity <i>continued</i>		c) All boring logs shall be included in the soils report. <i>B. Test pits and trenches:</i> a) Test pits and trenches shall be of sufficient length and depth to establish a suitable soils profile for the design of all proposed structures. b) Soils profiles of all test pits and trenches shall be included in the soils report. <i>C. A plat shall be included which shows the relationship of all the borings, test pits, and trenches to the exterior boundary of the site. The plat shall also show the location of all proposed site improvements. All proposed improvements shall be labeled.</i> <i>D. Copies of all data generated by the field and/or laboratory testing to determine allowable soil bearing pressures, sheer strength, active and passive pressures, maximum allowable slopes where applicable and any other information which may be required for the proper design of foundations, retaining walls, and other structures to be erected subsequent to or concurrent with work done under the grading permit.</i> <i>E. Soils Report.</i> A written report shall be submitted which shall but is not limited to the following: a. Site description. b. Local and site geology. c. Review of previous field and laboratory investigations for the site. d. Review of information on or in the vicinity of the site on file at the Information Counter, City of Oakland, Office of Planning and Building. e. Site stability shall be addressed with particular attention to existing conditions and proposed corrective attention to existing conditions and proposed corrective actions at locations where land stability problems exist. f. Conclusions and recommendations for foundations and retaining structures, resistance to lateral loading, slopes, and specifications, for fills, and pavement design as required.	

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Geology, Soils and Seismicity <i>continued</i>		g. Conclusions and recommendations for temporary and permanent erosion control and drainage. If not provided in a separate report they shall be appended to the required soils report. h. All other items which a Soils Engineer deems necessary. i. The signature and registration number of the Civil Engineer preparing the report. <i>F. The Director of Planning and Building may reject a report that she/he believes is not sufficient. The Director of Planning and Building may refuse to accept a soils report if the certification date of the responsible soils engineer on said document is more than three years old. In this instance , the Director may be require that the old soils report be recertified, that an addendum to the soils report be submitted, or that a new soils report be provided.</i>	
		COA GEO-3: Geotechnical Report. <i>Required as part of the submittal of a tentative Tract Map or tentative Parcel Map.</i> a) A site-specific, design level, Landslide or Liquefaction geotechnical investigation for each construction site within the project area shall be required as part if this project. Specifically: Each investigation shall include an analysis of expected ground motions at the site from identified faults. The analyses shall be accordance with applicable City ordinances and polices, and consistent with the most recent version of the California Building Code, which requires structural design that can accommodate ground accelerations expected from identified faults. The investigations shall determine final design parameters for the walls, foundations, foundation slabs, surrounding related improvements, and infrastructure (utilities, roadways, parking lots, and sidewalks). The investigations shall be reviewed and approved by a registered geotechnical engineer. All recommendations by the project engineer, geotechnical engineer, will be included in the final design, as approved by the City of Oakland.	LTS

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Geology, Soils and Seismicity <i>continued</i>		The geotechnical report shall include a map prepared by a land surveyor or civil engineer that shows all field work and location of the "No Build" zone. The map shall include a statement that the locations and limitations of the geologic features are accurate representations of said features as they exist on the ground, were placed on this map by the surveyor, the civil engineer or under their supervision, and are accurate to the best of their knowledge. Recommendations that are applicable to foundation design, earthwork, and site preparation that were prepared prior to or during the projects design phase, shall be incorporated in the project. A peer review is required for the Geotechnical Report. Personnel reviewing the geologic report shall approve the report, reject it, or withhold approval pending the submission by the applicant or subdivider of further geologic and engineering studies to more adequately define active fault traces. Final seismic considerations for the site shall be submitted to and approved by the City of Oakland Building Services Division prior to commencement of the project. b) Tentative Tract or Parcel Map approvals shall require, but not be limited to approval of the Geotechnical Report.	
H. PUBLIC HEALTH AND HAZARDS			
<i>No significant public health and hazards impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA HAZ-1: Hazards Best Management Practices. <i>Prior to issuance of a demolition, grading, or building permit.</i> The project applicant and construction contractor shall ensure that construction best management practices are implemented as part of construction to minimize the potential negative effects to groundwater and soils. These shall include the following: a) Follow manufacture's recommendations on use, storage, and disposal of chemical products used in construction; b) Avoid overtopping construction equipment fuel gas tanks; c) During routine maintenance of construction equipment, properly contain and remove grease and oils;	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Health & Hazards <i>continued</i>		d) Properly dispose of discarded containers of fuels and other chemicals. e) Ensure that construction would not have a significant impact on the environment or pose a substantial health risk to construction workers and the occupants of the proposed development. Soil sampling and chemical analyses of samples shall be performed to determine the extent of potential contamination beneath all UST's, elevator shafts, clarifiers, and subsurface hydraulic lifts when on-site demolition, or construction activities would potentially affect a particular development or building. f) If soil, groundwater or other environmental medium with suspected contamination is encountered unexpectedly during construction activities (e.g., identified by odor or visual staining, or if any underground storage tanks, abandoned drums or other hazardous materials or wastes are encountered), the applicant shall cease work in the vicinity of the suspect material, the area shall be secured as necessary, and the applicant shall take all appropriate measures to protect human health and the environment. Appropriate measures shall include notification of regulatory agency(ies) and implementation of the actions described in Standard Conditions of Approval (see COA HAZ-3 and HAZ-5 below) as necessary, to identify the nature and extent of contamination. Work shall not resume in the area(s) affected until the measures have been implemented under the oversight of the City or regulatory agency, as appropriate.	
		COA HAZ-2: Asbestos Removal in Structures. <i>Prior to issuance of a demolition permit.</i> If asbestos is found to be present in building materials to be removed, demolition and disposal is required to be conducted in accordance with procedures specified by Regulation 11, Rule 2 (Asbestos Demolition, Renovation and Manufacturing) of Bay Area Air Quality Management District (BAAQMD) regulations, as may be amended.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Health & Hazards <i>continued</i>		COA HAZ-3: Phase I and/or Phase II Reports. <i>Prior to issuance of a demolition, grading, or building permit.</i> Prior to issuance of demolition, grading, or building permits the project applicant shall submit to the Fire Prevention Bureau, Hazardous Materials Unit, a Phase I environmental site assessment report, and a Phase II report if warranted by the Phase I report for the project site. The reports shall make recommendations for remedial action, if appropriate, and should be signed by a Registered Environmental Assessor, Professional Geologist, or Professional Engineer.	LTS
		COA HAZ-4: Lead-Based Paint/Coatings, Asbestos, or PCB Occurrence Assessment. <i>Prior to issuance of a demolition, grading, or building permit.</i> The project applicant shall submit a comprehensive assessment report, signed by a qualified environmental professional, documenting the presence or lack thereof of asbestos-containing materials (ACM), lead-based paint, and any other building materials or stored materials classified as hazardous waste by State or federal law.	LTS
		COA HAZ-5: Environmental Site Assessment Reports Remediation. <i>Prior to issuance of a demolition, grading, or building permit.</i> If the environmental site assessment reports recommend remedial action, the project applicant shall: a) Consult with the appropriate local, State, and federal environmental regulatory agencies to ensure sufficient minimization of risk to human health and environmental resources, both during and after construction, posed by soil contamination, groundwater contamination, or other surface hazards including, but not limited to, underground storage tanks, fuel distribution lines, waste pits and sumps. b) Obtain and submit written evidence of approval for any remedial action if required by a local, State, or federal environmental regulatory agency.	LTS

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Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Health & Hazards <i>continued</i>		c) Submit a copy of all applicable documentation required by local, State, and federal environmental regulatory agencies, including but not limited to: permit applications, Phase I and II environmental site assessments, human health and ecological risk assessments, remedial action plans, risk management plans, soil management plans, and groundwater management plans. Prior to issuing any permits for construction at the project site, a Construction-Phase Risk Management Plan (RMP) shall be prepared for the project. The RMP shall include any health and safety measures determined necessary in the HHRA to protect the health of construction workers and nearby public during construction activities. These measures may potentially include dust control, air monitoring, and/or the use of personal protective equipment during construction activities. Action levels for contaminants of concern shall be established, with detailed descriptions of corrective actions to be taken in the event that the action levels are reached during monitoring. The RMP shall also include safety and emergency response measures included in the City's Standard Conditions HAZ-1 and HAZ-2. The RMP shall be reviewed and approved by the City of Oakland or designated regulatory oversight agency. d) Implementation of COA HAZ-5 would require a Remediation Action Plan (RAP). Required remedial actions shall include measures to ensure that any potential added health risks to future site users as a result of hazardous materials are reduced to a cumulative human health risk of less than 1×10^{-6} (one in one million) for carcinogens and a cumulative hazard index of 1.0 for non-carcinogens, or other site-specific goals established by regulatory oversight agencies. The potential risks to human health in excess of these goals may be reduced either by remediation of the contaminated soils or groundwater (e.g., excavation).	

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Health & Hazards <i>continued</i>		and off-site disposal of soils and treatment of groundwater) and/or implementation of institutional controls and engineering controls (IC/EC). IC/EC may include the use of hardscape (buildings and pavements), importation of clean soil in landscaped areas to eliminate exposure pathways, and deed restrictions. Specific remedies would depend on the findings of the site-specific HHRA and the requirements of the regulatory agencies	
		COA HAZ-6: Lead-Based Paint Remediation. <i>Prior to issuance of a demolition, grading, or building permit.</i> If lead-based paint is present, the project applicant shall submit specifications signed by a certified Lead Supervisor, Project Monitor, or Project Designer for the stabilization and/or removal of the identified lead paint in accordance with all applicable laws and regulations, including but not necessarily limited to: Cal/OSHA's Construction Lead Standard, 8 CCR1532.1 and DHS regulation 17 CCR Sections 35001 through 36100, as may be amended.	LTS
		COA HAZ-7: Asbestos Remediation. <i>Prior to issuance of a demolition, grading, or building permit.</i> If asbestos-containing materials (ACM) are present, the project applicant shall submit specifications signed by a certified asbestos consultant for the removal, encapsulation, or enclosure of the identified ACM in accordance with all applicable laws and regulations, including but not necessarily limited to: California Code of Regulations, Title 8; Business and Professions Code; Division 3; California Health & Safety Code 25915-25919.7; and Bay Area Air Quality Management District, Regulation 11, Rule 2, as may be amended.	LTS
		COA HAZ-8: Other Materials Classified as Hazardous Waste. <i>Prior to issuance of a demolition, grading, or building permit.</i> If other building materials or stored materials classified as hazardous waste by State or federal law is present, the project applicant shall submit written confirmation that all State and federal laws and regulations shall be followed when profiling, handling, treating, transporting and/or disposing of such materials.	LTS

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Health & Hazards <i>continued</i>		COA HAZ-9: Health and Safety Plan per Assessment. <i>Prior to issuance of a demolition, grading, or building permit.</i> If the required lead-based paint/coatings, asbestos, or PCB assessment finds presence of such materials, the project applicant shall create and implement a health and safety plan to protect workers from risks associated with hazardous materials during demolition, renovation of affected structures, and transport and disposal.	LTS
		COA HAZ-10: Fire Safety Phasing Plan. <i>Prior to issuance of a demolition, grading, or building permit and concurrent with any p-job submittal permit.</i> The project applicant shall submit a separate fire safety phasing plan to the Planning and Zoning Division and Fire Services Division for their review and approval. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. Fire Services Division may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase.	LTS
		COA HAZ-11: Fire Safety. <i>Prior to and ongoing throughout demolition, grading, and/or construction..</i> The project applicant and construction contractor will ensure that during project construction, all construction vehicles and equipment will be fitted with spark arrestors to minimize accidental ignition of dry construction debris and surrounding dry vegetation.	LTS
I. PUBLIC SERVICES			
<i>No significant public services impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA SERV-1: Conformance with other Requirements. <i>Prior to issuance of a demolition, grading, P-job, or other construction related permit.</i> a) The project applicant shall comply with all other applicable federal, state, regional and/or local codes, requirements, regulations, and guidelines, including but not limited to those imposed by the City's Building Services Division, the City's Fire Marshal, and the City's Public Works Agency.	LTS

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Public Services <i>continued</i>		b) The applicant shall submit approved building plans for project-specific needs related to fire protection to the Fire Services Division for review and approval, including, but not limited to automatic extinguishing systems, water supply improvements and hydrants, fire department access, and vegetation management for preventing fires and soil erosion.	
		COA SERV-2: Fire Safety Phasing Plan. <i>Prior to issuance of a demolition, grading, and/or construction and concurrent with any p-job submittal permit,</i> the project applicant shall submit a separate fire safety phasing plan to the Planning and Zoning Division and Fire Services Division for their review and approval. The fire safety plan shall include all of the fire safety features incorporated into the project and the schedule for implementation of the features. Fire Services Division may require changes to the plan or may reject the plan if it does not adequately address fire hazards associated with the project as a whole or the individual phase.	LTS
J. UTILITIES AND INFRASTRUCTURE			
<i>No significant utilities and infrastructure impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA UTIL-1: Waste Reduction and Recycling. The project applicant will submit a Construction & Demolition Waste Reduction and Recycling Plan (WRRP) and an Operational Diversion Plan (ODP) for review and approval by the Public Works Agency. <i>Prior to issuance of demolition, grading, or building permit.</i> Chapter 15.34 of the Oakland Municipal Code outlines requirements for reducing waste and optimizing construction and demolition (C&D) recycling. Affected projects include all new construction, renovations/ alterations/modifications with construction values of \$50,000 or more (except R-3), and all demolition (including soft demo).The WRRP must specify the methods by which the development will divert C&D debris waste generated by the proposed project from landfill disposal in accordance with current City requirements. Current standards, FAQs, and forms are available at www.oaklandpw.com/Page39.aspx or in the Green Building Resource Center. After approval of the plan, the project applicant shall implement the plan.	LTS

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Utilities & Infrastructure <i>continued</i>		<i>Ongoing.</i> The ODP will identify how the project complies with the Recycling Space Allocation Ordinance, (Chapter 17.118 of the Oakland Municipal Code), including capacity calculations, and specify the methods by which the development will meet the current diversion of solid waste generated by operation of the proposed project from landfill disposal in accordance with current City requirements. The proposed program shall be implemented and maintained for the duration of the proposed activity or facility. Changes to the plan may be re-submitted to the Environmental Services Division of the Public Works Agency for review and approval. Any incentive programs shall remain fully operational as long as residents and businesses exist at the project site.	
		COA UTIL-2: Storm Water and Sewer. <i>Prior to completing the final design for the project's sewer service.</i> Confirmation of the capacity of the City's surrounding stormwater and sanitary sewer system and state of repair shall be completed by a qualified civil engineer with funding from the project applicant. The project applicant shall be responsible for the necessary stormwater and sanitary sewer infrastructure improvements to accommodate the proposed project. In addition, the applicant shall be required to pay additional fees to improve sanitary sewer infrastructure if required by the City. Improvements to the existing sanitary sewer collection system shall specifically include, but are not limited to, mechanisms to control or minimize increases in infiltration/inflow to offset sanitary sewer increases associated with the proposed project. To the maximum extent practicable, the applicant will be required to implement Best Management Practices to reduce the peak stormwater runoff from the project site. Additionally, the project applicant shall be responsible for payment of the required installation or hook-up fees to the affected service providers.	LTS

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Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
K. CULTURAL AND PALEONTOLOGICAL RESOURCES			
<i>No significant cultural and paleontological resources impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA CULT-1: Archaeological Resources. <i>Ongoing throughout demolition, grading, and/or construction</i> Pursuant to CEQA Guidelines section 15064.5 (f), “provisions for historical or unique archaeological resources accidentally discovered during construction” should be instituted. Therefore, in the event that any prehistoric or historic subsurface cultural resources are discovered during ground disturbing activities, all work within 50 feet of the resources shall be halted and the project applicant and/or lead agency shall consult with a qualified archaeologist or paleontologist to assess the significance of the find. If any find is determined to be significant, representatives of the project proponent and/or lead agency and the qualified archaeologist would meet to determine the appropriate avoidance measures or other appropriate measure, with the ultimate determination to be made by the City of Oakland. All significant cultural materials recovered shall be subject to scientific analysis, professional museum curation, and a report prepared by the qualified archaeologist according to current professional standards. In considering any suggested measure proposed by the consulting archaeologist in order to mitigate impacts to historical resources or unique archaeological resources, the project applicant shall determine whether avoidance is necessary and feasible in light of factors such as the nature of the find, project design, costs, and other considerations. If avoidance is unnecessary or infeasible, other appropriate measures (e.g., data recovery) shall be instituted. Work may proceed on other parts of the project site while measure for historical resources or unique archaeological resources is carried out.	LTS

LTS = Less Than Significant , SU = Significant and Unavoidable, S = Significant

Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Cultural & Paleontological Resources <i>continued</i>		Should an archaeological artifact or feature be discovered on-site during project construction, all activities within a 50-foot radius of the find would be halted until the findings can be fully investigated by a qualified archaeologist to evaluate the find and assess the significance of the find according to the CEQA definition of a historical or unique archaeological resource. If the deposit is determined to be significant, the project applicant and the qualified archaeologist shall meet to determine the appropriate avoidance measures or other appropriate measure, subject to approval by the City of Oakland, which shall assure implementation of appropriate measure measures recommended by the archaeologist. Should archaeologically-significant materials be recovered, the qualified archaeologist shall recommend appropriate analysis and treatment, and would prepare a report on the findings for submittal to the Northwest Information Center.	
		COA CULT-2: Human Remains. <i>Ongoing throughout demolition, grading, and/or construction</i> In the event that human skeletal remains are uncovered at the project site during construction or ground-breaking activities, all work shall immediately halt and the Alameda County Coroner shall be contacted to evaluate the remains, and following the procedures and protocols pursuant to Section 15064.5 (e)(1) of the CEQA Guidelines. If the County Coroner determines that the remains are Native American, the City shall contact the California Native American Heritage Commission (NAHC), pursuant to subdivision (c) of Section 7050.5 of the Health and Safety Code, and all excavation and site preparation activities shall cease within a 50-foot radius of the find until appropriate arrangements are made. If the agencies determine that avoidance is not feasible, then an alternative plan shall be prepared with specific steps and timeframe required to resume construction activities. Monitoring, data recovery, determination of significance and avoidance measures (if applicable) shall be completed expeditiously.	LTS

LTS = Less Than Significant , SU = Significant and Unavoidable, S = Significant

Table II-1 Summary of Impacts, Conditions of Approval (COA) and Mitigation Measures (MM)

Impact	Level of Significance Without MM	Standard COA/MM	Level of Significance With MM/COA
Cultural & Paleontological Resources <i>continued</i>		COA CULT-3: Paleontological Resources. <i>Ongoing throughout demolition, grading, and/or construction</i> In the event of an unanticipated discovery of a paleontological resource during construction, excavations within 50 feet of the find shall be temporarily halted or diverted until the discovery is examined by a qualified paleontologist (per Society of Vertebrate Paleontology standards (SVP 1995,1996)). The qualified paleontologist shall document the discovery as needed, evaluate the potential resource, and assess the significance of the find. The paleontologist shall notify the appropriate agencies to determine procedures that would be followed before construction is allowed to resume at the location of the find. If the City determines that avoidance is not feasible, the paleontologist shall prepare an excavation plan for mitigating the effect of the project on the qualities that make the resource important, and such plan shall be implemented. The plan shall be submitted to the City for review and approval.	LTS
L. AESTHETIC RESOURCES			
<i>No significant lighting impacts would occur with implementation of the City Standard Conditions of Approval listed in this table.</i>		COA AES-1: Lighting Plan. <i>Prior to the issuance of an electrical or building permit</i> The proposed lighting fixtures shall be adequately shielded to a point below the light bulb and reflector and that prevent unnecessary glare onto adjacent properties. All lighting shall be architecturally integrated into the site.	LTS

LTS = Less Than Significant , SU = Significant and Unavoidable, S = Significant

Table II-2 Recommendations

TRANS-1: In consultation with City of Oakland staff and pending feasibility studies, the following improvements should be considered in and around the project area:

- Removal of the slip right-turns on northbound and southbound Telegraph Avenue at West MacArthur Boulevard.
- Providing street furniture and widening sidewalks where feasible in and around the project site.
- Providing pedestrian scale lighting on MacArthur Boulevard under the freeway overpass.
- Specific intersection improvements, such as advanced stop bars, median refuge islands, reduced corner curb radii, raised crosswalks, curb bulb-outs, audible pedestrian signals, and pedestrian and bicycle signal detection.

TRANS-2: Project applicant should pay to monitor traffic volumes and speeds on the following roadways before and after the completion of the proposed project:

- 37th Street between West MacArthur Boulevard and Telegraph Avenue;
- 38th Street between Telegraph Avenue and Webster Street; and
- Clarke Street and Ruby Street between 38th Street and 40th Street.

In consultation with local residents, and in accordance with all legal requirements, appropriate traffic calming measures, such as speed humps, or roadway closures, should be considered if and when excessive traffic volumes or speeding are observed. These potential improvements should be funded by the project applicant.

NOISE-1: All exterior active use areas, including playgrounds, patios, and decks, shall either be shielded by buildings to block any direct line of sight to 40th Street, MacArthur Boulevard, or SR-24; or be located a minimum of 87 feet from the centerline of 40th Street, a minimum of 94 feet from the centerline of MacArthur Boulevard, and a minimum of 372 feet from the centerline of SR-24.

APPENDIX I

Impacts and Mitigation Measures from the Oakland Housing Element EIR

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts		Mitigation Measures	Level of Significance With Mitigation
3.2 Transportation			
TR-1.	The LOS analysis (Appendix E-6) conducted for the 2007-2014 <i>Housing Element</i> identified several roadway segments where the LOS would drop from an acceptable LOS to an unacceptable LOS with the addition of project generated traffic. The LOS analysis also identified roadway segments that operate or would operate at an unacceptable LOS without project generated traffic, where the project would increase the V/C ratio by more than 0.03. Both of these conditions would be considered a significant impact. (SU)	Mitigation: An individual project's contribution to a significant roadway segment or intersection impact can only be determined on a site-by-site or case-by-case basis, which is outside the scope of this environmental analysis. In addition, the feasibility and effectiveness of mitigation measures can also only be determined on a site-by-site or case-by-case basis. Therefore, to mitigate potential traffic impacts for residential development under the <i>2007-2014 Housing Element</i>, the following mitigation measures are incorporated: TR-1.1 Traffic Impact Study (TIS) for Residential Projects. Prior to approval of a development application for a residential development, that may impact any roadway segment or intersection identified as having a significant impact, the project applicant shall retain a qualified traffic engineer to conduct a Traffic Impact Study (TIS), in accordance with then-current City policies and practices, to identify whether the project would contribute additional vehicular trips to a significant traffic impact on a study roadway segment(s) or intersection(s). The TIS shall be performed in accordance with then-current City policies and practices, and shall generally identify: 1. The number of trips generated by the proposed project; 2. The mode split for vehicular trips (i.e. the number of generated trips that would be made by private vehicle); 3. The distribution of vehicular trips on local roadways;	SU

⁷ The City already requires as a Standard Condition of Approval (SCA-25), the development of a Transportation Demand Management (TDM) Plan for developments with 50 residential units or greater.

LTS = Less than Significant SU = Significant and Unavoidable

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
	4. Based on a quantitative evaluation of the information provided under 1 through 3, above, the City shall make a significance determination of the traffic impact(s) to roadway(s) or intersection(s) resulting from the proposed project; and	
	5. If the level of impact identified under 4 would be significant, Mitigation Measure TR-1.2 shall be employed.	
TR-1.2	<i>Other Mitigations.</i> Depending on the results of the TIS conducted in TR-1.1, the project applicant's traffic engineer shall evaluate the feasibility of the following broad measures at the intersections identified in TR-1.1 above, and implement those measures determined feasible by the City:⁷ • Install new traffic signals and other roadway improvements that support not only vehicle travel, but all other modes safely to and through the intersection, • Modify signal operation or phasing, • Change lane assignment, • Install bike and pedestrian facilities, and/or • Optimize signal timing (i.e., adjust the allocation of green time for each intersection approach) for the peak hours.	
	To implement those measures determined feasible by the City, the project sponsor shall submit the following to City of Oakland's Transportation Services Division for review and approval:	

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SU = Significant and Unavoidable

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
	Plans, Specifications, and Estimates (PS&E) to modify the intersection. All elements shall be designed to City standards in effect at the time of construction and all new or upgraded signals should include these enhancements. All other facilities supporting vehicle travel and alternative modes through the intersection should be brought up to both City standards and ADA standards (according to Federal and State Access Board guidelines) at the time of construction.	
	Current City Standards call for the elements listed below: 2070L Type Controller w/ Cabinet Assembly and License seat, - GPS communication (clock), - Accessible pedestrian signals (audible and tactile), and crosswalks according to Federal and State Access Board guidelines, - Countdown Pedestrian Head Module Switch out, - City Standard ADA wheelchair ramps, - Video Detection on Existing (or new, if required) Mast Arm Poles, full actuation (where applicable), - Polaris Push Buttons (full actuation), - Bicycle detection (full actuation), - Pull Boxes, - Signal interconnect and communication w/ trenching (where applicable), or through (E) conduit (where applicable)- 600 feet minimum, - Conduit replacement contingency, - Fiber Switch, - PTZ Camera (where applicable), and	
	<i>LTS = Less than Significant</i> <i>SU = Significant and Unavoidable</i>	

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
	- Signal timing plans. - The project sponsor shall fund, prepare, and install the approved plans and improvements.	
TR-2. Roadway Segment #18, Grand Avenue between Harrison Street and I-580, would operate at an unacceptable LOS E (V/C 0.97) in the eastbound direction in the PM peak hour in the Existing Plus Project scenario compared to LOS D (V/C 0.92) in the Existing condition. The addition of project-generated traffic would cause the LOS to drop from an acceptable to an unacceptable LOS, a significant impact. (SU)	Mitigation Measures TR-1.1 and TR-1.2 would be applied by the City on a project (case-by-case) basis, as appropriate. Incorporation of Mitigation Measures TR-1.1 and TR-1.2 would likely reduce impacts to congested roadway segment(s) and/or intersection(s); however, on roadway segments that are particularly congested, impacts would likely remain significant and unavoidable. Given that project specific quantitative analysis of Mitigation Measures TR-1.1 and TR-1.2 was not undertaken in this programmatic EIR, it is conservatively concluded that these mitigation measures would not satisfactorily mitigate the significant impacts identified below and that impacts would remain significant and unavoidable. Therefore, when an impacted roadway segment or state highway segment is identified, it is conservatively assumed that a significant and unavoidable impact might result. Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-3. At Roadway Segment #21, Fruitvale Avenue south of I-580, would operate at LOS E (V/C 0.96) in the northbound direction in the AM peak hour in the Existing Plus Project scenario, compared to LOS D (V/C 0.89) in the Existing condition. Roadway Segment #21 would operate at LOS F (V/C 1.08) during the PM peak hour in the southbound direction, compared with LOS E (V/C 0.95) in the Existing condition. The LOS on Roadway Segment #21 would drop from an acceptable LOS D to an unacceptable LOS E in the northbound direction, a significant impact. Roadway Segment #21 would operate	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
<i>LTS = Less than Significant</i>	<i>SU = Significant and Unavoidable</i>	

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
at an unacceptable LOS E (southbound) without the project; however, the project's trip contribution would increase the V/C 0.13, which is a significant impact. (SU)		
TR-4. Roadway Segment #18, Grand Avenue between Harrison Street and I-580, would operate at a LOS F with a V/C ratio of 1.14 in the westbound direction in the AM peak hour in the Cumulative 2015 with Project scenario, compared to a LOS F with a V/C ratio of 1.10 in the 2015 Baseline scenario. Roadway Segment #18 would operate at an unacceptable LOS F without the project; however the project's trip contribution would increase the V/C ratio by 0.04, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-5. In the PM peak hour, Roadway Segment #18 would operate at LOS F with a V/C ratio of 1.12 in the eastbound direction in the Cumulative 2015 with Project scenario, as compared to a LOS F with a V/C ratio of 1.07 in the 2015 Baseline scenario. Roadway Segment #18 would operate at an unacceptable LOS F without the project; however the project's trip contribution would increase the V/C ratio by 0.05, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-6. Roadway Segment #21, Fruitvale Avenue south of I-580, would operate at a LOS F (V/C 1.06) in the northbound direction and LOS F (V/C 1.07) in the southbound direction in the AM peak hour in the Cumulative 2015 with Project scenario, compared to the 2015 Baseline scenario which would operate at a LOS F (V/C 1.00) in the northbound direction and a LOS E (V/C 0.96) in the southbound direction. Roadway Segment #21 would operate at an unacceptable LOS F (northbound) and LOS E (southbound) without the project; however, the project's trip contribution would increase the V/C ratio by 0.06 (northbound) and 0.11 (southbound), which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
<i>LTS = Less than Significant SU = Significant and Unavoidable</i>		

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
TR-7. In the PM peak hour, Roadway Segment #21 would operate at a LOS F (V/C 1.07) in the northbound direction and a LOS F (V/C 1.06) in the southbound direction, in the Cumulative 2015 with Project scenario, compared to a LOS E (V/C 0.99) in the northbound direction and a LOS D (V/C 0.94) in the southbound direction in the 2015 Baseline scenario. Roadway Segment #21 would operate at an unacceptable LOS E (northbound) and LOS D (southbound) without the project; however, the project's trip contribution would increase the V/C ratio by 0.08 (northbound) and 0.12 (southbound), which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-8. Roadway Segment #23, Foothill Boulevard between Fruitvale Avenue and 23rd Avenue, would operate at a LOS F in the westbound direction in the AM peak hour with a V/C ratio of 1.01 in the Cumulative 2015 with Project condition, compared to a LOS E in the same direction with a V/C ratio of 0.99 for the 2015 Baseline scenario. However, Roadway Segment #23 V/C ratio would not increase by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required.	
TR-9. Roadway Segment #23, Foothill Boulevard between Fruitvale Avenue and 23rd Avenue, would operate at LOS F in the PM peak hour (V/C 1.03) in the eastbound direction in the Cumulative 2015 with Project scenario, compared to a LOS F with a V/C of 1.00 (rounded) in the 2015 Baseline scenario. Roadway Segment #23 would operate at an unacceptable LOS F without the project; and the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required.	
TR-10. Roadway Segment #24, Foothill Boulevard north of Seminary Avenue, would operate at LOS E in the eastbound direction in the AM peak hour with a V/C ratio of 0.97 in the Cumulative 2015 with Project scenario, compared to a LOS D with a V/C ratio of 0.94 in the 2015 Baseline scenario. Roadway Segment #24 would operate at an unacceptable LOS D without the project; and, the project's trip contribution would not increase the V/C ratio by more than 0.03 and,	Mitigation: None required.	
<i>LTS = Less than Significant</i>	<i>SU = Significant and Unavoidable</i>	

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
therefore, is not a significant impact. (LTS)		
TR-11. In the PM peak hour, Roadway Segment #24 (Foothill Boulevard north of Seminary Avenue) would operate at LOS F with a V/C ratio of 1.07 in the westbound direction, compared to a LOS E with a V/C ratio of 0.99 in the 2015 Baseline Scenario. Roadway Segment #24 would operate at an unacceptable LOS E without the project; however, the project's trip contribution would increase the V/C ratio by 0.08, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-12. Roadway Segment #29, International Boulevard between 23rd Avenue and Fruitvale Avenue, would operate at a LOS E in the eastbound direction in the PM peak hour with a V/C ratio of 0.95 in the Cumulative 2015 with Project scenario, compared to LOS D with a V/C ratio of 0.90 in the 2015 Baseline scenario. Roadway Segment #29 would operate at an acceptable LOS D without the project; however, the project's trip contribution would cause the segment to operate at LOS E and increase the V/C ratio by 0.05, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-13. Roadway Segment #30, International Boulevard west of Seminary Avenue, would operate at a LOS E in the eastbound direction in the PM peak hour with a V/C ratio of 0.96 in the Cumulative 2015 with Project scenario, compared to LOS D with a V/C ratio of 0.90 in the 2015 Baseline scenario. Roadway Segment #30 would operate at an acceptable LOS D; and the project's trip contribution would cause the segment to drop to LOS E and increase the V/C ratio by 0.06, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-14. Roadway Segment #41 Telegraph Avenue north of Claremont Avenue would operate at a LOS F in the northbound direction in the PM peak hour with a V/C ratio of 1.02 under the Cumulative 2015 with Project scenario, compared to LOS E with a V/C ratio of 1.00 (rounded) in the 2015 Baseline scenario. Roadway Segment #41 would operate at an unacceptable LOS E without the project; and the project's trip contribution would not increase the V/C ratio by more than 0.03	Mitigation: None required.	
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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
and, therefore, is not a significant impact.(LTS)		
TR-15. Roadway Segment #5, San Pablo Avenue south of Stanford Avenue, would operate at LOS E in the north- and southbound directions in the AM peak hour (V/C 0.98 and 0.99, respectively) in the Cumulative 2035 with Project scenario, compared to a LOS E in the southbound direction in the 2035 Baseline scenario (V/C 0.95). Roadway Segment #5 would operate at an acceptable LOS D in the northbound direction and LOS E in the southbound direction without the project; however, the project's trip contribution would increase the V/C ratio by 0.04 (northbound) and 0.04 (southbound), which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-16. Roadway Segment #5 in the PM peak hour, the north- and southbound directions would operate at a LOS F (V/C 1.01 and 1.03, respectively) in the Cumulative 2035 with Project scenario, compared to the 2035 Baseline scenario which would operate at a LOS E in the both directions (V/C 0.95 and 0.98, respectively). Roadway Segment #5 would operate at an unacceptable LOS E without the project; however, the project's contribution would increase the V/C ratio by 0.06 (northbound) and 0.05 (southbound), which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-17. Roadway Segment #9, West Grand Avenue west of Martin Luther King Jr. Way, would operate at a LOS F in the westbound direction in the AM peak hour (V/C 1.07) in the Cumulative 2035 with Project scenario, compared to a LOS F in the 2035 Baseline scenario (V/C 1.01). Roadway Segment #9 would operate at an unacceptable LOS F without the project; however, the project's trip contribution would increase the V/C ratio by 0.06, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-18. In the PM peak hour, Roadway Segment #9 would operate at a LOS F in the eastbound direction (V/C 1.38) in the Cumulative 2035 with Project scenario, compared with a LOS F for the 2035 Baseline scenario (V/C 1.30). Roadway Segment #9 would operate at an	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
unacceptable LOS F without the project; however, the project's trip contribution would increase the V/C ratio by 0.08, which is a significant impact. (SU)		
TR-19. Roadway Segment #11, Telegraph Avenue south of 51st Street, would operate at LOS E (V/C 0.92) in the southbound direction in the AM peak hour in the Cumulative 2035 with Project condition, compared to a LOS D (V/C 0.86) in the 2035 Baseline scenario. Roadway Segment #11 would operate at an acceptable LOS D without the project during the AM peak hour; however, the project's trip generation would reduce the LOS to an unacceptable LOS E, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-20. During the PM peak hour, the Roadway Segment #11 would operate at a LOS E (V/C 0.95) in the northbound direction in the Cumulative 2035 with Project scenario, compared to a LOS D (V/C 0.87) for the 2035 Baseline scenario. Roadway Segment #11 would operate at an acceptable LOS D without the project during the PM peak hour; however, the project's trip contribution would reduce the LOS to an unacceptable LOS E, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-21. Roadway Segment #18, Grand Avenue between Harrison Street and I-580, would operate at LOS F (V/C 1.47) in the westbound direction in the AM peak hour in the Cumulative 2035 with Project scenario, compared with a LOS F (V/C 1.43) for the 2035 Baseline scenario. Roadway Segment #18 would operate at an unacceptable LOS F without the project during the AM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.04, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-22. In the PM peak hour, Roadway Segment #18 would operate at a LOS F (V/C 1.41) in the eastbound direction in the Cumulative 2035 with Project Scenario, compared to a LOS F (V/C 1.36) for the 2035 Baseline Scenario. Roadway Segment #18 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would increase the V/C ratio by	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
0.05, which is a significant impact. (SU)		
TR-23. Roadway Segment #21, Fruitvale Avenue south of I-580, would operate at LOS F in the north- and southbound directions (V/C 1.07 and 1.08, respectively) in the AM peak hour in the Cumulative 2035 with Project scenario, compared with LOS F (V/C 1.00) in the northbound direction and LOS E (V/C 0.97) in the southbound direction the 2035 Baseline scenario. Roadway Segment #21 would operate at an unacceptable LOS F (northbound) and LOS E (southbound) without the project; however, the project's trip contribution would increase the V/C ratio by 0.07 (northbound) and 0.09 (southbound), which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-24. During the PM peak hour, Roadway Segment #21 would operate at a LOS F in both directions (V/C 1.07 and 1.08, respectively) in the Cumulative 2035 with Project scenario, compared to LOS E (V/C 0.99) in the northbound direction and LOS E (V/C 0.95) in the southbound direction for the 2035 Baseline scenario. Roadway Segment #21 would operate at an unacceptable LOS E (northbound) without the project; however, the project's trip contribution would increase the V/C ratio by 0.08, which is a significant impact. In the southbound direction the LOS would drop from an acceptable LOS E without the project to an unacceptable LOS F, also a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-25. Roadway Segment #23, Foothill Boulevard between Fruitvale Avenue and 23rd Avenue, would operate at LOS F (V/C 1.09) during the AM peak hour in the westbound direction in the Cumulative 2035 with Project scenario, compared with a LOS F (V/C 1.07) in the 2035 Baseline scenario. Roadway Segment #23 would operate at an unacceptable LOS F without the project during the AM peak hour; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required.	
<i>LTS = Less than Significant</i>		<i>SU = Significant and Unavoidable</i>

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
TR-26. During the PM peak hour, Roadway Segment #23 would operate at LOS F (V/C 1.10) in the eastbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.07) in the 2035 Baseline scenario. Roadway Segment #23 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS) TR-27. Roadway Segment #24, Foothill Boulevard north of Seminary Avenue, would operate at LOS F (V/C 1.29) during the AM peak hour in the eastbound direction in the Cumulative 2035 with Project scenario, compared to a LOS F (V/C 1.26) in the 2035 Baseline scenario. Roadway Segment #24 would operate at an unacceptable LOS F without the project during the AM peak hour; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required. Mitigation: None required.	
TR-28. During the PM peak hour, Roadway Segment #24 would operate at LOS F (V/C 1.35) in the westbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.27) in the 2035 Baseline scenario. Roadway Segment #24 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.08, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-29. Roadway Segment #25, MacArthur Boulevard west of 98th Avenue, would operate at LOS F (V/C 1.17) during the AM peak hour in the westbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.09) in the 2035 Baseline scenario. Roadway Segment #25 would operate at an unacceptable LOS F without the project during the AM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.08, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU

LTS = Less than Significant SU = Significant and Unavoidable

Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
TR-30. During the PM peak hour, Roadway Segment #25 would operate at a LOS F (V/C 1.11) in the westbound direction in the Cumulative 2035 with Project scenario, compared to LOS E (V/C 0.97) in the 2035 Baseline scenario. Roadway Segment #25 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.14, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-31. Roadway Segment #26, MacArthur Boulevard east of Lincoln Avenue, would operate at LOS F (V/C 1.38) during the AM peak hour in the westbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.34) in the 2035 Baseline scenario. Roadway Segment #26 would operate at an unacceptable LOS F without the project during the AM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.04, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-32. During the PM peak hour, Roadway Segment #26 would operate at a LOS F (V/C 1.51) in the eastbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.45) in the 2035 Baseline scenario. Roadway Segment #26 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.06, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU
TR-33. Roadway Segment #29, International Boulevard between 23rd Avenue and Fruitvale Avenue, would operate at LOS E (V/C 0.95) during the AM peak hour in the westbound direction in the Cumulative 2035 with Project scenario, compared to a LOS D (V/C 0.92) in the 2035 Baseline scenario. Roadway Segment #29 would operate at an acceptable LOS D without the project during the AM peak hour, and the project's trip contribution would increase the V/C ratio by 0.03. Nonetheless, because the segment would go from LOS D to LOS E, and the segment is outside of Downtown, there would be a significant unavoidable impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
TR-34. During the PM peak hour, Roadway Segment #29 would operate at a LOS F (V/C 1.05) in the eastbound direction in the 2035 with Project scenario, compared to LOS F (V/C 1.00) in the 2035 Baseline scenario. Roadway Segment #29 would operate at an unacceptable LOS F without the project during the PM peak hour; however, the project's trip contribution would increase the V/C ratio by 0.05, which is a significant impact. (SU) TR-35. During the PM peak hour, Roadway Segment #30, International Boulevard west of Seminary Avenue, would operate at a LOS F (V/C 1.08) in the eastbound direction in the Cumulative 2035 with Project scenario, compared to a LOS F (V/C 1.02) in the 2035 Baseline scenario. Roadway Segment #30 would operate at an unacceptable LOS F without the project; however, the project's trip contribution would increase the V/C ratio by 0.06, which is a significant impact. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented. Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented.	SU SU
TR-36. Roadway Segment #41, Telegraph Avenue north of Claremont Avenue, would operate at LOS F (V/C 1.02) during the AM peak hour in the southbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.00) in the 2035 Baseline scenario. Roadway Segment #41 would operate at an unacceptable LOS F without the project; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required.	SU
TR-37. During the PM peak hour, Roadway Segment #41 would operate at a LOS F (V/C 1.07) in the northbound direction in the Cumulative 2035 with Project scenario, compared to LOS F (V/C 1.04) in the 2035 Baseline scenario. Roadway Segment #41 would operate at an unacceptable LOS F without the project; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact.(LTS)	Mitigation: None required.	SU

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
TR-38. Roadway Segment #44, 27th Street west of Valdez Street (near Broadway), would operate at LOS E eastbound in the PM peak hour (V/C 0.92) in the Cumulative 2035 with Project scenario, compared to LOS D (V/C 0.90) in the 2035 Baseline scenario. Roadway Segment #44 would operate at an acceptable LOS D without the project; however, the project's trip contribution would not increase the V/C ratio by more than 0.03 and, therefore, is not a significant impact. (LTS)	Mitigation: None required.	
TR-39. Development under the 2007-2014 <i>Housing Element</i> would increase the demand for pedestrian and bicycle facilities, but would not fundamentally conflict with projects or programs supporting alternative transportation. (LTS)	Mitigation: None required.	
TR-40. Development under the 2007-2014 <i>Housing Element</i> would contribute traffic to roadway segments that will operate at an unacceptable LOS. Development under the <i>Housing Element</i> would also cause an increase in the V/C ratio of more than 0.03 on roadway segments that would already operate at an unacceptable LOS. Therefore, the <i>Housing Element</i> would result in cumulatively considerable impacts for the years 2015 and 2035. (SU)	Mitigation: Mitigation Measures TR-1.1 and TR-1.2 shall be implemented, but the feasibility and effectiveness of these mitigation measures has not been determined in this program level analysis. Therefore, impacts are conservatively assumed to be significant and unavoidable.	SU
TR-41. During construction of housing proposed under the project, there may be a need to temporarily close traffic lanes, prohibit parking, and/or block traffic lanes. Construction requires the delivery of building materials, sometimes the import or export of earth fill materials, as well as travel by construction workers on a daily basis to and from the sites, potentially disrupting local traffic flow depending on the specific construction site. Such activities are a temporary but unavoidable part of the construction process. This would constitute a temporary significant impact lasting throughout the construction period. However, compliance with SCA-33 would reduce this impact. (LTS)	Mitigation: None required.	
TR-42. Development under the 2007-2014 <i>Housing Element</i> would not result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety	Mitigation: None required.	

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
risks. (LTS) TR-43. Development under the 2007-2014 <i>Housing Element</i> has the potential to introduce additional vehicle, bicycle, and pedestrian traffic to existing at-grade railroad crossings, thereby potentially contributing to safety issues along railroad corridors. For example, vehicle traffic generated by new housing development may potentially cause vehicle queuing at intersections, resulting in traffic backing up onto at-grade railroad crossings, possibly resulting in train/automobile/pedestrian collisions and potentially causing injuries and/or fatalities. A substantial increase in traffic generated by housing development could substantially increase hazards that occur between incompatible uses (i.e. motor vehicles and trains, or pedestrians and trains) and would constitute a significant impact. (SU)	Mitigation: The following Mitigation Measure TR-43.1 should be applied to housing projects that generate substantial multi-modal traffic traveling across at-grade railroad crossings that could substantially increase hazards that occur between incompatible uses (i.e. motor vehicles and trains, or pedestrians and trains): <i>TR-43.1 Transportation Impact Studies (TIS) for At-grade Railroad Crossings.</i> The TIS, otherwise required to be prepared for proposed housing developments, in accordance with standard City policies and practices, must evaluate potential impacts to at-grade railroad crossing resulting from project-related traffic. The TIS should examine whether the proposed project would generate substantial multimodal traffic across at-grade railroad crossings that could substantially increase hazards that occur between incompatible uses (i.e. motor vehicles and trains, pedestrians and trains), which may include a Diagnostic Review for each railroad crossing. If required, the Diagnostic Review must be completed with all affected properties and Stakeholders, in coordination with the California Public Utility Commission (CPUC). It will include: roadway and rail descriptions; collision history; traffic volumes for all modes; train volumes; vehicular speeds; train speeds; and existing rail and traffic controls. Based on the Diagnostic Review and the number of Project trips, the TIS will evaluate if the proposed project increases hazards at the crossing. For example, vehicle traffic generated by the proposed project may cause vehicle queuing at intersections resulting in traffic backing up onto at-grade railroad crossings. Where the TIS identifies substantially hazardous crossing conditions caused by the proposed project, mitigations	SU
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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
	relative to the project's traffic contribution to the crossings may be applied through project redesign and/or incorporation of measures to reduce potential adverse impacts. Any proposed improvements must be coordinated with CPUC and affected railroads and all necessary permits/approvals obtained, including a GO 88-B Request (Authorization to Alter Highway Rail Crossings). These measures may include: • Installation of additional warning signage; • Improvements to warning devices at existing highway rail crossings; • Installation of concrete panels to provide a smooth crossing surface; • Reduction in the flangeway gap to improve pedestrian and bicyclist safety; • Installation of median separation to prevent vehicles from driving around railroad crossing gates; • Improvements to traffic signaling at intersections adjacent to crossings (e.g., signal preemption); • Prohibition of parking within 100 feet of the crossings to improve the visibility of warning devices and approaching trains; • Where soundwalls, landscaping, buildings, etc. would be installed near crossings, maintain the visibility of warning devices and approaching trains; • Elimination of driveways near crossings; • Installation of vandal-resistant fencing or walls to limit the access of pedestrians onto the railroad right-of-way; and/or	

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
	• Installation of grade separations at crossings. The incorporation of mitigation measures identified in this mitigation measure could reduce the project's impact to the at-grade railroad crossing to a less-than-significant level. However, to the extent that installation of safety mechanisms is not feasible (physically, financially or otherwise), impacts would remain significant and unavoidable.	
TR-44. Development under the 2007-2014 <i>Housing Element</i> that would result in less than two emergency access routes for streets exceeding 600 feet in length, could result in a significant impact unless otherwise determined to be acceptable by the Fire Chief, or his/her designee, in specific instances due to climatic, geographic, topographic, or other conditions. (LTS)	Mitigation: None required.	
TR-45. Development under the 2007-2014 Housing Element would increase traffic volumes on State (Caltrans) highways within and outside the City of Oakland (in the Existing Plus Project scenario):	Mitigation: None available. These freeway segments are in dense, built-up areas, where freeway widening to increase freeway capacity could be difficult. Furthermore, the cost for freeway widening would be prohibitive since there is no funding source available to pay for such improvements. In order to minimize the <i>Housing Element's</i> impact on the freeway system, individual projects with significant unavoidable impacts on roadway segments shall develop and implement a Parking and Transportation Demand Management Plan in accordance with SCA-25. The plan will include strategies to reduce single occupancy travel, and increase bicycle, pedestrian, transit, and carpool use.	SU
▪ #45 SR 13 north of I-580, northbound in the PM peak hour ▪ #46 SR 24 east of I-580, eastbound in the AM peak hour and both directions in the PM peak hour ▪ #52 I-880 north of 66th Avenue, northbound in the PM peak hour The increase in traffic volume would constitute a significant impact on some state highway segments. (SU).		
3.3 Air Quality		
Plan-Level Impacts		
AQ-1. The proposed project would create new area and mobile sources of air pollutants that would generate emissions of criteria air pollutants. However, the population growth for the plan area does not	Mitigation: None required.	
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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
exceed values in the current AQP. The <i>Housing Element</i> would be consistent with the control measures included in the current AQP, and the rate of increase in vehicle miles traveled or vehicle trips associated with the proposed project would be less than the rate of increase in population. As such, impacts on criteria air pollutants would be less than significant. (LTS) AQ-2a. Residential development proposed under the <i>Housing Element</i> could expose occupants at certain sites to substantial health risks from diesel particulate matter (DPM) from mobile and stationary sources. However, compliance with the City's Standard Conditions of Approval would reduce impacts to a less-than-significant level. (LTS) AQ-2b. Residential development proposed under the <i>Housing Element</i> could expose occupants at certain sites to substantial health risk from gaseous TACs emitted locally from stationary sources. Although compliance with the City's Standard Conditions of Approval would provide that site-specific health risk assessments would be prepared, there is no assurance that such exposures could be reduced to a safe level at every site. (SU) AQ-3. Residential development proposed under the <i>Housing Element</i> could expose occupants to substantial/frequent odor nuisance resulting from odors emitted by strong local sources. (SU)	Mitigation: None required. Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant and unavoidable impact is identified, no measures or techniques are available to reduce the impact of gaseous TACs on sensitive receptors. Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant/unavoidable impact is identified, no measures or techniques are feasible to reduce the impact of odors on sensitive receptors. Mitigation: None required.	SU SU
Project-Level Impacts		
AQ-4a. Residential development at specific project sites proposed under the <i>Housing Element</i> could expose occupants to diesel particulate matter from stationary and mobile sources. However, compliance with the City's Standard Conditions of Approval would reduce impacts to a less-than-significant level. (LTS)		

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
AQ-4b. Residential development proposed under the <i>Housing Element</i> could expose occupants at certain sites to substantial health risk from gaseous TACs emitted locally from stationary sources. Although compliance with the City's Standard Conditions of Approval would provide that site-specific health risk assessments would be prepared, there is no assurance that such exposures could be reduced to a safe level at every site. (SU)	Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant unavoidable impact is identified, no measures or techniques are available to reduce the impact of gaseous TACs on sensitive receptors.	SU
AQ-5. Residential development at specific project sites proposed under the <i>Housing Element</i> could expose occupants to substantial/frequent odor nuisance resulting from odors emitted by strong local sources. (SU)	Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant and unavoidable impact is identified, no measures or techniques are feasible to reduce the impact of odors on sensitive receptors.	SU
AQ-6. Traffic generated by the proposed project would increase traffic volumes at intersections in the plan area. This traffic would emit CO, but not enough to exceed ambient air quality standards. As such, project impacts on localized CO concentrations would be less than significant, and no project-specific CO analysis would be required. (LTS)	Mitigation: None required.	
AQ-7. Construction and operational emissions from the proposed project would not have cumulative impacts. (LTS)	Mitigation: None required.	
AQ-8. Cumulative traffic volumes would not result in cumulative impacts. (LTS)	Mitigation: None required.	
AQ-9. Individual TAC impacts would make a considerable contribution to the affected residents' exposures to TACs. Impacts related to gaseous TACs cannot be mitigated and would be cumulatively significant and unavoidable. (SU)	Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant/unavoidable impact is identified, no measures or techniques are feasible to reduce the impact of odors on sensitive receptors.	SU
AQ-10. Odor impacts are unmitigable and could make a considerable contribution to the affected residents' exposures to odor sources. (SU)	Mitigation: None available. While CEQA regulations require a mitigation measure(s) when a significant and unavoidable impact is identified, no measures or techniques are feasible to reduce the impact of odors on sensitive receptors.	SU

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts		Mitigation Measures	Level of Significance With Mitigation
3.4	Noise		
NO-1.	The construction of housing units under the <i>Housing Element</i> would potentially increase construction noise levels at sensitive receptors located near construction sites. Compliance with the City's Standard Conditions of Approval would reduce these impacts to a less-than-significant level. (LTS)	Mitigation: None required.	
NO-2.	Construction activities could generate excessive ground-borne vibration during the construction period. Compliance with the City's Standard Conditions of Approval would reduce these impacts to a less-than-significant level. (LTS)	Mitigation: None required.	
NO-3.	If residential uses are located near an existing railway line, residents could be exposed to excessive interior noise and ground-borne vibration. Compliance with the City's Standard Conditions of Approval would reduce these impacts to a less-than-significant level. (LTS)	Mitigation: None required.	
NO-4.	Sensitive receptors at the Housing Sites could be exposed to noise above Normally Acceptable levels for multi-family residential units. Compliance with the City's Standard Conditions of Approval would reduce these impacts to less than significant. (LTS)	Mitigation: None required.	
NO-5.	The proposed project would result in a less-than-significant increase in noise levels as provided by the City of Oakland threshold of 5 dBA. (LTS)	Mitigation: None required.	
NO-6.	Noise generated by stationary sources, such as mechanical ventilation equipment, could increase noise levels in the vicinity of new residential developments. Compliance with the City's Municipal Code would reduce impacts to a less-than-significant level. (LTS)	Mitigation: None required.	
NO-7.	Noise generated by commercial aircraft using Oakland International Airport would not produced unacceptable noise levels at any of the Housing Sites. (LTS)	Mitigation: None required.	

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Table S-2
Summary of Impacts and Mitigation Measures

Environmental Impacts	Mitigation Measures	Level of Significance With Mitigation
NO-8. Construction activity from the proposed project in combination with other foreseen development projects would not have cumulative noise effects. (LTS)	Mitigation: None required.	
NO-9. Implementation of the proposed project and related projects would result in a less-than-significant increase in noise levels as provided by the City of Oakland threshold of 5 dBA. (LTS)	Mitigation: None required.	
NO-10. Cumulative development could increase stationary source noise levels in the plan area; however, the proposed project's stationary source contributions would not be considerable and their cumulative impacts would be less than significant. (LTS)	Mitigation: None required.	
3.5 Climate Change		
CC-1. The future development proposed under the 2007-2014 <i>Housing Element</i> would not emit GHGs in exceedance of BAAQMD's project-level threshold of 1,100 MT CO ₂ e/yr and 4.6 MT CO ₂ e/sp/yr, resulting in a less-than-significant impact. (LTS)	Mitigation: None required.	
CC-2. The 2007-2014 <i>Housing Element</i> would not conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing GHG emissions, resulting in a less-than-significant impact. (LTS)	Mitigation: None required.	
CC-3. The 2007-2014 <i>Housing Element</i> would not emit GHGs in exceedance of BAAQMD's plan-level threshold of 6.6 MT CO ₂ e/sp/yr, resulting in a less-than-significant impact. (LTS)	Mitigation: No mitigation measures are necessary because the emissions would not exceed the BAAQMD threshold.	
CC-4. The 2007-2014 <i>Housing Element</i> would not result in a cumulatively considerable contribution to a cumulative Greenhouse Gas impact from GHG emissions. (LTS)	Mitigation: None required.	

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