SAN FRANCISCO
PLANNING DEPARTMENT

February 11, 2015

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

Jonas Ionin
Commission Secretary
San Francisco Planning Commission
1650 Mission Street, 4th Floor
San Francisco, CA 94103

Re: Notice of Availability of a Supplemental EIR and Draft SEIR for the Second Street Improvement Project – Supplement to the San Francisco Bicycle Plan Final EIR, Department File No. 2007.0347E

Dear Mr. Ionin:

The Planning Department has prepared a Notice of Availability of a Supplemental Environmental Impact Report (NOA) and a Draft Supplemental Environmental Impact Report (Draft SEIR) for the proposed project, the Second Street Improvement Project, which is being published today, Wednesday, February 11, 2015. Public comment on the Draft SEIR will be accepted in writing at the Planning Department until March 30, 2015, as specified in the enclosed documents. **A public hearing to accept comments on the Draft SEIR will be held before the San Francisco Planning Commission on March 19, 2015.** The NOA and Draft SEIR are being provided to you for distribution to the Commissioners. These documents are also available at the Planning Department Web site under Case number 2007.0347E on-line at http://www.sf-planning.org/sfceqadocs. In addition, the San Francisco Bicycle Plan Final EIR is also available at that web page.

If you have any questions related to this project's environmental evaluation, please contact me at 415-575-9031 or debra.dwyer@sfgov.org.

Sincerely,

Debra Dwyer

Debra Dwyer
Environmental Planner

cc: Member of the Planning Commission

enclosures

SAN FRANCISCO
PLANNING DEPARTMENT
1650 Mission Street, Suite 400 • San Francisco, CA 94103 • Fax (415) 558-6409

NOTICE OF PUBLIC HEARING

AND AVAILABILITY OF A DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

Hearing Date:	**March 19, 2015**
Time:	**Not before 12:00 PM (noon)**
Location:	**City Hall, 1 Dr. Carlton B. Goodlett Place, Room 400**
Case Type:	**Environmental (Draft Supplemental Environmental Impact Report)**
Hearing Body:	**Planning Commission**

PROPERTY INFORMATION

Project Address:	Second Street Corridor, between Market and King Streets in San Francisco
Cross Street(s):	Market and King streets
Block /Lot No.:	N/A – within the public right of way
Zoning District(s):	N/A – within the public right of way
Plan Area:	East SoMa Area Plan

APPLICATION INFORMATION

Case No.:	2007.0347E
Project Title:	Second Street Improvement Project
Building Permit:	N/A – within the public right of way
Applicant/Agent:	San Francisco Public Works
Telephone:	415-558-4004
E-Mail:	Cristina.C.Olea@sfdpw.org

PROJECT DESCRIPTION

A Draft Supplemental Environmental Impact Report (SEIR) to the Bicycle Plan EIR has been prepared by the San Francisco Planning Department in connection with the **Second Street Improvement Project** (proposed project). The proposed project is a refinement to the proposal for near-term improvement Project 2-1 analyzed in the 2009 Bicycle Plan EIR, certified by the San Francisco Planning Commission on June 25, 2009.

The proposed project would transform the corridor into a multi-modal corridor and improve safety and access for pedestrians, bicyclists and transit riders as well as drivers. The San Francisco Public Works (Public Works) would construct the following improvements along Second Street between Market and King streets: widen sidewalks between Harrison and Townsend streets; install one-way cycle track bicycle facilities in both directions on Second Street; install transit boarding islands at most transit stops along with planted medians; eliminate two channelized right-turn lanes from northbound Second Street at Harrison Street; install Americans with Disabilities Act-compliant curb ramps; plant street trees; install site furnishings (trash receptacles, bike racks, benches, and pedestrian lighting); and grind and repave the asphalt, curb-to-curb. The travel lanes along Second Street would generally be reduced from two to one in each direction, in order to install bicycle facilities; left turns would be restricted at most intersections and a pedestrian/bicycle phase would be implemented at all intersections along Second Street. In compliance with the San Francisco Complete Streets Policy (Public Works Code Section 2.4.13), Public Works would rehabilitate and replace aging sewer facilities along the project corridor, construct/install/relocate drainage facilities, and place overhead utilities underground on Second Street from Stillman to Townsend streets.

DRAFT SEIR: The Draft SEIR finds that implementation of the proposed project would lead to significant unavoidable project-level and cumulative impacts related to transportation and circulation (traffic and commercial loading). The Draft SEIR including a detailed project description is available for public review and comment on the Planning Department's website at http://www.sf-planning.org/sfceqadocs. The purpose of the public hearing is for the Planning Commission and Department staff to receive comments on the adequacy of the Draft SEIR. The Planning Commission will not respond to any of the comments or take action on the project at this hearing. Certification of the Final SEIR will take place at a later hearing. Contact the planner below if you wish to be on the mailing list for future notices.

Public comments on the Draft SEIR will be accepted from February 12 to 5:00 p.m. on March 30, 2015.

FOR MORE INFORMATION OR TO SUBMIT COMMENTS ON THE Draft SEIR, PLEASE CONTACT:
Planner: Debra Dwyer Telephone: (415) 575-9031 E-Mail: Debra.Dwyer@sfgov.org

GENERAL INFORMATION ABOUT PROCEDURES

Members of the public are not required to provide personal identifying information when they communicate with the Commission or the Department. All written or oral communications, including submitted personal contact information, may be made available to the public for inspection and copying upon request and may appear on the Department's website or in other public documents.

Only commenters on the Draft SEIR will be permitted to file an appeal of the certification of the Final SEIR to the Board of Supervisors.

CDs and paper copies of the Draft SEIR are available at the Planning Information Center (PIC) counter on the first floor of 1660 Mission Street, San Francisco, and referenced materials are available for review at the Planning Department (call the planner listed above). Written comments should be addressed to Sarah B. Jones, Environmental Review Officer, San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, or emailed to sarah.b.jones@sfgov.org. Comments received at the public hearing and in writing will be responded to in a Draft SEIR Responses to Comment (RTC) document.

中文詢問請電: **(415) 575-9010**

Para información en Español llamar al: **(415) 575-9010**

SAN FRANCISCO
PLANNING DEPARTMENT

Second Street Improvement Project
Draft Supplemental Environmental Impact Report

Supplement to the San Francisco Bicycle Plan Environmental Impact Report

City and County of San Francisco Planning Department
Case No. 2007.0347E
State Clearinghouse No. 2008032052

Draft Supplemental EIR Publication Date:	**February 11, 2015**
Draft Supplemental EIR Public Hearing Date:	**March 19, 2015**
Draft Supplemental EIR Public Review Period:	**February 12, 2015 – March 30, 2015**

Written comments should be sent to:

Sarah B. Jones, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103
or
sarah.b.jones@sfgov.org

SAN FRANCISCO
PLANNING DEPARTMENT

1650 Mission St.
Suite 400
San Francisco,
CA 94103-2479

Reception:
415.558.6378

Fax:
415.558.6409

Planning
Information:
415.558.6377

DATE: February 11, 2015

TO: Distribution List for the Second Street Improvement Project Draft Supplement to the San Francisco Bicycle Plan EIR

FROM: Sarah B. Jones, Environmental Review Officer

SUBJECT: Request for the Final Supplemental Environmental Impact Report to the San Francisco Bicycle Plan Environmental Impact Report for the Second Street Improvement Project (Planning Department File No. 2007.0347E)

This is the Draft Supplemental Environmental Impact Report (SEIR) to the San Francisco Bicycle Plan EIR for the Second Street Improvement Project. A public hearing will be held on the adequacy and accuracy of this document. After the public hearing, our office will prepare and publish a document titled Responses to Comments. It will contain a summary of all relevant comments on this Draft Supplemental EIR and our responses to those comments. It may also specify changes to this document.

Those who testify at the hearing on the Draft Supplemental EIR will automatically receive a copy of the Responses to Comments document, along with notice of the date reserved for certification; others may download the document from the Planning Department Web site at http://www.sf-planning.org/sfceqadocs or request to be sent a copy of the Responses to Comments and notice, or visit our office to obtain a copy.

The Planning Commission will consider this Draft Supplemental EIR, together with the Responses to Comments document, at an advertised public meeting. If it is deemed adequate, the Planning Commission will certify the draft as a Final Supplemental EIR to the Bicycle Plan EIR for the Second Street Improvement Project.

After certification, we will modify the Draft Supplemental EIR, as specified by the Responses to Comments document, and will print both documents in a single publication called the Final Supplemental EIR. This final document will add no new information to the combination of the two documents, except to reproduce the certification resolution; it will simply provide the information in one document rather than two. Therefore, if you receive a copy of the Responses to Comments document in addition to this copy of the Draft Supplemental EIR, you will technically have a copy of the Final Supplemental EIR.

We are aware that many people who receive the Draft Supplemental EIR and Responses to Comments have no interest in receiving virtually the same information after the Supplemental EIR has been certified. To avoid expending money and paper needlessly, we would like to send copies of the Final Supplemental EIR (in Adobe Acrobat portable document format [pdf] on a CD) to private individuals only if they request them. Therefore, if you would like a copy of the Final Supplemental EIR, please fill out and mail the postcard provided inside the back cover to the Environmental Planning division of the San Francisco Planning Department within two weeks after certification of the EIR. Any private party not requesting a Final Supplemental EIR by that time will not be mailed a copy. Public agencies on the distribution list (available for review at the Planning Department) will automatically receive a copy of the Final Supplemental EIR.

Thank you for your interest in this project.

This page intentionally left blank.

SAN FRANCISCO
PLANNING DEPARTMENT

Second Street Improvement Project
Draft Supplemental Environmental Impact Report

Supplement to the San Francisco Bicycle Plan Environmental Impact Report

City and County of San Francisco Planning Department
Case No. 2007.0347E
State Clearinghouse No. 2008032052

Draft Supplemental EIR Publication Date:	**February 11, 2015**
Draft Supplemental EIR Public Hearing Date:	**March 19, 2015**
Draft Supplemental EIR Public Review Period:	**February 12, 2015 – March 30, 2015**

Written comments should be sent to:

Sarah B. Jones, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103
or
sarah.b.jones@sfgov.org

SECOND STREET IMPROVEMENT PROJECT
DRAFT SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT
CASE NO. 2007.0347E

LIST OF TABLES

LIST OF FIGURES

Appendices

This page intentionally left blank.

List of Acronyms and Abbreviations

Acronym or Abbreviation	Definition
$\mu g/m^3$	micrograms per cubic meter
ABAG	Association of Bay Area Governments
AC Transit	Alameda-Contra Costa Transit District
ADA	Americans with Disabilities Act
ADRP	archeological data recovery plan
AMP	Archeological monitoring program
APN	assessor's parcel number
ARB	California Air Resources Board
BAAQMD	Bay Area Air Quality Management District
BART	Bay Area Rapid Transit
BCDC	Bay Conservation and Development Commission
BMP	best management practice
CAA	Federal Clean Air Act
CAAQS	California ambient air quality standard
CalEEMod	California Emissions Estimator Model
Caltrans	California Department of Transportation
CAP	Clean Air Plan
C-APE	CEQA-Area of Potential Effects
CCAA	California Clean Air Act
CCSF	City and County of San Francisco
CEQA	California Environmental Quality Act
CH_4	methane
CHRS	California Historic Resource Status
City	City and County of San Francisco
CMP	Congestion Management Program
CNEL	community noise equivalent level
CO	carbon monoxide
CO_2	carbon dioxide
CO_2e	carbon dioxide equivalent
CPE	Community Plan Exemption

Acronym or Abbreviation	Definition
CRHR	California Register of Historical Resources
cy	cubic yards
dB	decibel
dBA	A-weighted sound level
DBI	San Francisco Department of Building Inspection
DPH	San Francisco Department of Public Health
DPM	diesel particulate matter
EIR	Environmental Impact Report
Environmental Planning	San Francisco Planning Department's Environmental Planning Division
EO	Executive Order
ERO	environmental review officer
FAR	floor area ratio
FARR	Final Archeological Resources Report
FEIR	Final Environmental Impact Report
FTA	Federal Transit Administration
FY	fiscal year
GGBHTD	Golden Gate Bridge, Highway, and Transportation District
GGT	Golden Gate Transit
GHG	greenhouse gas
gsf	gross square feet
HABS	Historic American Buildings Survey
HFC	hydrofluorocarbon
HPC	San Francisco Historic Preservation Commission
HRE	Historical Resource Evaluation
Hz	hertz
I-280	US Interstate Highway 280
I-80	US Interstate Highway 80
in/sec	inches per second
IS	Initial Study
L_{dn}	day-night average sound level
L_{eq}	equivalent sound level

Acronym or Abbreviation	Definition
LOS	level of service
MEI	maximally exposed individual sensitive receptor
million $MTCO_2e$	million gross metric tons of CO_2e
MLD	Most Likely Descendant
MLP	maximum load point
MTC	Metropolitan Transportation Commission
MTS	Metropolitan Transportation System
Muni	San Francisco Municipal Railway
MUO	mixed use, office
MUTCD	Manual on Uniform Traffic Control Devices
MWh	million megawatt-hours
N_2O	nitrous oxide
NAAQS	national ambient air quality standards
NAHC	California State Native American Heritage Commission
NEPA	National Environmental Policy Act
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NOP	Notice of Preparation
NO_X	nitrogen oxides
NRHP	National Register of Historic Places
NSR	New Source Review
NWIC	Northwest Information Center
OBAG	One Bay Area Grant
PDAs	Priority Development Areas
PEIR	Market and Octavia Neighborhood Plan Final EIR (Program EIR)
PFC	perfluorocarbon
Planning Department	San Francisco Planning Department
PM_{10}	particulate matter less than 10 microns in diameter
$PM_{2.5}$	particulate matter less than 2.5 microns in diameter
ppb	parts per billion
ppm	parts per million

Acronym or Abbreviation	Definition
PPV	peak particle velocity
PRC	Public Resources Code
Public Works	San Francisco Public Works
QACL	Qualified Archeological Consultants List
ROG	reactive organic gases
ROW	right-of-way
RWQCB	Regional Water Quality Control Board
SamTrans	San Mateo County Transit District
SB-DTR	South Beach Downtown Residential
SEIR	Supplemental Environmental Impact Report
SFBAAB	San Francisco Bay Area Air Basin
SFCTA	San Francisco County Transportation Authority
SFMTA	San Francisco Municipal Transportation Agency
SFPUC	San Francisco Public Utilities Commission
SHPO	State Historic Preservation Officer
SIL	significant impact level
SO_2	sulfur dioxide
SoMa	South of Market (Street)
SPL	sound pressure level
SSO	service secondary office
SUD	Special Use District
SVP	Society of Vertebrate Paleontology
TAC	toxic air contaminant
TCC	Transportation Coordinating Committee
TCDP	Transit Center District Plan
TEP	Transit Effectiveness Project
TIS	Transportation Impact Study
TMP	Transportation Management Plan
TOG	total organic gas
TPS	Transit Preferential Streets
UB	urban bus
US 101	US Highway 101

Acronym or Abbreviation	Definition
US EPA	United States Environmental Protection Agency
V/C	volume to capacity ratio
VDECS	Verified Diesel Emission Control Strategy
ZEB	zero-emission bus

This page intentionally left blank.

SUMMARY

This chapter provides an overview of the topics and issues addressed in this Supplemental Environmental Impact Report (SEIR), which has been prepared for the Second Street Improvement Project (proposed project). It includes a summary of the proposed project; a list of the project's impacts, level of significance of the environmental impacts, and applicable mitigation measures; the alternatives to the proposed project that are analyzed in this EIR, and a comparison of their impacts to those of the proposed project; and a summary of environmental issues to be resolved and areas of controversy.

This SEIR for the Second Street Improvement Project has been prepared by the San Francisco Planning Department (Planning Department) as the Lead Agency for administering the environmental review of the proposed project, in conformance with the provisions of the California Environmental Quality Act (CEQA), the *CEQA Guidelines*, and Chapter 31 of the San Francisco Administrative Code.

S.1 PURPOSE OF AND APPROACH TO ENVIRONMENTAL ANALYSIS

The San Francisco Planning Commission certified the San Francisco Bicycle Plan Final Environmental Impact Report (Bicycle Plan FEIR) in June 2009.[1] It provided environmental clearance for the update to the City's Bicycle Plan originally adopted in 1997. The State Clearinghouse number (SCH) for the Bicycle Plan FEIR is 2008032052. The San Francisco Municipal Transportation Agency Board of Directors (SFMTA Board) and the San Francisco Board of Supervisors adopted the San Francisco Bicycle Plan as well as related amendments to the San Francisco General Plan in 2009. Second Street is Bicycle Route 11 in the City's bicycle route network, and as part of the Bicycle Plan FEIR, the SFMTA proposed two options for the Second Street corridor, referred to as Near-Term Improvement Project 2-1, Options 1 and 2, respectively. In addition, during the environmental review for the Bicycle Plan FEIR, the SFMTA modified Option 1 of Project 2-1, which was also evaluated at a project level in the Bicycle Plan FEIR as Project 2-1 Modified Option 1.

The Bicycle Plan FEIR certification was appealed by two organizations: the South Beach-Rincon-Mission Bay Neighborhood Association, a neighborhood organization for the area which includes Second Street, and the Coalition for Adequate Review. The EIR certification was upheld on appeal by the San Francisco Board of Supervisors in August 2009. However,

[1] San Francisco Planning Department. 2009. San Francisco Bicycle Plan Project Final EIR, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case File 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828.

the SFMTA decided not to pursue the SFMTA Board's approval for Project 2-1; instead, SFMTA partnered with the San Francisco Public Works Department (Public Works) as the project manager for continued project development. The two departments worked with the Second Street neighborhood and other stakeholders in order to refine the design for the Second Street corridor.

This SEIR supplements the analysis in the Bicycle Plan FEIR to address potential impacts associated with the additional project elements that resulted from further project planning and community outreach as well as City policy to implement projects consistent with the Complete Streets policy.

S.2 PROJECT SYNOPSIS

The Second Street Improvement Project is intended to transform the Second Street corridor in the east SoMa neighborhood into a pedestrian- and bicycle-friendly complete street,[2, 3] consistent with the vision identified by the community in the East SoMa Area Plan, an area plan of the City's General Plan. The area plan identified Second Street as a primary pedestrian, bicycle, and transit thoroughfare and a green connector[4] for the neighborhood.

Public Works, the project sponsor, would construct the following improvements along Second Street, between Market and King streets, as part of the proposed project: widen sidewalks; install one-way cycle track bicycle facilities in the northbound and southbound directions;[5] install transit boarding islands at most transit stops along with planted medians; install

[2] The San Francisco Public Works Code, Article 2.4 Excavation in the public right-of-way, Section 2.4.13, Transit, Pedestrian, Bicycle, Stormwater, and Communications infrastructure improvements as part of planning, construction, reconstruction, and repaving projects states that whenever Public Works or any other municipal excavator undertakes a project involving the planning, construction, reconstruction, or repaving of a public right-of-way, such project shall include, to the maximum extent practicable and feasible, transit, pedestrian, bicycle, stormwater, and communications infrastructure improvements. In combination, these improvements constitute a complete street project.

[3] The San Francisco Administrative Code, Chapter 98, Section 98.1, the Better Streets Policy, requires City Departments to design City streets in keeping with the Urban Design Element of the City's General Plan; the City's Transit-First Policy; best practices in environmental planning and pedestrian-oriented; multi-modal street design, including the design guidelines set forth in the National Association of City Transportation Officials (NACTO) Urban Street Design Guide (2013) and the NACTO Urban Bikeway Design Guide (2014), and any subsequent editions of these Guides; and incorporation of sustainable water management techniques to ensure continued quality of life, economic well-being, and environmental health in San Francisco.

[4] Green Connections is a two-year effort by the San Francisco Planning Department to identify city streets that would be upgraded incrementally over the next 20 years to make them safer and more pleasant to travel to parks by walking, biking, and other forms of transportation.

[5] Cycle tracks or separated bikeways are classified as Class IV bikeways. They promote active transportation and provide a right-of-way designated exclusively for bicycle travel next to a roadway. Cycle tracks and separated bikeways are protected from vehicular traffic. Types of separation include grade separation, flexible posts, inflexible physical barriers, and on-street parking, as defined by Assembly Bill No. 1193.

Americans with Disabilities Act (ADA)-compliant curb ramps; plant street trees; install site furnishings (trash receptacles, bike racks, benches, and pedestrian lighting); and grind and repave the asphalt, curb-to-curb. In order to achieve a complete street along the corridor, the travel lanes along Second Street would generally be reduced from two in each direction to one in each direction to implement bicycle facilities, consistent with the prior Bicycle Plan proposals; left turns would be restricted at most intersections. In addition, before constructing these streetscape improvements, Public Works would rehabilitate and replace aging sewers along the project corridor, would construct/install/relocate drainage facilities, and would place existing overhead utilities underground along Second Street from Stillman to Townsend streets, which is the only segment where the utilities are currently not underground.

Further details of the proposed project are described below:

Right-of-way changes would reduce the number of travel lanes along the Second Street corridor from two lanes in each direction to one lane in each direction and would restrict left turns at most locations. The one exception to this would be between Harrison and Bryant streets, where the lane configuration would be changed in the northbound direction from three travel lanes to two travel lanes. The three northbound lanes—one through-lane, one right-turn through-lane, and one right-turn only lane—would be changed to one right-turn only lane and a through-lane. In conjunction with the bicycle facilities described below, right-turn pockets would be implemented at a number of Second Street intersections.

Pedestrian improvements proposed as part of the project are the following: widened sidewalks between Harrison and Townsend streets on both sides of the street (from 10 feet to 15 feet in width); pedestrian bulb-outs at Second Street and South Park Street; raised crosswalks at all alleys; continental crosswalks with high visibility markings at other locations; and pedestrian-scale lighting. A new signal would be installed at the intersection of Second and South Park streets to facilitate pedestrian crossing and traffic movements from eastbound South Park Street.

Outside of the Second Street corridor, changes would be made to parking configurations and the loading and curb designations (i.e., the red, yellow, and white zones) and bus zones along Brannan Street, Harrison Street, and a portion of Townsend Street near their intersections with Second Street.

Bicycle facilities would include the installation of a one-way cycle track in each direction along Second Street, between Stevenson and Townsend streets. Signal timing would be modified to include combined bicycle, pedestrian, and through-traffic phases at all intersections along Second Street, with a separate right-turn phase at right-turn pockets.

Two-stage, left-turn, bicycle queue boxes would be installed at a number of intersections along the Second Street corridor to facilitate left turns by bicyclists.

Transit improvements would entail the installation of bus-boarding islands at all Second Street transit stops, except for a proposed far-side outbound stop on Townsend Street on the northwest corner, at Second Street, which would become a curbside bus zone.

Streetscape improvements include: planted medians, generally aligned at the ends of bus-boarding islands; new trash receptacles; new benches; new pedestrian-scale street lighting; and new bicycle racks installed on the sidewalk.

S.2.1 Project Variant

A project variant was developed based on input from area residents who use the southbound left turn at Second and Brannan streets to access their building. The project variant would include the same physical changes to Second Street as the proposed project; however, southbound left-turns along Second Street at the intersection of Brannan Street would be permitted. There would not be a separate signal phase for turns at this intersection. The southbound cycle track would not be continued to the intersection, and right-turning motorists and bicyclists would be required to merge into a shared right-turn pocket on Second Street.

S.2.2 Project Construction

Construction of the proposed project would take approximately one year. The anticipated date for construction to begin is fall 2016. Public Works anticipates that construction would occur one block at a time along Second Street, requiring up to six weeks per block. Construction activities would occur sequentially with construction related to sewer replacement or rehabilitation and to undergrounding of overhead utilities completed first, if required for the block. This would be followed by the construction of roadway and streetscape improvements including bicycle, transit, and pedestrian facilities.

S.3 SUMMARY OF IMPACTS AND MITIGATION MEASURES

Table S-1 summarizes the potential environmental impacts of the proposed project by environmental topic area, and identifies the mitigation measures that would reduce potentially significant impacts to a less-than-significant level, where feasible. The significance criteria used for each environmental topic are presented in the respective section of Chapter 4, under each environmental topic. Table S-2 lists the mitigation measures identified in the Bicycle Plan FEIR that would apply to the proposed project.

For the impact analyses, the following categories are used to determine impact significance:

- **No Impact (NI).** An impact is considered not applicable (no impact) if there is no potential for impacts, or the environmental resource does not occur within the project area or the area of potential effect. For example, there would be no impacts related to tree removal if there is no tree removal proposed at a project site.
- **Less-than-Significant impact, no mitigation required (LS).** This determination applies if there is a potential for a limited impact that would not qualify as a significant impact under the significance criteria.
- **Less-than-Significant impact with Mitigation (LSM).** This determination applies if the project would result in an adverse effect that meets the significance criteria, but feasible mitigation is available that would reduce the impact to a less-than-significant level.
- **Significant impact (S).** This determination applies if the project would result in a substantial, or potentially substantial, adverse change that meets the significance criteria before mitigation.
- **Significant and Unavoidable impact for which feasible mitigation is not available (SU).** This determination applies if the project would result in an adverse effect under the significance criteria, but for which there appears to be no feasible mitigation available to reduce the impact to a less-than-significant level. Therefore, the impact would be significant and unavoidable.
- **Significant and Unavoidable impact with implementation of feasible Mitigation (SUM).** This determination applies if it is certain that the project would result in an adverse effect that meets the significance criteria and mitigation is available to lessen the impact, but the residual effect after implementation of the measure would remain significant, or the feasibility of the identified mitigation measure is uncertain. Therefore, the impact is significant and unavoidable with mitigation.

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Section 4.3: Cultural and Paleontological Resources			
Impact CP-1: The proposed project or the project variant would have no impact on historic architectural resources.	NI	None required.	NI
Impact CP-2: The proposed project or the project variant could have a substantial adverse change to CRHR-Listed, Eligible to be Listed, or significant Archeological Resources[6], including those containing human remains.	S	**Mitigation Measure CP-2: Archeological Monitoring** Based on the reasonable potential that archeological resources may be present within the project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project or its variant on buried or submerged historical resources. The project sponsor shall retain the services of an archeological consultant from the rotational Department Qualified Archeological Consultants List (QACL) maintained by the Planning Department archeologist. The project sponsor shall contact the Department archeologist to obtain the names and contact information for the next three archeological consultants on the QACL. The archeological consultant shall undertake an archeological monitoring program. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the Environmental Review Officer (ERO) for review and comment, and shall be considered draft	LSM

[6] Significant archeological resources cover resources defined by PRC Section 21083, detailed under Section 4.3.3 Regulatory Framework.

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		reports subject to revision until final approval by the ERO. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of 4 weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce to a less-than-significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Section 15064.5 (a)(c). *Archeological monitoring program (AMP).* The archeological monitoring program shall minimally include the following provisions: • The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soil disturbing activities commencing. The ERO in consultation with the project archeologist shall determine what project activities shall be archeologically monitored. In most cases, any soils disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc., shall require archeological monitoring because of the potential risk these activities pose to archeological resources and to their depositional context. • The archeological consultant shall advise all project contractors to be on the alert for	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archeological resource. • The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities could have no effects on significant archeological deposits. • The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. • If an intact archeological deposit is encountered, all soils disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/construction crews and heavy equipment until the deposit is evaluated. If in the case of pile driving activity (foundation, shoring, etc.), the archeological monitor has cause to believe that the pile driving activity may affect an archeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archeological consultant shall immediately	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		notify the ERO of the encountered archeological deposit. The archeological consultant shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the ERO. *Consultation with Descendant Communities:* On discovery of an archeological site associated with descendant Native Americans or the Overseas Chinese an appropriate representative of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to consult with ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. A copy of the Final Archeological Resources Report shall be provided to the representative of the descendant group. If the ERO in consultation with the archeological consultant determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project or its variant, at the discretion of the project sponsor either: A. The proposed project or its variant shall be redesigned so as to avoid any adverse effect	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		on the significant archeological resource, or B. An archeological data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible. If an archeological data recovery program is required by the ERO, the archeological data recovery program shall be conducted in accord with an archeological data recovery plan (ADRP). The project archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and approval. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archeological resource is expected to contain; that is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project or its variant. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		The scope of the ADRP shall include the following elements: • Field Methods and Procedures—Descriptions of proposed field strategies, procedures, and operations; • Cataloguing and Laboratory Analysis—Description of selected cataloguing system and artifact analysis procedures; • Discard and Deaccession Policy—Description of and rationale for field and post-field discard and deaccession policies; • Interpretive Program—Consideration of an on-site/off-site public interpretive program during the course of the archeological data recovery program; • Security Measures—Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities; • Final Report—Description of proposed report format and distribution of results; and • Curation—Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities. *Human Remains, Associated or Unassociated Funerary Objects.* The treatment of human remains and of associated or unassociated	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		funerary objects discovered during any soils disturbing activity shall comply with applicable state and federal laws, including immediate notification of the Coroner of the City and County of San Francisco and In the event of the Coroner's determination that the human remains are Native American remains, notification of the California State Native American Heritage Commission (NAHC) who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Section 5097.98). The archeological consultant, project sponsor, ERO, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, curation, possession, and final disposition of the human remains and associated or unassociated funerary objects. *Final Archeological Resources Report.* The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-2 (continued)		separate removable insert within the draft final report. Copies of the draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archeological Site Survey Northwest Information Center (NWIC) shall receive one copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Environmental Planning Division of the Planning Department shall receive one bound, one unbound, and one unlocked searchable PDF copy on CD of the FARR, along with copies of any formal site recordation forms (CA DPR 523 series) and documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented above.	
Impact CP-3: The excavation associated with the proposed project or the project variant could have a substantial impact on unique paleontological resources or sites or unique geologic features.	S	**Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery** The project sponsor shall distribute a paleontological resource "ALERT" sheet to the project prime contractor, to any project subcontractor (including demolition, excavation, grading, pile driving, etc. firms) or utilities firm involved in soil-disturbing activities in the areas of the project site identified as being sensitive for paleontological resources. Before any soil-	LSM

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-3 (continued)		disturbing activities begin, each contractor is responsible for ensuring that the ALERT sheet is circulated to all field personnel, including machine operators, field crew, pile driver operators, and supervisory personnel. The project sponsor shall provide the Environmental Review Officer (ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractors, and utilities firm) confirming that all field personnel have received copies of the Alert Sheet. Should any feature with potential to be a paleontological resource (fossilized invertebrate, vertebrate, plant, or micro-fossil) be encountered during soil-disturbing activities, the project sponsor would require that the following steps be taken: the soil-disturbing activity within 25 feet of the feature must be stopped, the ERO must be notified, and a qualified paleontologist in accordance with the Society of Vertebrate Paleontology standards (SVP 1996) must also be retained to identify and evaluate the significance of the potential resource. In addition the paleontologist would document the findings in an advisory memorandum to the ERO. If it is determined that a significant paleontological resource cannot be feasibly avoided, the paleontologist shall prepare an excavation plan. This plan may include curation of the resource in a permanent retrieval paleontological research collection facility, such as the University of California Museum of Paleontology in Berkeley or the California Academy of Sciences in San Francisco. The Environmental Planning Division	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact CP-3 (continued)		of the Planning Department shall receive two copies of a final paleontological excavation and recovery report. The requirements of this measure could suspend construction of the proposed project or its variant for as short a duration as reasonably possible and in no event for more than a maximum of 4 weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.	
Impact C-CP-1: Construction of the proposed project or the project variant could result in a cumulatively considerable contribution to cumulative impacts on cultural resources.	S	**Mitigation Measure M-CP-2: Archeological Monitoring** (See above.) **Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery** (See above.)	LSM
Section 4.4: Transportation and Circulation			
Impact TR-1: The proposed project or project variant would not result in significant transportation-related construction impacts.	LS	None required.	LS
Impact TR-2: The proposed project or project variant would cause the level of service at the intersection of Market and New Montgomery streets (Intersection #1) to deteriorate from LOS D to LOS E during the p.m. peak hour.	S	No feasible mitigation measure available.	SU

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-3: The proposed project or project variant would cause the level of service at the intersection of Mission and New Montgomery streets (Intersection #2) to deteriorate from LOS E to LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-4: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS D to LOS E during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-5: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10) and the intersection would continue to perform at LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Second streets (Intersection #16) to deteriorate from LOS D to LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-7: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17) and the intersection would continue to perform at LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-8: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28) and the intersection would continue to perform at LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-9: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Fifth Street/Bryant Street/I 80 Eastbound On-Ramp (Intersection #29) and the intersection would continue to perform at LOS F during the p.m. peak hour.	S	No feasible mitigation measure available.	SU
Impact TR-10: The proposed project or project variant would cause the level of service at the intersection of Howard and New Montgomery streets (Intersection #3) to deteriorate from LOS D to LOS E during the p.m. peak hour.	S	**Mitigation Measure M-TR-10: Increase Signal Cycle Length (Howard and New Montgomery streets)** The Howard and New Montgomery streets traffic signal operates on a 60-second cycle under the existing plus project conditions. As a mitigation measure, increasing the signal cycle length to 90 seconds would improve the intersection operation from LOS E to D, thus reducing the project's impact to a less-than-significant level with mitigation.	LSM

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-11: The proposed project or project variant would cause the level of service at the intersection of Howard and Hawthorne streets (Intersection #4) to deteriorate from LOS B to LOS E during the p.m. peak hour.	S	**Mitigation Measure M-TR-11: Increase Signal Cycle Length (Howard Street and Hawthorne streets)** The Howard and Hawthorne streets traffic signal operates on a 60-second cycle under the existing plus proposed project conditions. As a mitigation measure, increasing the signal cycle to 90 seconds would improve the intersection operation from LOS E to B, thus reducing the impact of the proposed project to a less-than-significant level with mitigation.	LSM
Impact TR-12: The proposed project or project variant would cause the level of service at the intersection of Folsom and Hawthorne streets (Intersection #5) to deteriorate from LOS E to LOS F during the p.m. peak hour.	S	**Mitigation Measure M-TR-12: Add a left-turn lane (Folsom and Hawthorne streets)** At the Folsom and Hawthorne streets intersection, there currently is a single southbound lane, serving both the southbound-through and southbound-left movements. As a mitigation measure, the addition of a southbound left-turn lane during the p.m. peak demand period would return the intersection operation to the existing LOS E condition. This mitigation measure would result in the removal of two metered parking spaces on the east side of Hawthorne Street north of Folsom Street during the p.m. peak demand period; during the remainder of the day, the parking spaces would remain available. With implementation of the above mitigation measure, the intersection would remain at LOS E with the proposed project and the mitigation measure. In order to determine if the proposed	LSM

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-12 (continued)		project would result in a considerable contribution to the unacceptable operation of the intersection, the critical eastbound-through movement was examined. The proposed project would reduce the volume of traffic by approximately 26 vehicles from the critical eastbound-through movement along Folsom Street during the afternoon peak hour, due to diversions off Second Street to Third Street. This would be a negative contribution to the critical movement and therefore does not constitute a considerable contribution, and impacts of the proposed project would be less than significant with mitigation.	
Impact TR-13: The proposed project or project variant would not contribute considerable traffic to the unsatisfactory operation at the intersections of Harrison and Essex streets (Intersection #23) and Folsom and First streets (Intersection #27) even though these intersections would continue to perform at LOS E or F during the p.m. peak hour.	LS	None required.	LS
Impact TR-14: The proposed project or project variant would not cause the levels of service at 16 out of the 29 intersections to deteriorate to LOS E or F and the intersections would perform at acceptable LOS conditions of LOS D or better under existing plus proposed project or project variant conditions.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-15: The unsatisfactory intersection conditions experienced at 11 of the 29 study intersections during the weekday baseball games at AT&T Ball Park could deteriorate further under proposed project or project variant and game day conditions.	S	**Mitigation Measure M-TR-10: Increase Signal Cycle Length (Howard and New Montgomery streets)** **Mitigation Measure M-TR-11: Increase Signal Cycle Length (Howard Street and Hawthorne streets)** **Mitigation Measure M-TR-12: Add a left-turn lane (Folsom and Hawthorne streets)** (See above.) No other feasible mitigation measures available.	SUM
Impact TR-16: The proposed project or the project variant would not result in significant impacts on local or regional transit.	LS	None required.	LS
Impact TR-17: The proposed project or the project variant would not result in significant impacts on local or regional transit during game day conditions.	LS	None required.	LS
Impact TR-18: The proposed project or project variant would not result in substantial overcrowding on public sidewalks, nor create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian circulation and safety in the project vicinity during regular or game day conditions.	LS	None required.	LS
Impact TR-19: The proposed project or project variant would not create potentially hazardous conditions for bicyclists, or otherwise substantially interfere with bicycle accessibility to the project site and adjoining areas.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact TR-20: The proposed project or project variant would not adversely affect emergency vehicle access along the Second Street corridor or in the project vicinity.	LS	None required.	LS
Impact TR-21: The proposed project or project variant would not result in a passenger loading demand during the peak hour of loading activities that could not be accommodated within on-street passenger loading zones, and would therefore not create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.	LS	None required.	LS
Impact TR-22: The proposed project or project variant would remove on-street commercial loading spaces along Second Street that could not be located nearby and would thereby result in potential conflict between trucks and other traffic.	S	**Mitigation Measure M-TR-12: Add a left-turn lane (Folsom and Hawthorne streets)** (See above.) **Mitigation Measure M-TR-22: Provision of Replacement Commercial Loading Stalls** Whenever feasible, commercial loading stalls proposed for removal would be relocated within 250 feet of the existing location.	SUM
Impact TR-23: Implementation of the proposed project or project variant would not result in a significant parking impact.	LS	None required.	LS
Impact C-TR-1: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative construction impacts on transportation and circulation.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-2: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Market and New Montgomery streets (Intersection #1) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-3: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Mission and New Montgomery streets (Intersection #2) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-4: The proposed project or project variant would cause the level of service at the intersection of Howard and New Montgomery streets (Intersection #3) to deteriorate from LOS B to LOS E under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-5: The proposed project or project variant would cause a significant project impact at the intersection of Howard and Hawthorne streets (Intersection #4) under existing plus project conditions and would continue to cause significant impacts under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS C to LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-7: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Third streets (Intersection #7) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-8: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Brannan and Third streets (Intersection #8) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-9: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of the Townsend and Third streets (Intersection #9) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-10: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-11: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and Second streets (Intersection #16) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-12: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-13: The proposed project or project variant would cause the level of service at the intersection of Townsend and Second streets (Intersection #20) to deteriorate from LOS E to LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-14: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-15: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant Street/Fifth Street/I-80 Eastbound On-Ramp (Intersection #29) and the intersection would continue to perform at LOS F under cumulative plus project conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-16: The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute cumulatively considerable traffic to the unsatisfactory operation at eight intersections under cumulative plus project conditions, even though these intersections would continue to perform at LOS F under cumulative plus project conditions.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-17: The project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute cumulatively considerable traffic to the unsatisfactory operation at nine intersections under cumulative plus project conditions, even though these intersections would continue to perform at LOS E or LOS F under cumulative plus project conditions.	LS	None required.	LS
Impact C-TR-18: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not cause the levels of service at 7 out of the 29 intersections to deteriorate to LOS E or F under cumulative plus project conditions and the intersections would perform at acceptable LOS conditions of LOS D or better.	LS	None required.	LS
Impact C-TR-19: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not result in cumulative transit impacts.	LS	None required.	LS
Impact C-TR-20: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative pedestrian impacts associated with overcrowding on public sidewalks, nor to hazardous conditions for pedestrians, or interference with pedestrian circulation and safety in the project vicinity.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-21: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute to cumulative impacts associated with potential hazardous conditions for bicyclists or interference with bicycle accessibility.	LS	None required.	LS
Impact C-TR-22: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative impacts on emergency vehicle access.	LS	None required.	LS
Impact C-TR-23: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute significantly to cumulative passenger loading impacts associated with potential hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.	LS	None required.	LS
Impact C-TR-24: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would contribute considerably to cumulative impacts on commercial loading along the Second Street corridor.	S	**Mitigation Measure M-TR-22** (see above)	SUM
Impact C-TR-25: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative parking impacts.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact C-TR-26: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would result in significant cumulative traffic impacts under game day conditions.	S	No feasible mitigation measure available.	SU
Impact C-TR-27: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to transit, pedestrians, bicyclists, or emergency vehicle access under game day conditions.	LS	None required.	LS
Section 4.5: Noise and Vibration			
Impact NO-1: Construction activities as a result of the proposed project or the project variant could result in a substantial temporary or periodic increase in noise levels above existing ambient conditions.	S	**Mitigation Measure M-NO-1: Control or Abatement of Concrete Saw Operation Noise** The project construction contractor shall implement noise mitigation measures to ensure compliance with the allowable maximum noise level of 80 dBA at a distance of 100 feet from concrete saw operation. Such noise control or sound abatement techniques could include one or more of the following options: • Use a saw that exhibits or can be shown with manufacturer/supplier test data or published engineering specs no more than 86 dBA Lmax at 50 feet. Such a saw might be designed to include (either from the factory or with factory-approved acoustical upgrades supplied by others) noise control features, such as a hood, vibration dampening, or other techniques.	LSM

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact NO-1 (continued)		• Install a temporary portable noise barrier that provides linear occlusion (a line-of-sight block) between the operating saw and the nearby noise-sensitive receiver of concern. Such a barrier would need to be only tall enough to provide this direct sound path occlusion, and long enough so that "flanking" diffraction would be minimized. It would be placed around the saw work area as a single-wall, an L shaped combination of two wall segments, or a C shaped layout if needed. As the saw work area may move or progress from day to day, so would this barrier be relocated. To provide this portability, the barrier would be composed of either a o Prefabricated curtain or panel-type element suspended from a field-assembled frame or o Contractor-built plywood barriers using ½-inch minimum thickness boards (with at least 2 inch thick fiberglass or similar acoustically absorptive media) on the equipment-facing side.	
Impact NO-2: Construction activities related to the proposed project or project variant could expose persons and structures to excessive temporary ground-borne vibration or ground-borne noise levels.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact NO-3: The proposed project or the project variant would not result in a substantial increase in permanent noise levels along Second Street and other streets above existing ambient conditions.	LS	None required.	LS
Impact C-NO-1: The construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, would increase construction noise and vibration or operational noise levels within the project corridor above existing ambient conditions.	S	**Mitigation Measure M-NO-1: Control or Abatement of Concrete Saw Operation Noise** (see above)	LSM
Section 4.6: Air and Quality			
Impact AQ-1: Construction of the proposed project or the project variant would not result in a violation of air quality standards or contribute substantially to an existing or projected air quality violation; nor would it result in a cumulatively considerable net increase of criteria air pollutants, for which the project region is in nonattainment under an applicable ambient air quality standard.	LS	None required.	LS
Impact AQ-2: Construction of the proposed project or the project variant could generate emissions of PM2.5 and toxic air contaminants, including diesel particulate matter that may expose sensitive receptors to substantial pollutant concentrations.	S	**Mitigation Measure M-AQ-2: Construction Emissions Minimization** A. *Construction Emissions Minimization Plan.* Before a construction permit is issued, San Francisco Public Works shall submit a construction emissions minimization plan to the ERO for review and approval by an environmental planning air quality specialist.	LSM

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact AQ-2 (continued)		The plan shall detail project compliance with the following requirements: 1. All off-road equipment greater than 25 horsepower and operating for more than 20 total hours over the duration of construction shall meet the following requirements: a) Where access to alternative sources of power are available, portable diesel engines shall be prohibited; b) All off-road equipment engines shall i. Meet or exceed either the US EPA or ARB Tier 2 off-road emission standards and ii. Be retrofitted with an ARB Level 3 VDECS; c) Exceptions i. Exceptions to A(1)(a) may be granted if the project sponsor has submitted evidence to the satisfaction of the ERO that an alternative source of power is limited or infeasible at the project site and that the requirements of this exception provision apply. Under this circumstance, the sponsor shall submit documentation of compliance with A(1)(b) for onsite power generation. ii. Exceptions to A(1)(b)(ii) may be granted if the project sponsor has	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact AQ-2 (continued)		submitted evidence to the satisfaction of the ERO that a particular piece of off-road equipment with a CARB Level 3 VDECS is (1) technically not feasible; (2) would not produce desired emissions reductions due to expected operating modes; (3) would create a safety hazard or impaired visibility for the operator; or (4) would interfere with a compelling emergency need to use off-road equipment that is not retrofitted with an ARB Level 3 VDECS and the sponsor has submitted documentation to the ERO that the requirements of this exception apply. If granted an exception to A(1)(b)(ii), the project sponsor must comply with the requirements of A(1)(c)(iii). iii. In accordance with A(1)(c)(ii), the project sponsor shall provide the next cleanest piece of off-road equipment (see Table 4.6 6). 2. The project sponsor shall require the idling time for off-road and on-road equipment be limited to no more than 2 minutes, except as provided in the applicable state regulations for idling off-road and on-road equipment. Legible and visible signs shall be posted in English, Spanish, and	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

<table>
<tr><th>Impact Summary</th><th>Impact Significance Without Mitigation Measure</th><th>Mitigation Measures</th><th>Impact Significance With Mitigation Measure</th></tr>
<tr><td>Impact AQ-2 (continued)</td><td></td><td>
Chinese in designated queuing areas and at the construction site to remind operators of the 2 minute idling limit.

3. The project sponsor shall require that construction operators properly maintain and tune equipment in accordance with manufacturer specifications.

Table 4.6-6: Off-Road Equipment Compliance Step-Down Schedule
<table>
<tr><th>Compliance Alternative</th><th>Engine Emission Standard</th><th>Emissions Control</th></tr>
<tr><td>1</td><td>Tier 2</td><td>ARB Level 2 VDECS</td></tr>
<tr><td>2</td><td>Tier 2</td><td>ARB Level 1 VDECS</td></tr>
<tr><td>3</td><td>Tier 2</td><td>Alternative fuel[1]</td></tr>
<tr><td colspan="3">How to use the table: If the requirements of (A)(1)(b) cannot be met, then the project sponsor would need to meet Compliance Alternative 1. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 1, then Compliance Alternative 2 would need to be met. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 2, then Compliance Alternative 3 would need to be met.
[1]Alternative fuel is not a VDECS.
Source: ARB, “Verified Retrofits for Off-Road Diesel Vehicles,” ARB web page last updated June 23, 2014. Available online: http://www.arb.ca.gov/msprog/ordiesel/vdecs.htm.</td></tr>
</table>
4. The plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road
</td><td></td></tr>
</table>

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact AQ-2 (continued)		equipment required for every construction phase. Off-road equipment descriptions and information may include equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, engine serial number, and expected fuel use and hours of operation. For VDECS installed, the information may include technology type, serial number, make, model, manufacturer, ARB verification number level, and installation date and hour meter reading on installation date. For off-road equipment using alternative fuels, reporting shall indicate the type of alternative fuel being used. 5. The plan shall be kept onsite and available for review by any persons requesting it, and a legible sign shall be posted at the perimeter of the construction site indicating to the public the basic requirements of the plan and a way to request a copy. The project sponsor shall provide copies of the plan to members of the public as requested. B. *Reporting.* Quarterly reports shall be submitted to the ERO indicating the construction phase and off-road equipment information used during each phase, including the information required in A(4). In addition, for off-road equipment using alternative fuels,	

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact AQ-2 (continued)		reporting shall include the actual amount of alternative fuel used. Within six months of construction completion, the project sponsor shall submit to the ERO a final report summarizing activities. The final report shall indicate the start and end dates and duration of each construction phase. For each phase, the report shall include the detailed information required in A(4). In addition, for off-road equipment using alternative fuels, reporting shall include the actual amount of alternative fuel used. C. *Certification Statement and Onsite Requirements.* Before construction begins, the project sponsor must certify compliance with the plan and that all applicable requirements of the plan have been incorporated into contract specifications.	
Impact AQ-3: Operation of the proposed project or the project variant would not result in violation of air quality standards or contribute substantially to an existing or projected air quality violation; nor would it result in a cumulatively considerable net increase of any criteria air pollutant, for which the project region is in nonattainment under an applicable ambient air quality standard.	LS	None required.	LS

Table S-1: Summary of Impacts and Mitigation Measures Identified in this SEIR *(continued)*

Impact Summary	Impact Significance Without Mitigation Measure	Mitigation Measures	Impact Significance With Mitigation Measure
Impact AQ-4: Operation of the proposed project or the project variant would not generate emissions of $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter, at levels that would expose sensitive receptors to substantial pollutant concentrations.	LS	None required.	LS
Impact AQ-5: The proposed project or the project variant would not conflict with or obstruct implementation of the applicable air quality plan, the 2010 Bay Area Clean Air Plan.	LS	None required.	LS
Impact C-AQ-1: Construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in nonattainment under applicable ambient air quality standards	LS	None required.	LS
Impact C-AQ-2: Construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, could generate emissions of $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter, at levels that would expose sensitive receptors to substantial pollutant concentrations.	S	**Mitigation Measure M-AQ-2: Construction Emissions Minimization** (see above)	LSM

Notes:
LS = Less-than-Significant impact, no mitigation required
LSM = Less-than-Significant Impact with mitigation
S = Significant impact
SU = Significant and Unavoidable impact for which feasible mitigation is not available
SUM = Significant and Unavoidable impact, with implementation of feasible mitigation

Table S-2: Applicable Mitigation Measures Identified in the Bicycle Plan FEIR

Environmental Topic	Mitigation Measure	Level of Significance with Mitigation
Archaeological Resources	**Mitigation Measure 1: Archaeological Resources: Accidental Discovery** The following mitigation measure is required to avoid any potential adverse effect from the Proposed Project on accidentally discovered buried or submerged historical resources as defined in CEQA Guidelines Section 15064.5(a)(c). The Project Sponsor shall distribute the Planning Department archeological resource “ALERT” sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, pile driving, etc. firms); or utilities firm involved in soils disturbing activities within the project site. Prior to any soils disturbing activities being undertaken each contractor is responsible for ensuring that the “ALERT” sheet is circulated to all field personnel including, machine operators, field crew, pile drivers, supervisory personnel, etc. The Project Sponsor shall provide the Environmental Review Officer (ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) to the ERO confirming that all field personnel have received copies of the Alert Sheet. Should any indication of an archeological resource be encountered during any soils disturbing activity of the project, the project Head Foreman and/or Project Sponsor shall immediately notify the ERO and shall immediately suspend any soils disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures should be undertaken. If the ERO determines that an archeological resource may be present within the project site, the Project Sponsor shall retain the services of a qualified archeological consultant. The archeological consultant shall advise the ERO as to whether the discovery is an archeological resource, retains sufficient integrity, and is of potential scientific/historical/cultural significance. If an archeological resource is present, the archeological consultant shall identify and evaluate the archeological resource. The archeological consultant shall make a recommendation as to what action, if any, is warranted. Based on this information, the ERO may require, if warranted, specific additional measures to be implemented by the Project Sponsor. Measures might include: preservation in situ of the archeological resource; an archaeological monitoring program; or an archeological testing program. If an archeological monitoring program or archeological testing program is required, it	LSM

Table S-2: Applicable Mitigation Measures Identified in the Bicycle Plan FEIR *(continued)*

Environmental Topic	Mitigation Measure	Level of Significance with Mitigation
	shall be consistent with the Major Environmental Analysis (MEA) division of the Planning Department (now Environmental Planning Division) guidelines for such programs. The ERO may also require that the Project Sponsor immediately implement a site security program if the archeological resource is at risk from vandalism, looting, or other damaging actions. The project archeological consultant shall submit a Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describing the archeological and historical research methods employed in the archeological monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the final report. Copies of the Draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archaeological Site Survey Northwest Information Center (NWIC) shall receive one (1) copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Environmental Planning Division shall receive three copies of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented above.	

S.4 ALTERNATIVES TO THE PROPOSED PROJECT

Three alternatives are evaluated in this EIR: The No Project Alternative, as required by CEQA, the Bicycle Lanes Alternative, and the Center-Turn Lane Alternative. The three alternatives are described in detail in Chapter 6, Alternatives. Table S-3, Description of the Proposed Project, Project Variant and Alternatives, shows a comparison of project elements or features included under the proposed project, its variant, and the alternatives.

S.4.1 No Project Alternative (Alternative 1)

Consistent with Section 15126.6(e)(2) of the CEQA guidelines, this alternative assumes the continuation of existing conditions, taking into account what would be reasonably expected to occur if the Second Street Improvement Project were not implemented.

Under Alternative 1, the No Project Alternative, the proposed improvements along Second Street would not be implemented; thus, there would be no change from existing conditions under this alternative. As a result, Public Works' objectives would not be met for providing a pedestrian- and bicycle-friendly street along Second Street corridor, for implementing improvements to increase reliability of transit service, for undergrounding of overhead utilities, and for rehabilitating sewer facilities.

S.4.2 Bicycle Lanes Alternative (Alternative 2)

The streetscape design for Alternative 2 was developed by modifying Project 2-1, Modified Option 1 from the San Francisco Bicycle Plan EIR.[7] This was done to reduce or eliminate the significant traffic and commercial loading impacts of the proposed project or its variant. Under Alternative 2, the proposed bicycle lane would be accommodated by removing one travel lane in each direction along most of Second Street. Alternative 2 would include a northbound and southbound Class II bicycle lane, except along two blocks: northbound between Stevenson and Market streets and southbound between Townsend and King streets. Bicycle sharrows would be added to the travel lane at these two locations.

Left turns would be prohibited at most streets under Alternative 2, except northbound at Townsend, Brannan, and Harrison streets and southbound at Townsend and King streets. Left turns would be permitted at alleys. Right-turn pockets would be provided northbound at Mission and Folsom streets and southbound at Mission, Howard, and Harrison streets. Two

[7] San Francisco Planning Department. 2009. San Francisco Bicycle Plan Project Final EIR, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case File 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828.

Table S-3: Description of the Proposed Project/Project Variant and Alternatives

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Traffic	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction with new right-turn pockets at every intersection. Right-turn capacity at the northbound Second Street approach at Harrison Street would be reduced from two to one lane and the movement would be signalized. Retain one exclusive eastbound left-turn lane from Bryant Street to Second Street. Eliminate most left turns, except northbound at Townsend Street and southbound at King Street. The southbound Second Street approach at Townsend Street approach would include a right-turn bay and a shared through-left lane. Install a new traffic signal at the intersection of Second and South Park streets.	No improvements to the Second Street corridor.	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction. Right-turn capacity at the northbound Second Street approach at Harrison Street would be reduced from two to one lane and the movement would be signalized. An exclusive left-turn lane would be included. Retain two exclusive eastbound left-turn lanes from Bryant Street to Second Street. Eliminate most left turns, except northbound at Townsend Street, southbound at King Street, northbound at Harrison Street, and at a shared northbound through-left lane at Brannan Street. The southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane. Install a new traffic signal at the intersection of Second and South Park streets. A p.m. peak tow-away, southbound left-turn lane along Hawthorne Street at Folsom Street.	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction. No right-turn pockets at locations other than northbound approach to Harrison Street. The northbound Second Street approach at Harrison Street would include a shared through-left lane and an exclusive right-turn lane; a bicycle lane would be provided between these lanes. The northbound right-turn capacity would be reduced from two lanes to one lane and the movement would be signalized. Retain one eastbound left-turn lane on Bryant Street at the Second Street intersection. Retain all the existing left-turn opportunities along Second Street (southbound and northbound at Mission, Harrison, Brannan, and Townsend streets; southbound at Folsom and King streets; and northbound at Howard Street). The southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane. Install a new traffic signal at the intersection of Second and South Park streets.

Table S-3: Description of the Proposed Project/Project Variant and Alternatives *(continued)*

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Transit	The proposed project or its variant would consolidate Second Street bus stop locations from 13 under existing conditions to 10, and optimize placement of the remaining stops. Bus-boarding islands would be installed at all Second Street transit stops, except for a proposed far-side outbound stop on the northwest corner of Townsend Street at Second Street, which would become a bus zone.	No improvements to the Second Street corridor.	Alternative 2 would consolidate bus stop locations from 13 under existing conditions to 10. It would provide bus bulbs at all stops except the Townsend Street outbound stop at Second Street, which would become a bus zone.	Consolidate bus stop locations from 13 under existing conditions to 10. Optimize placement of the remaining bus stops, similar to the proposed project. Provide bus bulbs at bus stops on the west side of Second Street and bus zones on the east side of Second Street. The outbound bus stop on Townsend Street would be a bus zone.
Pedestrian Facilities and Streetscape	Widen sidewalks on Second Street between Harrison and Townsend streets to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install planted medians, generally aligned at the ends of bus-boarding islands; new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.	No improvements to the Second Street corridor.	Widen sidewalks between Harrison and Townsend streets on the west side on Second Street to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.	Widen sidewalks on Second Street between Harrison and Townsend streets to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.
Bicycle Facilities	Grade separated cycle track (Class IV) would be installed on both sides of Second Street. Traffic signal cycle lengths would be increased from 60 seconds to 90 seconds and signal phasing would be modified to include combined bicycle, pedestrian, and through-traffic phases at all intersections along Second Street, with a separate right-turn phase at right-turn pockets.	No improvements to the Second Street corridor.	Class II bicycle lanes, on both sides of Second Street. Traffic signals would have shorter signal lengths (60 seconds) and no phased signals for bicycles and pedestrians.	Class II bicycle lanes, on both sides of Second Street. Traffic signals retain existing signal cycle (60 second cycle) except at Second Street intersections with Howard, Folsom, and Harrison street (90 second cycle) and no phased signals for bicycles and pedestrians.

Table S-3: Description of the Proposed Project/Project Variant and Alternatives *(continued)*

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Parking and Loading	Net removal of 129 on-street parking spaces and 19 motorcycle parking spaces in the project area. Also remove 6 passenger loading zones and 25 commercial loading stalls, 4 of which would be relocated, and 2 could be created.	No improvements to the Second Street corridor.	Would remove 28 parking spaces and 13 commercial loading stalls, 5 of which would be relocated along Second Street and adjacent streets. It would also remove two passenger loading zones, one of which could be relocated within the same block.	Would remove 91 parking spaces, 32 motorcycle spaces, 24 commercial loading stalls, and 9 passenger loading zones.
Sewer	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.	No improvements to the Second Street corridor.	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.
Utilities	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.	No improvements to the Second Street corridor.	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.

eastbound left-turn lanes would be retained along Bryant Street to Second Street, and an exclusive southbound left-turn lane would be added to Hawthorne Street at Folsom Street. This would be accomplished by eliminating a commercial loading zone along the east side of Hawthorne Street.

Alternative 2 would allow the right-turn onto Harrison Street only from a single curbside lane. It would do this by converting the p.m. tow-away lane along Second Street into a permanent exclusive right-turn lane. The shared through-right lane under the Bicycle Plan Project would be converted to a through-only lane, and the northbound left-turn lane would be retained. Additionally, the southeast corner at the Harrison and Second streets intersection would be reconfigured to eliminate uncontrolled (channelized) northbound right turns, and vehicles would be required to make a turn at the signalized intersection. The configuration at the Second and Harrison streets intersection under Alternative 2 would benefit pedestrian safety in the east crosswalk.

Alternative 2 would consolidate bus stop locations throughout the Second Street Corridor from a total of 13 existing transit stops, including inbound and outbound transit stops, under existing conditions to 10 transit stops (5 inbound and 5 outbound) under this alternative, and would provide bus bulbs at 9 of the 10 proposed bus stops and a bus zone at one bus stop.

Under Alternative 2, the sidewalk on the west side of Second Street between Harrison and Townsend streets would be widened from 10 feet to 15 feet; the sidewalk on the east side of Second Street would remain unchanged. Crosswalks at the alleys would be raised, and all crosswalks would be upgraded with high-visibility markings. This alternative would allow right turns without an exclusive pedestrian and bicycle signal phase from all intersections on Second Street. Alternative 2 would result in the net loss of two passenger loading zones, eight commercial loading zones, 28 parking spaces, and 12 motorcycle spaces along the Second Street corridor.

Alternative 2 would include the rehabilitation and replacement of portions of the City's underground sewer infrastructure along the Second Street corridor between Market and King streets. In addition, under this alternative, overhead electrical and telecommunication utilities between Stillman and Townsend streets would be placed underground.

S.4.3 Center-Turn Lane Alternative (Alternative 3)

The streetscape design for Alternative 3 was developed during community meetings held in 2012 by Public Works, SFMTA, and the San Francisco Planning Department for the Second Street corridor. Alternative 3 is based on the Second Street corridor design with bicycle lanes and a center-turn lane option. Under Alternative 3, Second Street would include northbound and southbound Class II bicycle lanes, from Market to Townsend streets.

Between Townsend and King streets, a northbound bicycle lane would be provided, and bicycle sharrows would be added to the southbound travel lane. The proposed bicycle lanes would be accommodated by removing one travel lane in each direction along most of Second Street.

To allow left turns at intersections and into the few existing driveways along Second Street, a two-way left-turn center lane would be provided along two sections of Second Street: between Market and Harrison streets and between South Park and Townsend streets. The two-way left-turn lanes would transition to exclusive left-turn lanes northbound at Mission, Howard, and Brannan streets and southbound at Mission, Folsom, Harrison, Brannan, Townsend, and King streets.

Additionally, in the northbound direction a shared left-turn and through lane would be provided at Minna, Harrison, Townsend, and South Park streets. No exclusive right-turn lanes and pockets would be provided along Second Street, except for a single northbound right-turn lane at Harrison Street. However, right turns would be permitted from the shared lane at all intersections where right turns are currently allowed.

Between Harrison and South Park streets, Alternative 3 would include two northbound lanes and one southbound lane. Between Harrison and Bryant streets, the northbound configuration would include a shared through-left lane, an exclusive right-turn lane, and a bicycle lane between these two lanes. To improve pedestrian safety at Second and Harrison streets, the southeast corner would be reconfigured to eliminate the two existing uncontrolled (channelized) northbound right-turn lanes; drivers would be required to make turns from the single right-turn lane at the intersection. Also, the eastbound left-turn lanes from Bryant to Second streets would be reduced from two lanes to one.

Alternative 3 would include a new traffic signal at the intersection of Second and South Park streets. The separate bicycle and pedestrian signals, included under the proposed project or its variant, would not be provided under this alternative. Bicyclists and pedestrians would cross intersections with vehicular traffic, which is typical when there is no separate signal phase for bicycles and pedestrians. Traffic signal timing between the intersections along Second Street would be adjusted under this alternative to minimize traffic delay and facilitate smooth and coordinated flow of traffic along Second Street. However, under Alternative 3, cycle lengths would remain the same as under the existing conditions (60 seconds) at all intersections under existing plus Alternative 3 conditions, except at Second Street intersections with Howard, Folsom, and Harrison streets. To improve traffic capacity at these three intersections, the cycle length would be increased from 60 to 90 seconds under Alternative 3 conditions.

Alternative 3 would consolidate bus stops along Second Street from the existing 13 bus stops to 9 bus stops on Second Street. Additionally the existing outbound flag stop[8] on Second Street at Townsend Street would be relocated around the northwest corner as a new bus zone on the north side of Townsend Street. Due to the curbside bicycle lane on the east side of the street, this alternative would provide bus zones at all Second Street stops on the east side of the street and at the Townsend outbound stop; all bus stops on the west side of the street would be bus bulbs.

Sidewalks between Harrison and Townsend streets would be widened on both sides of Second Street from 10 feet to 15 feet under Alternative 3. Crosswalks would be raised at the alleys would be upgraded with high-visibility markings.

Alternative 3 would result in a net loss of 9 passenger loading zones, 24 commercial loading stalls, 91 parking spaces, and 32 motorcycle spaces.

Alternative 3 would be coordinated with the rehabilitation and replacement of portions of the City's underground sewer infrastructure along the Second Street corridor, between Market and King streets. In addition, under this alternative, the overhead electrical and telecommunication utilities between Stillman and Townsend streets would be placed underground.

S.4.4 Comparison of Project Alternatives

The proposed project or project variant would result in significant and unavoidable project-level and cumulative traffic and commercial loading impacts. The proposed project or project variant would result in less-than-significant impacts on bicyclists, pedestrians, passenger loading, transit, and emergency vehicle access. It would have less-than-significant impacts with mitigation on archeological and paleontological resources, noise, and air quality.

Table S-4, Comparison of Environmental Impacts of the Alternatives, provides a comparison summary of the potential environmental impacts that may result from the alternatives to those of the proposed project.[9] The proposed project or its variant would result in significant impacts on transportation and circulation, specifically on traffic and commercial loading. This analysis did not identify impacts associated with the No Project Alternative 1 as no

8 A flag stop is a transit stop without a bus zone where the bus stops in the travel lane and transit riders step into the street to board the bus. Similarly, riders alighting the bus step off the bus into the street and cross the parking lane to the curb.

9 CHS Consulting Group. 2014. Final Supplemental Transportation Technical Memorandum for Transportation Impact Assessment of Project Alternatives. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

improvements would be made. Alternative 2 would have reduced impacts related to noise and vibration, and air quality compared to the proposed project or its variant. Alternative 3 would have similar impacts related to noise and vibration, and air quality compared to the proposed project or its variant.

Table S-4 compares the project alternatives to the proposed project and its variant. Similar to the proposed project or its variant, both Alternative 2 and Alternative 3 would have significant impacts related to transportation and circulation, as summarized below.

Traffic Impacts—Alternative 2 would cause significant and unavoidable traffic impacts at seven intersections compared to eight intersections under the proposed project or its variant. It would result in significant and unavoidable cumulative traffic impacts at 12 intersections, with two fewer intersections than the proposed project and one fewer intersection than the project variant.

Alternative 3 would cause significant and unavoidable traffic impacts at three fewer intersections than the proposed project or its variant. It would result in significant cumulative impact at 11 intersections, three fewer intersections than the proposed project and two fewer intersections than the project variant.

Transit Impacts—Alternative 2 would slightly improve transit travel time Muni Routes 10 and 12, compared to the proposed project or its variant. Cumulative transit delay time for Muni Route 10 under Alternative 2 would be less improved than under the proposed project or its variant. Cumulative transit delay would improve for Muni Route 12 under Alternative 2 conditions compared to cumulative transit under the proposed project conditions.

Unlike the proposed project or its variant, Alternative 3 would result in significant and unavoidable impacts on Muni Route 10. Similar to the proposed project or its variant, Alternative 3 would have less-than-significant impacts on Muni Route 12.

Unlike cumulative plus proposed project or its variant conditions, cumulative plus Alternative 3 conditions would result in significant and unavoidable cumulative transit impacts on Muni Route 10. Similar to the proposed project and its variant, cumulative plus Alternative 3 conditions would result in less-than-significant cumulative impacts on Muni Route 12.

Table S-4: Comparison of the Environmental Impacts of the Alternatives

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Ability to Meet Project Objectives	Would meet all project objectives.	Would not meet any of the project objectives.	Would meet some of the project objectives but would have reduced bicycle and pedestrian safety and reduced improvements to transit reliability compared to the proposed project or project variant.	Would meet some of the project objectives but would have reduced bicycle and pedestrian safety and reduced improvements to transit reliability compared to the proposed project or project variant.
IMPACTS				
Cultural and Paleontological Resources				
Impact CP-1 Historical Resources	LS	NI	Similar (LS)	Similar (LS)
Impact CP-2 Archaeological Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Impact CP-3 Paleontological Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Impact C-CP-1 Contribution to Cumulative Impacts on Cultural Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Transportation and Circulation				
Impact TR-1 Construction Impacts	LS	NI	Similar (LS)	Similar (LS)
Impacts TR-2 and TR-3 Traffic Impacts at Intersections #1 and #2	SU	NI	Similar (SU) for TR-2 and TR-3	Eliminated (LS) for TR-2 and TR-3

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impacts TR-4 through TR-6 and TR-9 Traffic Impacts at Intersections #6, #10, #16, and #29	SU	NI	Similar (SU) for TR-4, TR-5, and TR-9 Reduced (SU)[1] for TR-6	Similar (SU) for TR-4, TR-5, and TR-9 Reduced (SU)[1] for TR-6
Impact TR-7 Traffic Impact at intersection # 17	SU	NI	Eliminated (LS) for TR-7	Greater (SU) [2] for TR-7
Impact TR-8 Traffic Impact at intersection #28	SU	NI	Similar (SU) for TR-8	Eliminated (LS) for TR-8
Impacts TR-10 through TR-12 Traffic Impacts at Intersections #3, #4, and #5	LSM	NI	Similar (LSM) for TR-10 and TR-11 Reduced (LS) for TR-12	Reduced (LS)
Impacts TR-13 Traffic Impacts at Intersection #23 and #27	LS	NI	Similar (LS)	Similar (LS)
TR-14 Traffic Impacts at Intersections #7, #8, #9, #11, #12, #13, #14, #15, #18 through #22, and #24 through #26	LS	NI	Similar (LS)	Similar (LS) at Intersections #7, #8, #9, #11, #12, #13, #14, #18 through #22, and #24 through #26 Greater (SU) at Intersection #15
Impact TR-15 Traffic Impacts during weekday baseball games	SU	NI	Similar (SU)	Similar (SU)
Impact TR-16 Transit Impacts	LS	NI	Reduced (LS)[1]	Greater (SU) on Route 10 Reduced (LS) on Route 12
Impact TR-18 Pedestrian Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact TR-19 Bicycle Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact TR-20 Emergency access Impacts	LS	NI	Reduced (LS)	Reduced (LS)
Impact TR-21 Passenger Loading Impacts	LS	NI	Reduced (LS)[1]	Greater (SUM)
Impact TR-22 Commercial Loading Impacts	SUM	NI	Eliminated (LS)	Greater (SUM)
Impact TR-23 Parking Impacts	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Impact C-TR-1	LS	NI	Similar (LS)	Similar (LS)
Impact C-TR-2 through C-TR-5 Cumulative Traffic Impacts at Intersections #1, #2, #3, and #4	SU	NI	Similar (SU) for C-TR-2 through C-TR-5	Eliminated (LS) for C-TR-2 through C-TR-5
Impact C-TR-6 through C-TR-11 and C-TR-15 Cumulative Traffic Impacts at Intersections #6, #7, #8, #9, #10, #16, and #29	SU	NI	Similar (SU) for C-TR-6 through C-TR-8, C-TR-10, and C-TR-15. Greater (SU) for C-TR-9, C-TR-11	Similar (SU) for C-TR-6 through C-TR-10 and C-TR-15 Greater (SU) for C-TR-11
Impact C-TR-12 Cumulative Traffic Impact at Intersections #17	SU	NI	Eliminated (LS) for C-TR-12	Greater (SU) for C-TR-12

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-TR-13 Cumulative Traffic Impact at Intersections #20 for the proposed project	SU	NI	Eliminated (LSM) for C-TR-13	Eliminated (LSM) for C-TR-13
Impact C-TR-14 Cumulative Traffic Impact at Intersections #28	SU	NI	Similar (SU) for C-TR-14	Eliminated (LS) for C-TR-14
Impact C-TR-16 Cumulative Traffic Impacts at Intersections #5, #14, #15, #21, #22, #23, #26, and #27	LS	NI	Similar (LS) for #5, #15, #21, #22, #23, #26, and #27 Reduced (LS) for #14	Similar (LS) for #5, #21, #22, #23, #26, and #27 Greater (SU) for Intersections #14 and #15
Impact C-TR-17 Project Variant Cumulative Traffic Impacts at Intersection #5, #14, #15, #20, #21, #22, #23, #26, and #27 (Project Variant)	LS[3]	NI	Reduced (LSM) for Intersection #20 Similar (LS) for #5, #14, #15, #21, #22, #23, #26, and #27	Reduced (LSM) for Intersection #20 Similar (LS) for 5, , #21, #22, #23, #26, and #27
Impact C-TR-18 Cumulative Traffic Impacts at Intersection #11, #12, #13, #18, #19, #24, and #25	LS	NI	Similar (LS)	Similar (LS)
Impact C-TR-19 Cumulative Transit Impacts	LS	NI	Greater for Muni Route 10 (LS)[2] Reduced for Muni Route 12 (LS)[1]	Greater for Muni Route 10 (SU)[2] Greater for Muni Route 12 (LS)[2]

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-TR-20 Cumulative Pedestrian impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact C-TR-21 Cumulative Bicycle Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact C-TR-22 Cumulative Emergency Access Impacts	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Impact C-TR-23 Cumulative Passenger Loading Impacts	LS	NI	Reduced (LS)[1]	Greater (SU)
Impact C-TR-24 Cumulative Commercial Loading Impacts	SUM	NI	Eliminated (LS)[1]	Greater (SUM)
Impact C-TR-25 Cumulative Parking Impact	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Noise				
Impact NO-1 Construction Noise Impacts	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Impact NO-2 Construction Ground-Borne Vibration Impacts	LS	NI	Reduced (LS)[1]	Similar (LS)
Impact NO-3 Permanent Noise Impacts	LS	NI	Similar (LS)[1]	Similar (LS)

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-NO-1 Cumulative Noise Impacts	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Air Quality				
Impact AQ-1 Construction Air Quality Impacts Related to Criteria Air Pollutants	LS	NI	Reduced (LS)[1]	Similar (LS)
Impact AQ-2 Construction Air Quality Impacts Related to Sensitive Receptors	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Impact AQ-3 Operation Air Quality Impacts Related to Violation of Air Quality Standards	LS	NI	Similar (LS)[1]	Similar (LS)
Impact AQ-4 Operation Air Quality Impacts Related to Sensitive Receptors	LS	NI	Similar (LS)[1]	Similar (LS)
Impact AQ-5 Air Quality Impacts Related to Implementation of Air Quality Plan	LS	NI	Similar (LS)[1]	Similar (LS)
Impact C-AQ-1 Cumulative Construction and Operation Air Quality Impacts Related to Criteria Pollutants	LS	NI	Reduced (LS)[1]	Similar (LS)

Table S-4: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-AQ-2 Cumulative Construction and Operation Air Quality Impacts Related to Sensitive Receptors	LSM	NI	Reduced (LSM)[1]	Similar (LSM)

Notes:

[1] Although the impact conclusion does not change, the level or intensity of the impact would be reduced under this alternative.

[2] Although the impact conclusion does not change, the level or intensity of the impact would be greater under this alternative.

[3] This comparison is between the alternative and the project variant.

LS = Less-than-Significant impact, no mitigation required

LSM = Less-than-Significant Impact with Mitigation

SU = Significant and Unavoidable impact for which feasible mitigation is not available

SUM = Significant and Unavoidable impact, with implementation of feasible mitigation

Pedestrians Impacts—Although both Alternatives 2 and 3 would improve pedestrian safety along Second Street, compared to existing conditions, and pedestrian impacts would be less than significant under either alternative, these improvements would not be to the same degree as those under the proposed project or its variant. In particular, because neither alternative would provide a separate pedestrian and bicyclist signal phase, conflicts between right-turning vehicles and pedestrians would continue under the two alternatives but would be eliminated under the proposed project and its variant.

Bicycle Impacts—Both Alternative 2 and Alternative 3 would improve bicycle facilities along Second Street, and both alternatives would result in less-than-significant bicycle impacts. However, they would have somewhat greater bicycle impacts than the proposed project or its variant because these alternatives would not achieve the same degree of bicycle safety. In particular, since neither alternative would provide a separate pedestrian and bicycle signal phase, conflicts between right-turning motorists and bicyclist would continue under the two alternatives, but the conflicts would be removed under the proposed project and its variant. Further, the bus bulbs or bus stops under these alternatives would have the potential to cause conflicts between transit vehicles and bicyclists. Bus operators would have to cross the bicycle lanes to allow passengers to board and alight at the bus bulb or would have to pull into and out of the bus zones.

Emergency Vehicle Access—Both Alternative 2 and Alternative 3 would provide adequate widths, clearance, and capacity for emergency vehicle access, similar to the proposed project and its variant. However, unlike the proposed project or its variant, Alternative 2 or Alternative 3 would include bus bulbs instead of bus boarding islands. Therefore, in the event of an emergency, the bicycle lanes under both alternatives would be more accessible for vehicles to pull over than under the proposed project or its variant..

Loading Impacts—Compared to the proposed project or its variant, Alternative 2 would reduce impacts on passenger loading zones and would eliminate commercial loading impacts. However, Alternative 3 would result in greater impacts on passenger and commercial loading.

Parking Impact—Both Alternative 2 and Alternative 3 would have reduced parking impacts compared to the proposed project and its variant because fewer parking spaces would be removed.

S.4.5 Environmentally Superior Alternative

CEQA Guidelines Section 15126.6(e)(2) requires identification of an environmentally superior alternative. If the No Project Alternative is environmentally superior, CEQA requires selection of the “environmentally superior alternative other than the no project alternative” from among the proposed project and the alternatives evaluated. The No Project Alternative is considered the overall environmentally superior alternative because the impacts associated with the proposed project would not occur. However, this alternative would not meet any of the project sponsor's objectives, listed in Chapter 2, Project Description, on page 2-2.

In accordance with the CEQA guidelines, an EIR is required to identify the environmentally superior alternative that has the fewest significant environmental impacts from among the alternatives evaluated. Based on the information in the comparison section above, the environmentally superior alternative is Alternative 2.

Alternative 2 is environmentally superior alternative because it would result in fewer significant and unavoidable traffic impacts than the proposed project or project variant and it would eliminate the proposed project's or variant's significant and unavoidable commercial loading impact. While Alternative 3 would result in fewer significant and unavoidable traffic impacts than Alternative 2, it would result in a significant and unavoidable transit impact for Muni Route 10. In addition, Alternative 3 would result in a significant and unavoidable passenger loading impact and a significant and unavoidable commercial loading impact that would be more severe than that of the proposed project or its variant. However, implementing Alternative 2 would not fully avoid the significant and unavoidable project level traffic impacts at seven intersections or the significant and unavoidable cumulative level traffic impacts at 12 intersections. No feasible mitigation measures have been identified due to right-of-way constraints.

Further, although Alternative 2 would result in less-than-significant impacts on alternative-specific and cumulative pedestrian and bicycle facilities, these impacts would be greater under Alternative 2 than under the proposed project or its variant. Alternative 2 would result in less-than-significant impacts on alternative-specific and cumulative parking. These impacts would be greater under Alternative 2 than under the proposed project or its variant. However, overall, Alternative 2 would have fewer significant and unavoidable traffic impacts than under the proposed project or project variant and would eliminate the project level and cumulative commercial loading impact of the proposed project or project variant. Alternative 2 would have similar impacts on cultural and paleontological resources, noise, and air quality as either Alternative 3 or the proposed project or its variant; therefore, Alternative 2 is identified as the environmentally superior alternative.

S.5 AREAS OF CONTROVERSY

On July 7, 2014, Environmental Planning issued a neighborhood notice to inform the public about the decision to supplement the Bicycle Plan FEIR for the Second Street Improvement Project. Parties that received the notice were owners and occupants of properties within 300 feet of the project site, neighborhood organizations for the project vicinity, persons who commented on the EIR for the San Francisco Bicycle Plan Project, and others who expressed an interest in the project during the subsequent public outreach conducted. Responders requested to be kept informed about the project and the environmental review process. Further, commenters raised issues about the timeframe for implementing bicycle facilities along this corridor and suggested improved signage. Commenters also expressed concern for traffic flow and the overall environmental footprint of the proposed project, given that traffic along the corridor is often headed to the Bay Bridge. In particular, one commenter noted that the analysis must include a full and accurate assessment of traffic impacts along Second Street as well as all adjacent streets—in typical and worst case rush hour conditions. The commenter also noted that the review of this project should also address delays to drivers that would result from project implementation, as well as the congestion, pollution, and noise impacts of the project. The topics raised in these comments are addressed in Sections 4.4, 4.5, and 4.6 of this EIR.

CHAPTER 1: BACKGROUND AND INTRODUCTION

1.1 HISTORY OF PROJECT PLANNING PROCESS

In 1997, San Francisco adopted the 1997 San Francisco Bicycle Plan (1997 Bicycle Plan), which was its first bicycle plan. The San Francisco Municipal Transportation Agency (SFMTA) Bicycle Program staff began a public process to update the 1997 Bicycle Plan in 2002. This planning process resulted in the development of a Bicycle Plan Policy Framework (May 2005) and a Bicycle Plan Network Improvement Document (April 2005). The Network Improvement Document identified potential projects, both near term and long term, to improve the existing citywide bicycle route network. The two documents evolved into the draft San Francisco Bicycle Plan, an update to the 1997 Bicycle Plan, which underwent environmental review in the San Francisco Bicycle Plan Environmental Impact Report (Bicycle Plan FEIR).[1] The State Clearinghouse number (SCH) for the Bicycle Plan FEIR is 2008032052.

The San Francisco Planning Commission certified the Bicycle Plan FEIR in June 2009. It provided environmental clearance for the update to the City's Bicycle Plan. The San Francisco Municipal Transportation Agency Board of Directors (SFMTA Board) and the San Francisco Board of Supervisors adopted the San Francisco Bicycle Plan as well as related amendments to the San Francisco General Plan in 2009. Second Street is Bicycle Route 11 in the City's bicycle route network, and as part of the Bicycle Plan FEIR, the SFMTA proposed two options for the Second Street corridor, referred to as Near-Term Improvement Project 2-1, Options 1 and 2, respectively. In addition, during the environmental review for the Bicycle Plan FEIR, the SFMTA modified Option 1 of Project 2-1, which was also evaluated in the Bicycle Plan FEIR as Project 2-1 Modified Option 1.

The Bicycle Plan FEIR certification was appealed by two organizations: the South Beach-Rincon-Mission Bay Neighborhood Association, a neighborhood organization for the area, including Second Street, and the Coalition for Adequate Review. The EIR certification was upheld on appeal by the San Francisco Board of Supervisors in August 2009. However, the SFMTA decided not to pursue the SFMTA Board's approval for Project 2-1; instead, SFMTA partnered with the San Francisco Public Works (Public Works) as the project manager for continued project development. The two departments worked with the Second Street

---

[1] San Francisco Planning Department, 2009. San Francisco Bicycle Plan Project Final EIR, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case File 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828.

neighborhood and other stakeholders in order to refine the design for the Second Street corridor.

1.1.1 Public Involvement

In early 2012, Public Works, the SFMTA, and the San Francisco Planning Department (Planning Department) began planning for the current proposal for the Second Street Improvement Project. The departments initially led three community meetings, one each in May, September, and November 2012, and one subsequent community meeting in May 2013.

In May 2012, existing conditions and project goals were discussed. Then the meeting participants developed design alternatives for the corridor. Four design themes emerged: bike lanes, bike lanes with a center turn lane, one-way cycle tracks, and a two-way cycle track.[2] At the September 2012 meeting, the participating departments presented these four options to the community and asked attendees to complete a survey for feedback. The survey results indicated that the community's preferred alternative was the design that included one-way cycle tracks in each direction. The design with bike lanes and a center turn lane concept was the second option preferred by survey respondents. In November 2012, the departments presented to the community the one-way cycle tracks design concept in further detail.

After the initial meetings, in May 2013, the departments presented a refined plan, with right-turn pockets and a detailed roadway reconfiguration. This refined plan included changes in the facilities for traffic, transit, pedestrians, bicyclists, parking, and loading along the Second Street corridor. In addition to the public workshops and community meetings, Public Works and SFMTA staff walked door to door to all of the buildings on Second Street, between Market and King streets, to notify tenants about the refined project design. Public Works staff have continued to meet with multiple neighborhood and merchant associations to provide project updates as requested.

1.1.2 Project Funding

In October 2012, Public Works submitted a One Bay Area Grant (OBAG) application to fund the preliminary engineering and construction of the project. The OBAG Program is a new

[2] The California Streets and Highway Code Section 890.4 defines a "bikeway" as a facility that is provided primarily for bicycle travel. Bikeway facilities are classified as follows: (1) Class I provides a completely separated right-of-way for the exclusive use of bicycles and pedestrians with cross-flow by motorists minimized; (2) Class II provides a striped lane for one-way bike travel on a street or highway; and (3) Class III provides for shared use with pedestrian or motor vehicle traffic. Cycle tracks are a type of Class IV bicycle facility, and consist of asphalt paving physically raised 2 inches from the level of either the parking lane or vehicle travel lane. "Class IV bikeways" or cycle tracks was approved in September 2014 under Assembly Bill 1193.

funding approach that better integrates the region's federal transportation program with California's climate law and the Sustainable Communities Strategy. OBAG-eligible projects are those that support multi-modal travel, local streets and road pavement rehabilitation, bicycle and pedestrian safety improvements, and safe routes to schools. The Second Street Improvement Project directly meets the goals and objectives of OBAG. The project supports the Sustainable Communities Strategy by promoting transportation investments in Priority Development Areas (PDAs), such as the East South of Market (SoMa) Area. In June 2013, the San Francisco County Transportation Authority (SFCTA) selected the project for funding under the OBAG program. In addition to compliance with the California Environmental Quality Act (CEQA), the proposed project or the project variant[3] is required to comply with the National Environmental Policy Act (NEPA).[4]

1.2 TYPE, PURPOSE, AND FUNCTION OF THIS SUPPLEMENTAL EIR

On behalf of the City and County of San Francisco (City), the Planning Department is the lead agency responsible for project compliance with the California Environmental Quality Act (CEQA), the CEQA Guidelines, and Chapter 31 of the San Francisco Administrative Code. The Planning Department determined that the preparation of a Supplemental EIR (SEIR) to the San Francisco Bicycle Plan FEIR is required for the proposed project or the project variant. This SEIR is intended to be an informational document that, in and of itself, does not determine whether a project will be approved but aids the planning and decision-making process by disclosing the potential for significant and adverse environmental impacts.

Pursuant to CEQA Guidelines, Section 15163, an SEIR may be required under the following circumstances:

- If only minor additions or changes would be necessary to make the previous EIR adequately apply to the project; and

- If the lead agency determines one or more of the following conditions, as defined in CEQA Guidelines Section 15162, apply:

    - Substantial changes are proposed in the project, which will require major revisions of the previous EIR or Negative Declaration due to the involvement of

[3] The project variant would be the same as the proposed project along the Second Street corridor except for differences at that the intersection of Second and Brannan streets, as described in Chapter 2, Project Description. The project variant is analyzed throughout this SEIR at the same level as the proposed project.

[4] The NEPA process for the project is underway and is being reviewed by Caltrans Local Assistance, District 4 Environmental Division. The Public Works contact for the NEPA documentation is Frank Filice ([415] 558-4011).

new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

- o Substantial changes occur with respect to the circumstances under which the project is undertaken, which will require major revisions of the previous EIR or Negative Declaration due to the involvement of new significant environmental effects or a substantial increase in the severity of previously identified significant effects.

- o New information of substantial importance, which was not known and could not have been known with the exercise of reasonable diligence at the time the previous EIR was certified as complete or the Negative Declaration was adopted.

As discussed in Section 1.1 above, following the certification of the Bicycle Plan FEIR, SFMTA partnered with Public Works to refine the design for the Second Street corridor. In addition, for efficient completion of excavation within the right-of-way, the Complete Streets Policy (Public Works Code Section 2.4.13) directs the City to coordinate improvements within public rights-of-way to occur simultaneously.[5] For the Second Street project, this is applicable to repairing or replacing the sewer and undergrounding the overhead utilities along a portion of Second Street between Stillman and Townsend streets. Further, the Public Works Code (Order No. 176,707)[6], Regulations for Excavating and Restoring Streets in San Francisco (also referred to as the Excavation Code), establishes a five-year plan moratorium on excavation in streets that have been reconstructed, repaved, or resurfaced in the preceding five years.

The proposed project and its variant analyzed in this SEIR differs from the Near-Term Improvement Project 2-1 Modified Option 1 that was analyzed in the Bicycle Plan FEIR. The differences are that the proposed project or its variant would implement the following changes not contemplated in the Near-Term Improvement Project:

---

[5] The San Francisco Public Works Code, Article 2.4 Excavation in the public right of way, Section 2.4.13, Transit, Pedestrian, Bicycle, Stormwater, and Communications infrastructure improvements as part of planning, construction, reconstruction, and repaving projects states that whenever Public Works or any other municipal excavator undertakes a project involving the planning, construction, reconstruction, or repaving of a public right-of-way, such project shall include, to the maximum extent practicable and feasible, transit, pedestrian, bicycle, stormwater, and communications infrastructure improvements. In combination, these improvements constitute a complete street project.

[6] San Francisco Public Works. 2007. Regulations for Excavating and Restoring Streets in San Francisco. Available online at http://www.sfdpw.org/ftp/uploadedfiles/sfdpw/boe/manager/DPW_Order_176-707.pdf. Accessed January 18, 2015.

- Reconfigure the southeast corner at the intersection of Harrison and Second streets to eliminate the two uncontrolled northbound right-turn lanes;
- Install raised and buffered cycle tracks (Class IV bicycle lanes) along most of the Second Street corridor instead of Class II bicycle lanes;
- Install raised crosswalks at alleys;
- Provide bus boarding islands at most bus stops, whereas the Bicycle Plan FEIR did not propose these transit facilities;
- Plant infill street trees;
- Provide pedestrian-scale street lighting;
- Widen sidewalks between Harrison and Townsend streets, from 10 feet to 15 feet, compared to no changes to sidewalks;
- Remove 129 standard on-street parking spaces and 19 motorcycle parking spaces instead of the 14 parking spaces originally proposed for removal under the Bicycle Plan FEIR;
- Repair and replace the sewer along Second Street, including the main sewer, side sewers, and construct/install/relocate drainage facilities; and
- Place existing overhead utilities underground along Second Street from Stillman to Townsend streets.

The Initial Study conducted during the Bicycle Plan FEIR process determined that the environmental topic areas that may result in potentially significant impacts were transportation, transportation-related air quality, and transportation-related noise. All other environmental topics analyzed in the Bicycle Plan FEIR were determined not to result in significant environmental effects.

As indicated in the CEQA Guidelines, Section 15163, “The supplement to the EIR need contain only the information necessary to make the previous EIR adequate for the project as revised.”

Section 4.2–Supplement to the Bicycle Plan Initial Study of this document supplements the analysis that was prepared in the Bicycle Plan IS. In particular, it examines potential impacts as a result of additional project components, such as rehabilitating and replacing sewer facilities, undergrounding overhead utilities, and implementing additional streetscape and pedestrian improvements. If the Bicycle Plan IS analysis for a particular topic is adequate to address the current proposed project and its variant, then no further analysis is provided for this topic in the SEIR. Topics further analyzed in this SEIR in Sections 4.3 through Section 4.6 are cultural and paleontological resources, transportation and circulation, noise, and air quality.

This document includes an analysis of air quality (Section 4.6) and greenhouse gases (Section 4.2) to address the changes in the Bay Area Air Quality Management District CEQA guidance and the evolving City approach for these topics since the publication of the Bicycle Plan FEIR.

In conformance with the CEQA Guidelines (California Public Resources Code, Section 21000 et seq.), this SEIR provides objective information addressing the environmental consequences of the project. It also identifies possible means of reducing or avoiding its potentially significant impacts and analyzes reasonable alternatives to the project. CEQA requires that public agencies not approve projects until all feasible means available have been employed to substantially lessen the significant environmental effect of such projects.[7]

The CEQA Guidelines help define the role and expectations of an EIR, as follows:

- **Informational Document.** An EIR is an informational document that will inform public agency decision makers and the public generally of the significant environmental effect(s) of a project, identify possible ways to minimize the significant effects, and describe reasonable alternatives to the project. The public agency shall consider the information in the EIR along with other information which may be presented to the agency (Section 15121 [a]).

- **Standards for Adequacy of an EIR.** An EIR should be prepared with a sufficient degree of analysis to provide decision makers with information that enables them to make a decision that intelligently takes account of environmental consequences. An evaluation of the environmental effects of a proposed project need not be exhaustive, but the sufficiency of an EIR is to be reviewed in the light of what is reasonably feasible. Disagreement among experts does not make an EIR inadequate, but the EIR should summarize the main points of disagreements among the experts. The courts have looked not for perfection but for adequacy, completeness, and a good faith effort at full disclosure (Section 15151).

[7] "Feasible" means capable of being accomplished in a successful manner within a reasonable period, taking into account economic, environmental, social, and technological factors (Public Resources Code, Section 21061.1).

The degree of specificity required in an EIR should "correspond to the degree of specificity involved in the underlying activity which is described in the EIR" (CEQA Guidelines, Section 15146).

City decision makers will use the certified EIR, along with other information and public processes, to determine whether to approve, modify, or disapprove the proposed project and to require any feasible mitigation measures as conditions of project approval.

1.3 ENVIRONMENTAL REVIEW PROCESS

The Planning Department's Environmental Planning Division (Environmental Planning) has prepared this SEIR for the benefit of the public and responsible and trustee agencies reviewing the proposed project and its variant. Its purpose is to provide supplemental information about the potential effects of the project on the environment.

On July 7, 2014, Environmental Planning issued a neighborhood notice to inform the public about the decision to supplement the Bicycle Plan FEIR for the Second Street Improvement Project (see Appendix A of this SEIR). Parties that received the notice were owners and occupants of properties within 300 feet of the project site, neighborhood organizations for the project vicinity, persons who commented on the EIR for the San Francisco Bicycle Plan Project, and others who expressed an interest in the project during the subsequent outreach conducted.

Responders to the neighborhood notice requested to be kept informed about the project and the environmental review process. Further, commenters raised issues about the timeframe for implementing bicycle facilities along this corridor and suggested improved signage. Commenters also expressed concern for traffic flow in the area and the overall environmental footprint of the proposed project and its variant, given that traffic along the corridor is often headed to the Bay Bridge. In particular, one commenter noted that the analysis must include a full and accurate assessment of traffic impacts along Second Street as well as all adjacent streets—in typical and worst case rush hour conditions. The commenter noted that the review of this project should also address driver delays that would result from project implementation, as well as the congestion, pollution, and noise impacts of the project.

1.3.1 Draft SEIR

An EIR and an SEIR are public informational documents intended to disclose to public agency decision makers and the general public the significant environmental effects of a project. They also present mitigation measures and feasible alternatives to avoid or reduce the proposed project's significant environmental effects.

All documents referenced in this Draft SEIR are available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, San Francisco, California, as part of Case File, 2007.0347E [SCH 2008032052]. The distribution list for the Draft SEIR is also available for review at the Planning Department.

Following publication of this Draft SEIR, there will be a public hearing before the Planning Commission during an approximately 45-day public review and comment period. The purpose of the hearing is to solicit public comment on the adequacy and accuracy of information presented in this Draft SEIR. The public hearing on this Draft SEIR has been scheduled by the San Francisco Planning Commission for March 19, 2015, in Room 400, City Hall, Dr. Carlton B. Goodlett Place, beginning at noon or later. (Call [415] 558-6422 the week of the hearing for a recorded message providing the Planning Commission Agenda for when this item will be heard.)

In addition, readers are invited to submit written comments on the adequacy of the document; that is, whether this Draft SEIR identifies and analyzes the possible environmental impacts and identifies appropriate mitigation measures. Comments are most helpful when they suggest specific alternatives or additional measures that would better mitigate significant environmental effects. CEQA Guidelines, Section 15096(d), calls for responsible agencies to provide comments on those project activities within their areas of expertise and to support those comments with either oral or written documentation.[8]

Written comments should be submitted to Sarah B. Jones, Environmental Review Officer, at sarah.b.jones@sfgov.org, or by mail at the following address:

Sarah B. Jones, Environmental Review Officer
San Francisco Planning Department
1650 Mission Street, Suite 400
San Francisco, CA 94103

1.3.2 Final SEIR

Following the close of the public review and comment period, the Planning Department will prepare and publish a document titled Responses to Comments, which will contain the City's responses to all comments on this Draft SEIR. The document will include copies of the letters and e-mails received and a transcript of the Planning Commission public hearing on the Draft SEIR. The Planning Commission will consider this Draft SEIR, together with the

8 CEQA Section 21069 defines a responsible agency as a public agency, other than the lead agency, that has responsibility for carrying out or approving a project.

Responses to Comments document, in an advertised public meeting and then will certify it as a Final SEIR if it is deemed adequate.

1.4 ORGANIZATION OF THIS SUPPLEMENTAL DRAFT EIR

This Supplemental Draft EIR has been organized as follows:

- **Summary—**This chapter summarizes the SEIR by providing a concise overview of the proposed project or its variant, the environmental impacts that would result from the proposed project or its variant, mitigation measures identified to reduce or eliminate these impacts, and alternatives to the proposed project or its variant.

- **Chapter 1, Background and Introduction—**This chapter provides an overview of the project planning process and the type, purpose, and function of this SEIR, its environmental review process, and its organization.

- **Chapter 2, Project Description—**This chapter discusses the project overview and the project sponsor's objectives, describes the project location, summarizes the existing conditions along the Second Street corridor, describes the proposed project and its variant components, and identifies required project approvals.

- **Chapter 3, Plans and Policies—**This chapter describes any project inconsistencies with the applicable plans, policies, and regulations of the City and County of San Francisco, as well as with those of regional and State of California agencies.

- **Chapter 4, Environmental Settings, Impacts, and Mitigation Measures—**This chapter supplements the environmental analysis in the Bicycle Plan FEIR. It includes a section to supplement the Bicycle Plan IS analysis and a section for each of the topics that are analyzed further: cultural and paleontological resources; transportation and circulation; noise; and air quality. For each of the topics, the relevant section describes the existing setting and regulatory framework, the project's environmental impacts, and the cumulative impacts for the environmental topic.

- **Chapter 5, Other CEQA Considerations—**This chapter presents any growth-inducing impacts that could result from the proposed project or its variant, summarizes the significant environmental effects that cannot be mitigated to a less-than-significant level, and presents any areas of controversy to be resolved.

- **Chapter 6, Alternatives—**This chapter presents alternatives to the proposed project and its variant for the Second Street Corridor, including the No Project Alternative, the Bicycle Lanes Alternative, and the Center-Turn Lane Alternative, as well as a discussion about other alternatives considered but rejected as infeasible.

- **Chapter 7, Report Preparers—**This chapter presents a list of persons involved in preparation of this SEIR.
- **Appendices—**The following appendices are included in the SEIR: Neighborhood Notice (Appendix A), Transportation Impact Study (Appendix B), Air Quality Technical Report (Appendix C), and Supplemental Transportation Technical Memorandum for Transportation Impact Assessment of Project Alternatives (Appendix D).

CHAPTER 2: PROJECT DESCRIPTION

2.1 PROJECT OVERVIEW

The Second Street Improvement project is intended to transform the Second Street corridor in the east South of Market (SoMa) neighborhood into a pedestrian- and bicycle-friendly complete street,[1, 2] consistent with the vision identified by the community in the East SoMa Area Plan, an area plan of the City's General Plan. The area plan identified Second Street as a primary pedestrian, bicycle, and transit thoroughfare and a green connector[3] for the neighborhood.

San Francisco Public Works (Public Works), the project sponsor, would construct the following improvements along Second Street, between Market and King streets, as part of the proposed project: widen sidewalks; install one-way cycle track bicycle facilities in the northbound and southbound directions;[4] install transit boarding islands at most transit stops along with planted medians; install Americans with Disabilities Act (ADA)-compliant curb ramps; plant street trees; install site furnishings (trash receptacles, bike racks, benches, and pedestrian lighting); and grind and repave the asphalt, curb-to-curb. In order to achieve the complete street along the corridor, the travel lanes along Second Street would generally be reduced from two in each direction to one in each direction to implement the bicycle facilities, consistent with the Bicycle Plan proposal; left turns would be restricted at most intersections.

---

1 The San Francisco Public Works Code Article 2.4 Excavation in the Public Right of Way, Section 2.4.13, Transit, Pedestrian, Bicycle, Stormwater, and Communications Infrastructure Improvements as Part of Planning, Construction, Reconstruction, and Repaving Projects states that whenever Public Works or other municipal excavator undertakes a project involving the planning, construction, reconstruction, or repaving of a public right-of-way, such project shall include, to the maximum extent practicable and feasible, transit, pedestrian, bicycle, stormwater, and communications infrastructure improvements. In combination, these improvements constitute a complete street project.

2 The San Francisco Administrative Code, Chapter 98, Section 98.1, the Better Streets Policy, requires City Departments to design City streets in keeping with the Urban Design Element of the City's General Plan; the City's Transit-First Policy; best practices in environmental planning and pedestrian-oriented; multi-modal street design, including the design guidelines set forth in the National Association of City Transportation Officials (NACTO) Urban Street Design Guide (2013) and the NACTO Urban Bikeway Design Guide (2014), and any subsequent editions of these Guides; and incorporation of sustainable water management techniques to ensure continued quality of life, economic well-being, and environmental health in San Francisco.

3 Green Connections is a two-year effort by the San Francisco Planning Department to identify city streets that would be upgraded incrementally over the next 20 years to make them safer and more pleasant to travel to parks by walking, biking, and other forms of transportation.

4 Cycle tracks or separated bikeways are classified as Class IV bikeways. They promote active transportation and provide a right-of-way designated exclusively for bicycle travel next to a roadway. Cycle tracks and separated bikeways are protected from vehicular traffic. Types of separation include grade separation, flexible posts, inflexible physical barriers, and on-street parking, as defined by Assembly Bill No. 1193.

In addition, before constructing these streetscape improvements, Public Works would rehabilitate and replace aging sewers along the project corridor, would construct/install/relocate drainage facilities, and would place existing overhead utilities underground along Second Street from Stillman to Townsend streets, which is the only segment where they are currently not underground.

A project variant was developed based on input from area residents who use the southbound left-turn at Second and Brannan streets to access their building. The variant would be the same as the proposed project along the Second Street corridor except for the following differences at the intersection of Second and Brannan streets: southbound left-turning movements would be permitted and there would be no separate signal phase at the crosswalk and cycle track on the east side of the intersection to separate left- or right-turning vehicles from pedestrians and cyclists proceeding through the intersection.

2.2 PROJECT SPONSOR OBJECTIVES

The overall purpose of the Second Street Improvement project is to implement a pedestrian- and bicycle-friendly street along Second Street from Market to King streets. The objectives of the project are as follows:

- Improve safety and accessibility for pedestrians, bicyclists, and transit passengers along the entirety of the Second Street corridor;
- Prioritize the needs of people walking, bicycling, and taking transit, consistent with the San Francisco Transit First Policy;[5]
- Decrease the likelihood of pedestrian and bicycle collisions with vehicles by reducing the number of conflicts between vehicles and pedestrians or bicycles;
- Reduce the number of vehicles accessing the freeway from Second Street;
- Increase the amount of space dedicated to pedestrians along Second Street;
- Fulfill the recommendations of the San Francisco Bicycle Plan by installing a dedicated bicycle facility along Second Street;
- Maintain system-wide reliability for transit routes along Second Street; and
- Inspect, rehabilitate, and replace the sewer system along the corridor.

---

[5] San Francisco Municipal Transportation Agency, 2014. Charter Article 8A, Municipal Transportation Agency, including the Transit-First Policy. Available online: http://www.sfmta.com/about-sfmta/reports/charter-article-8a-municipal-transportation-agency-including-transit-first.

2.3 PROJECT LOCATION

The project site consists of the Second Street corridor. Second Street is a north-south road in the SoMa neighborhood. It serves as a connector to various San Francisco neighborhoods, including Rincon Hill, East SoMa, and the downtown Financial District. As shown in Figure 2-1, the project site includes the public right-of-way along the entire length of Second Street, from Market Street to King Street.

The project boundary extends approximately 0.9 mile, from the southern edge of Market Street to the northern edge of King Street. The proposed project would change the intersections on Second Street at the following cross streets: Market, Stevenson, Jessie, Mission, Minna, Natoma, Howard, Tehama, Clementina, and Folsom streets, Dow Place, Harrison, Stillman, and Bryant streets, Taber Place, and Federal, South Park, De Boom, Brannan, Townsend, and King streets. The project boundary extends from one parcel property line to the facing parcel property line across Second Street, encompassing the 82.5-foot-wide public right-of-way, including the street and sidewalks in between. The project area is approximately 8.91 acres.

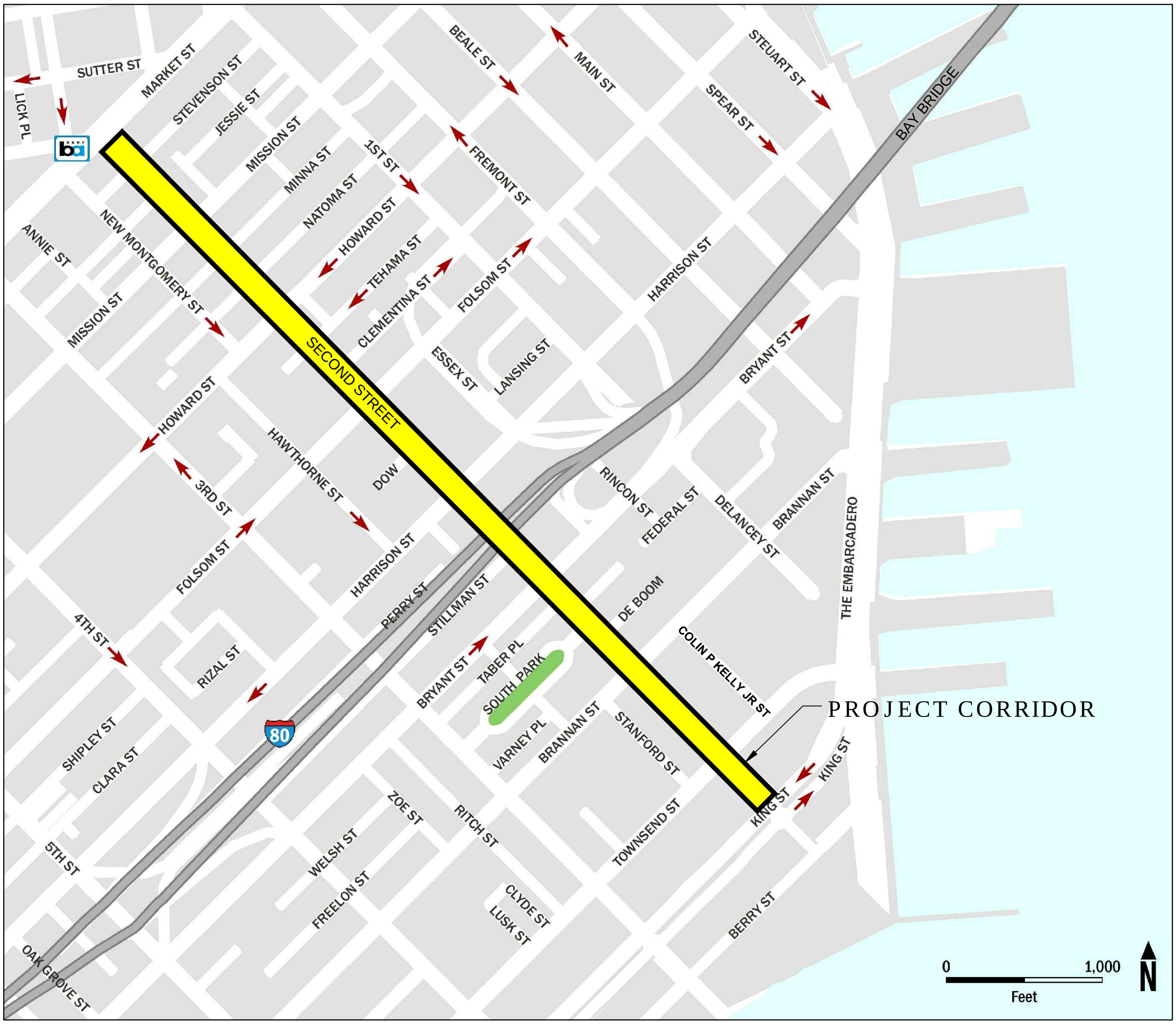
Modifications to loading and curb designations would be made outside of the Second Street corridor as follows: along Hawthorne Street at the intersection with Folsom Street, and along Brannan, Harrison, and Townsend streets, near their intersections with Second Street.

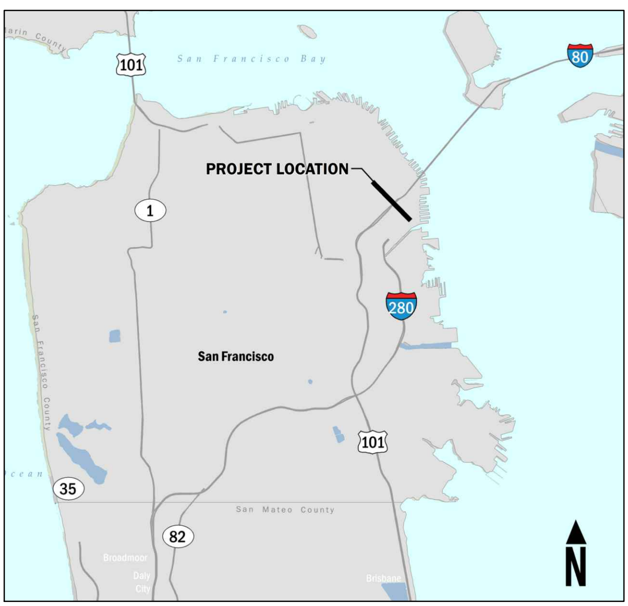
2.4 EXISTING CONDITIONS

Second Street is a north-south road surrounded by various land uses and diverse urban forms. There are high-rise buildings along the northern portion of the street (near downtown) and an array of mid-level, mixed-use commercial, retail, industrial, and residential buildings in the middle and southern portions of the street.[6] The northern terminus of Second Street ends near the center of the Financial District at Market Street; the street extends south into the SoMa neighborhood; and the southern terminus ends at AT&T Park, the San Francisco Giant's baseball stadium.

Second Street generally has two travel lanes in each direction, except from Townsend to King streets, where it has one travel lane in each direction. Parallel parking is available on both sides of the street along the whole project corridor between Market and King streets.

[6] Streets in SoMa are generally parallel or orthogonal to Market Street, which is oriented at approximately 44 degrees off true north. However, streets parallel to Market Street are generally described as "east-west" streets, while streets orthogonal to Market Street are generally described as running "north-south."





LEGEND

BART/Muni Metro Station

Source: City of San Francisco GIS Program

PROJECT LOCATION

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-1

dahlia_mendoza Jan 20, 2015 – 3:59pm T:\SFDPW 2nd Street Improvement\Figures_EIR\FIGURE 2-1.dwg

XREFS: Figures TB 8.5x11 PORTR.dwg

Second Street is used as a route for Bay Bridge-bound traffic. Northbound drivers use it to access the Essex Street on-ramp to I-80 by a right turn onto eastbound Harrison Street from Second Street; southbound drivers access the freeway with a left turn on Folsom or Harrison streets from Second Street and a right turn on Essex or First streets.

Second Street is also a pedestrian route from public transit, including the Montgomery Street BART Station, to AT&T Park on game days. Second Street is designated as Route 11 on the City's bicycle route network; it has sharrows[7] between Mission and Howard streets.

Land uses along the Second Street corridor are predominantly office uses and related business services, general commercial, retail, hotel, residential, and restaurants and cafes. Commercial and passenger loading zones are designated along the entire corridor.

Second Street extends through the Transit Center District Plan area and the East SoMa Area Plan area. It also serves as the eastern boundary for the Central SoMa Plan[8] area. As described in the East SoMa Area Plan, the zoning districts along the Second Street corridor are designated to reinforce its role as a secondary office reservoir for downtown. It permits small and larger offices, as well as residential uses and production, distribution, and repair (PDR) businesses.[9] The Second Street corridor is zoned primarily as Downtown Office (Special Development; C-3-O [SD]) from Market to Folsom streets and Mixed Use, Office [MUO]) from Folsom to King streets. A few areas are zoned Downtown Support (C-3-S), Service Secondary Office (SSO), and Public (P). The eastern side of Second Street from Townsend to King streets is zoned for residential uses, specifically South Beach Downtown Residential (SB-DTR).

The subsections below describe the existing conditions in the project area, organized by the type of features or project component as follows: right-of-way, including roadway alignment, travel lanes and sidewalks; bicycle facilities; transit facilities; on-street parking; on-street loading zones; street trees and landscaping; sewer; and overhead utilities.

---

7 Sharrows are a shared roadway bicycle marking that is typically placed in the center of a travel lane. They are considered a Class III bicycle facility as defined by the California Streets and Highway Code Section 890.4, because they provide for shared use between bicycles and pedestrian or motor vehicle traffic.

8 The draft Central SoMa Plan was formerly called the Central Corridor Plan. More information regarding this planning effort is available on the Planning Department Web site, The draft Central SoMa Plan, online at http://www.sf-planning.org/index.aspx?page=2557. Accessed December 2, 2014.

9 The Planning Department has adopted the term production, distribution and repair (PDR) to refer to the very wide variety of activities which have traditionally occurred and still occur in the industrially zoned areas. Examples of PDR businesses include: food preparation and printing books; sound and image production for movies; taking people to the airport; arranging flowers and building theatrical sets; building houses and offices; picking up mail and garbage. PDR includes arts activities, performance spaces, furniture wholesaling, and design activities.

2.4.1 Right-of-Way

Throughout the Second Street corridor, the existing right-of-way (ROW) is 82.5 feet wide between the parcel property lines on either side of the street. The general characteristics of the ROW are described from north to south below; they are depicted on Figures 2-2a and 2-2b and are shown on the existing street cross-sections on Figure 2-3.

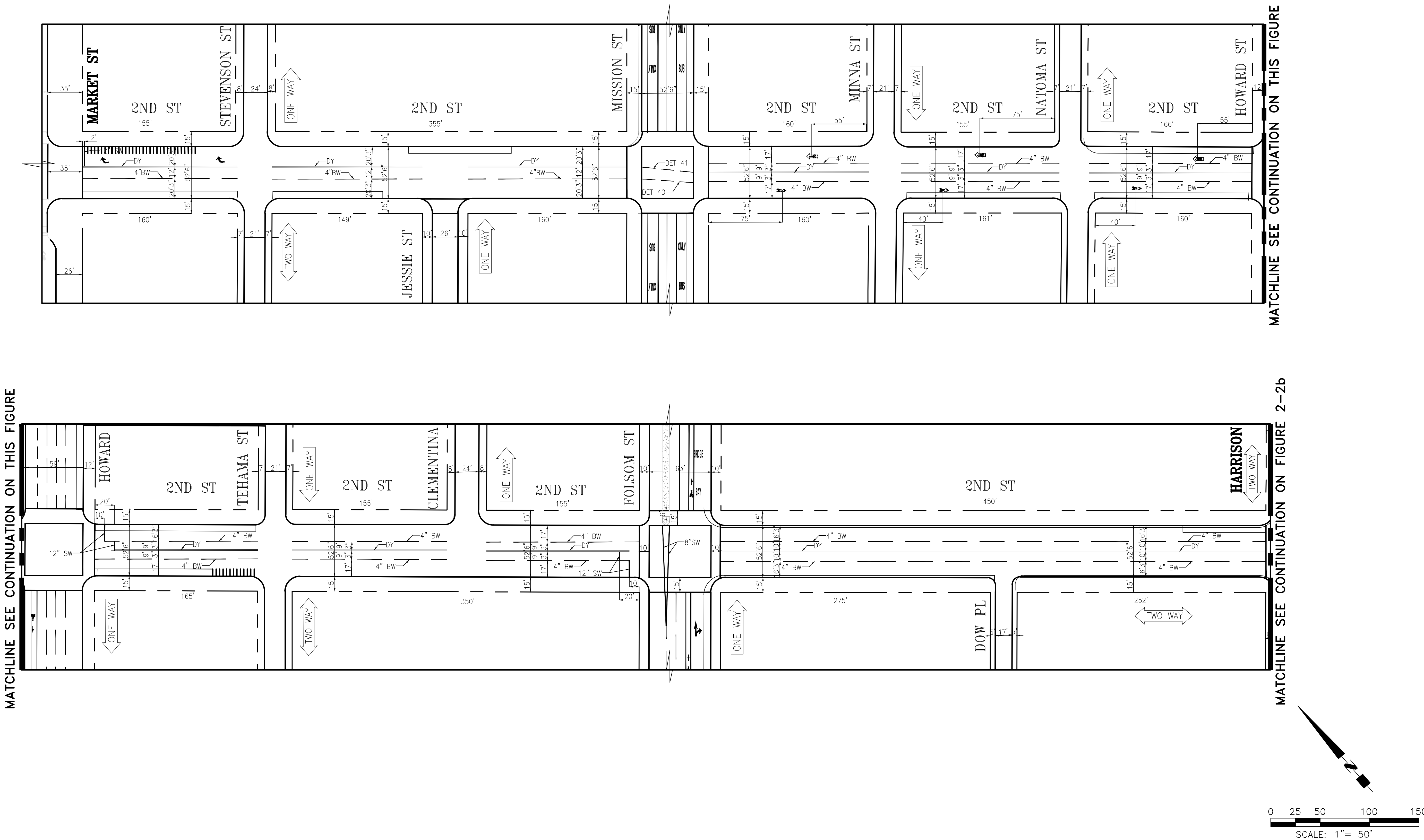
- From Market to Harrison streets, sidewalks on Second Street are 15 feet wide and the roadway is generally 52.5 feet wide. There is parallel parking on both sides of the street and two travel lanes in each direction, except between Market and Mission streets, where there is only one northbound travel lane.

- From Harrison to Townsend streets, the sidewalks are 10 feet wide and the roadway is generally 62.5 feet wide. There is parallel parking on both sides of the street and two travel lanes in each direction, except between South Park and Harrison streets, where there are three northbound travel lanes. These lanes include a right-turn only lane, a right-turn through-lane, and a through-lane. As shown on Figure 2-2b, there are two uncontrolled, northbound right-turn lanes at the intersection of Second and Harrison streets and two left-turn lanes from eastbound Bryant Street onto Second Street. As described above, during evening commute hours, drivers use Second Street to access the Interstate 80 (I-80) east freeway on-ramps at Essex Street and First Street.

- From Townsend to King streets, the sidewalks are approximately 18.75 feet wide and the roadway is generally 44.5 feet wide. There is parallel parking on both sides of the street and one travel lane in each direction.

2.4.2 Bicycle Facilities

Existing bicycle facilities along the Second Street corridor consist of sharrows between Mission and Howard streets. There are no other pavement markings or dedicated bicycle facilities on Second Street. Other improvements for bicyclists are guide signs and sidewalk bicycle racks. There are approximately 33 sidewalk bicycle racks, each accommodating two bicycles, with a total of approximately 66 bicycle parking spaces along the Second Street corridor, as shown in Table 2-1. There are three Bay Area Bike Share stations on Second Street corridor in the parking lanes: one south of Folsom Street on the east side, one south of South Park on the west side, and one south of Townsend Street on the east side. A fourth station is on the north side of Howard Street, approximately 22 feet east of Second Street.



EXISTING CONDITIONS - MARKET TO HARRISON STREETS

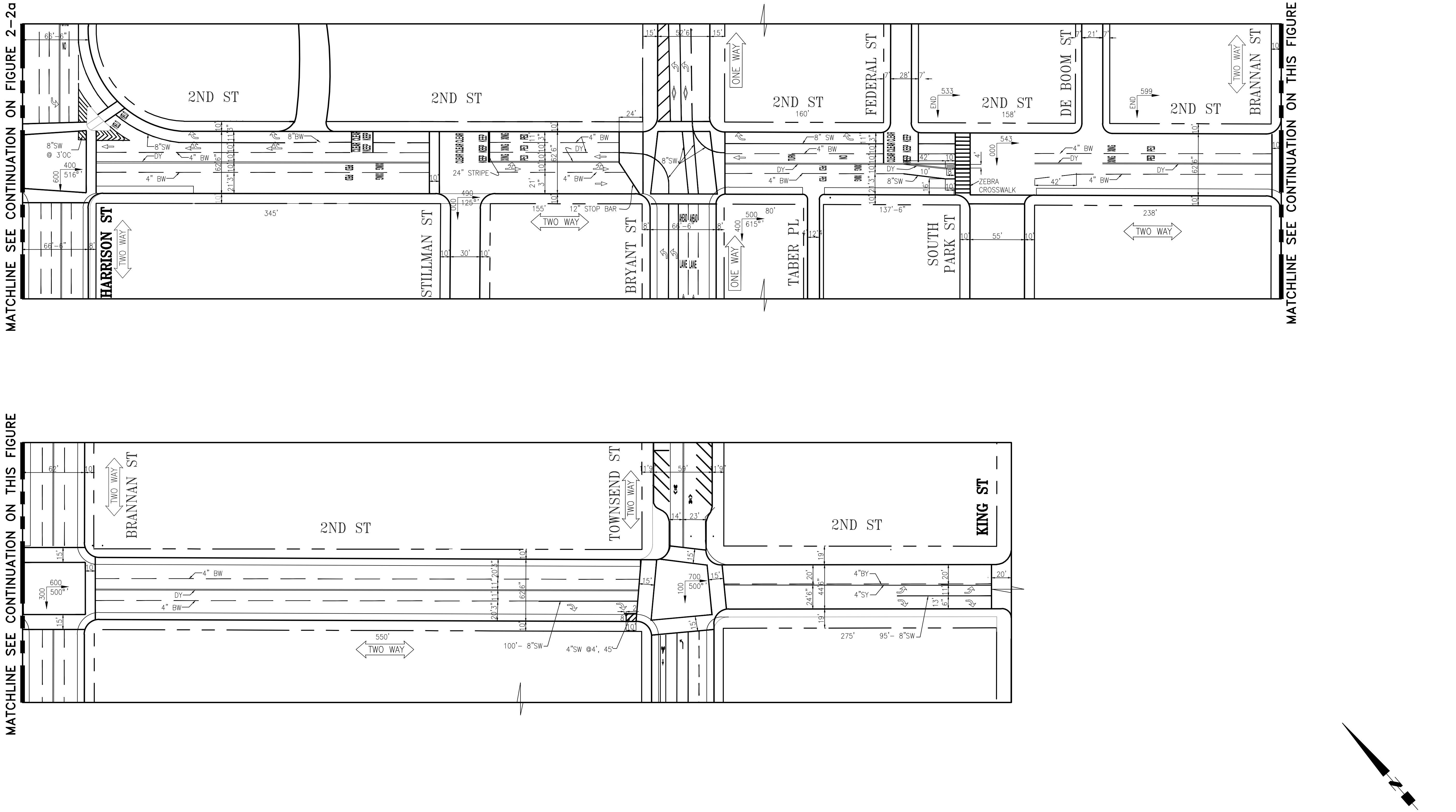
Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-2a

Source: Public Works 2014

dahlia_mendoza Jan 20, 2015 - 4:21pm T:\SFDPW 2nd Street Improvement\Figures_EIR\FIGURE 2-2a.dwg

XREFS: Figures TB.dwg\ X2NDEXISTING.dwg



EXISTING CONDITIONS - HARRISON TO KING STREETS

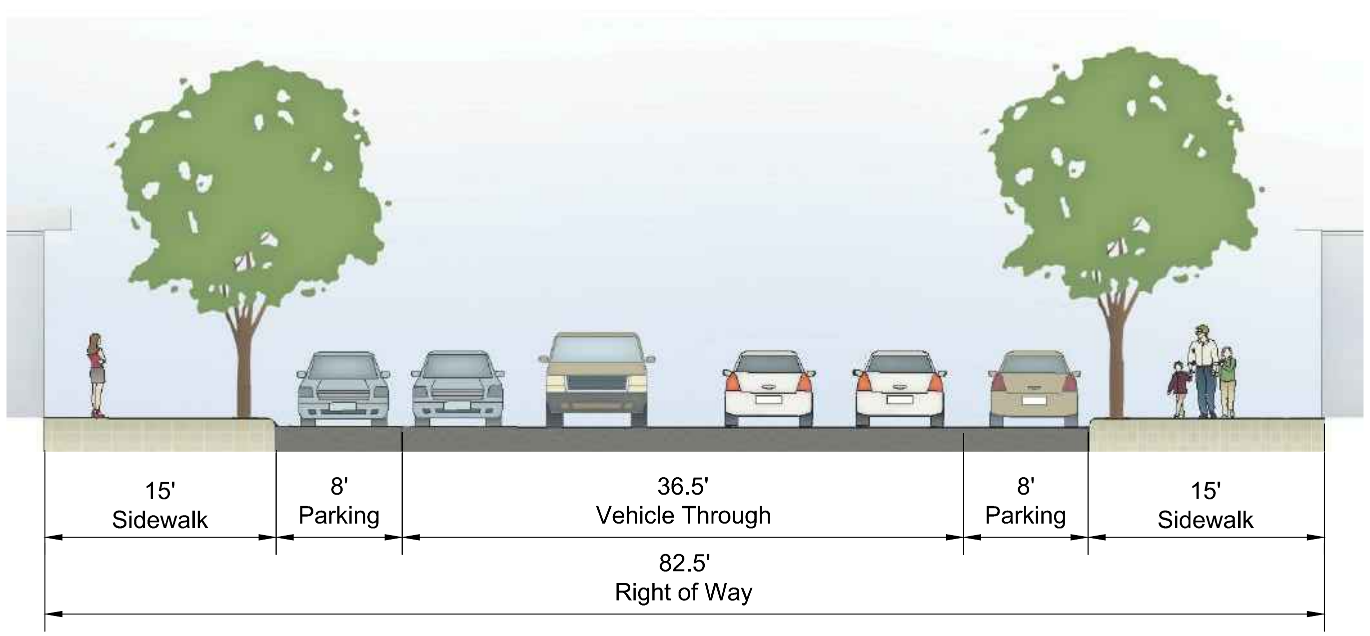
Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-2b

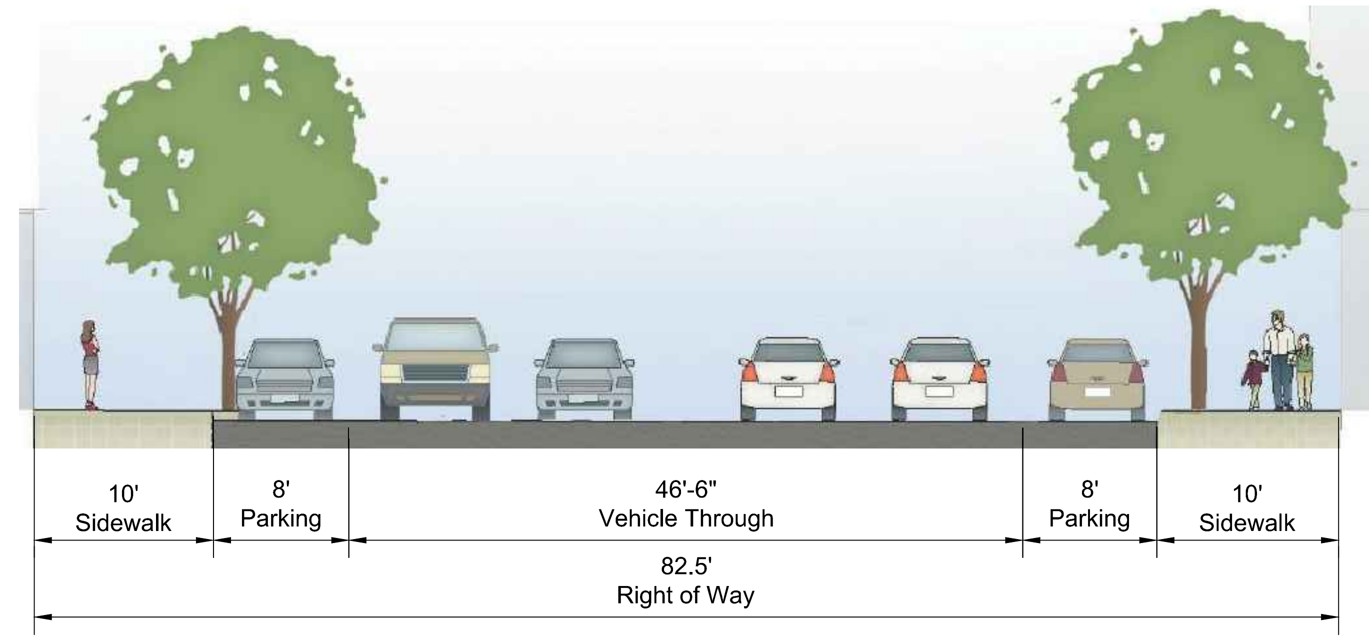
Source: Public Works 2014

dahlia_mendoza Jan 20, 2015 - 4:22pm T:\SFDPW 2nd Street Improvement\Figures_EIR\FIGURE 2-2b.dwg

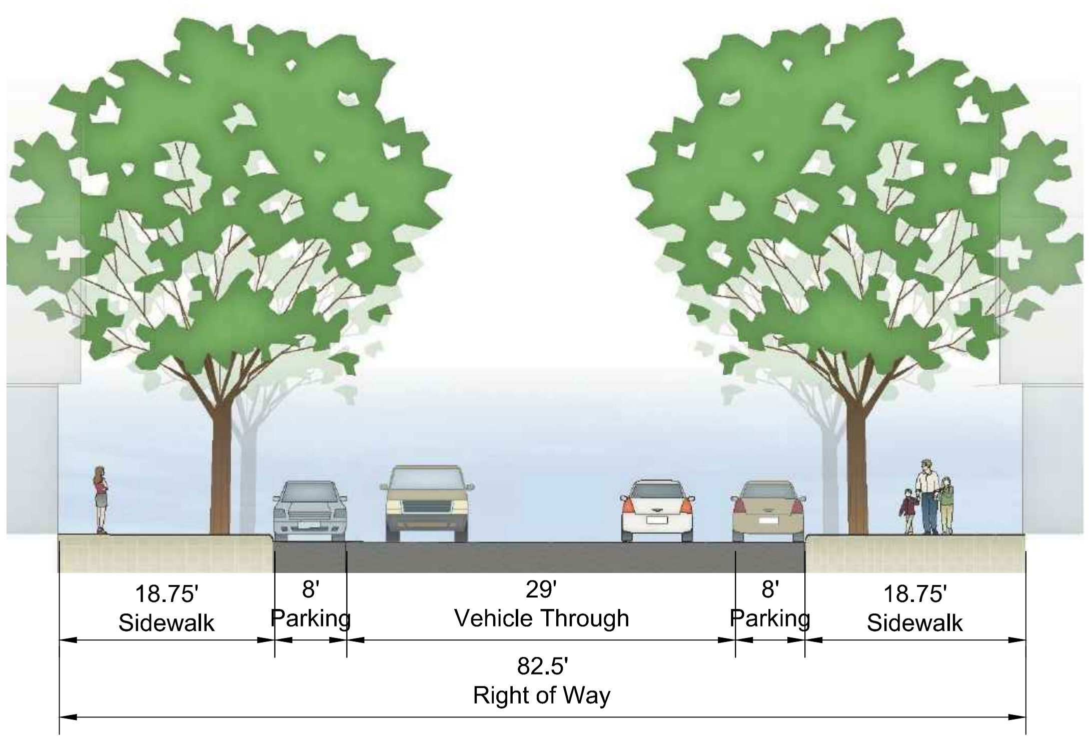
XREFS: Figures TB.dwg\ X2NDEXISTING.dwg



Market Street to Harrison Street



Harrison Street to Townsend Street



Townsend Street to King Street

Not to scale

Source: Public Works 2014

EXISTING CONDITIONS - STREET CROSS SECTIONS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-3

This page intentionally left blank.

Table 2-1: Existing Bicycle Racks and Bicycle Parking Spaces

Number of Racks	Number of Bicycle Parking Spaces	Address	Cross Street
2	4	36 Second Street	Stevenson Street
2	4	85 Second Street	Jessie Street
2	4	124 Second Street	Mission Street
1	2	142 Second Street	Minna Street
1	2	144 Second Street	Minna Street
1	2	156 Second Street	Minna Street
2	4	181 Second Street	Natoma Street
2	4	186 Second Street	Natoma Street
1	2	246 Second Street	Clementina Street
2	4	303 Second Street	Folsom Street
2	4	461 Second Street #127 C	Stillman Street
3	6	555 Second Street	South Park Street
2	4	563 Second Street	South Park Street
2	4	577 Second Street	De Boom Street
4	8	595 Second Street	De Boom Street
1	2	680 Second Street	Brannan Street
1	2	701 Second Street	Townsend Street
2	4	1 South Park Street	Second Street
33	**66**	**TOTALS**	
Source: SFMTA 2014.			

2.4.3 Transit

The existing Muni bus transit routes along Second Street are the 10 Townsend and 12 Folsom/Pacific. There are 13 transit stops on Second Street, including both inbound and outbound stops, serving the two bus lines. These are primarily curbside bus zones, with the exception of inbound and outbound[10] at Townsend Street and outbound at Brannan Street, which are flag stops.[11]

---

[10] Inbound transit service on Second Street is north toward Market Street, and outbound transit service is south towards King Street.

[11] A flag stop is a bus stop without a designated curbside bus zone.

Existing transit stops on Second Street are located in the outbound direction at Stevenson, Howard, Folsom, Harrison, Bryant, Brannan, and Townsend streets. Existing inbound transit stops are located on Second Street at the same intersections as the outbound stops, except there is no inbound stop on Second Street at Bryant Street. Near-side stops[12] are the outbound stop at Townsend Street, inbound and outbound at Brannan Street, and inbound at Folsom and at Howard streets. Far-side stops[13] include the inbound stop at Townsend Street, inbound and outbound stops at Harrison Street, the outbound stops at Folsom and at Howard streets, and the outbound stop at Stevenson Street. The inbound stop between Mission and Stevenson streets is located midblock.

Changes to transit service along Second Street are included as part of the SFMTA's Muni Forward (formerly known as the Transit Effectiveness Project).[14] Under Muni Forward Service Improvements, the 10 Townsend bus line will be renamed the 10 Sansome, but it will still serve transit stops along Second Street between Market and King streets, and the 12 Folsom/Pacific will be eliminated. However, additional transit service on Second Street will be provided by a new route called the 11 Downtown Connector, which will replace the 12 Folsom/Pacific service.

2.4.4 Parking

As shown in Table 2-2, there are approximately 168 standard on-street vehicle parking spaces on Second Street between Market and King streets. They include general metered parking (163 spaces) and blue ADA-accessible (i.e., handicap-accessible) parking spaces (5 spaces). In addition, there are 56 motorcycle parking spaces along this segment of Second Street. As described under Section 2.4.1, above, parking is generally provided along both sides of the street. There are approximately 21 general metered parking spaces on Brannan Street between Second and Colin P. Kelly Jr. streets, 10 parking spaces on the north side and 11 on the south side. Parking conditions on Harrison Street between Second and Hawthorne streets include 19 general metered parking spaces,9 spaces on the north side and 10 spaces on the south side.

[12] A near-side stop means that the transit stop is located before the bus enters the intersection.
[13] A far-side stop is located after the bus travels through an intersection.
[14] SFMTA. 2014. Muni Forward. Available online: http://muniforward.com/. Accessed December 22, 2014.

Table 2-2: Existing and Proposed Parking Supply along Second Street

Project Area (segment)	Parking Inventory and Supply by Type					
	General Metered		Blue (Handicap)		Motorcycle[1]	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Second Street						
Market to Mission streets						
East side			1		32	32
West side	3					
Mission to Howard streets						
East side	7		1			
West side	11		1			
Howard to Folsom streets						
East side	7	5				
West side	10				12	
Folsom to Harrison streets						
East side	13	5				5
West side	13				4	
Harrison to Bryant streets						
East side	11	2				
West side	11		1			
Bryant – Brannan streets						
East side	18	2				
West side	16				8	
Brannan to Townsend streets						
East side	20	3				
West side	10		1			
Townsend to King streets						
East side	13	13				
West side				1		
Second Street Subtotal	**163**	**30**	**5**	**1**	**56**	**37**
Side Streets						
Brannan Street (Second to Colin P. Kelly Jr. streets)						
North side	10	11		1		
South side	11	15				
Harrison Street (Hawthorne to Second streets)						
North side	9	10		1		
South side	10	10				
Side Street Subtotal	**40**	**46**	**0**	**2**		
Total supply	**203**	**76**	**5**	**3**	**56**	**37**

[1]In general, five motorcycle spaces is the equivalent of one car parking stall (one vehicle parking space).
Source: SFMTA, SFPark, September 2012; presented in Appendix K of the Second Street Improvement Project Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

2.4.5 Loading Zones

As shown in Table 2-3, there are 41 metered commercial loading stalls or spaces. Adjacent commercial loading spaces form commercial loading zones in which larger trucks may use more than one stall. There are 16 commercial loading zones along Second Street.

Unlike commercial loading zones, passenger loading zones may not be metered and are typically described by length in feet. As shown in Table 2-3, there are approximately 15 designated passenger loading zones along the Second Street corridor between Market and King streets, which provide capacity for approximately 39 passenger vehicles.[15] In addition, loading conditions on Harrison Street between Second and Hawthorne streets include one metered commercial loading stall and two passenger loading zones (88 feet). Metered commercial loading zones are typically designated with a yellow-painted curb and may be used only by freight vehicles or similar commercial trucks. Passenger loading zones are designated with a white-painted curb. Long-term parking is prohibited within these designated zones.

Commercial loading zones in metered areas are typically at least 22 feet long, which is the length for one loading stall. Loading zones may be comprised of one or more stalls with yellow-painted curb and yellow-capped meters. These zones are reserved for loading and unloading activities during weekdays, typically 7 a.m. to 6 p.m. Commercial vehicles are limited to 30 minutes in the zone, while passenger vehicles are limited to 3 minutes for loading passengers or materials and must be attended.

Special truck loading zones are typically 52 feet long and are comprised of two adjacent 26-foot-long metered stalls with yellow-painted curb and red-capped meters. Special truck loading zones are reserved for the use of trucks only (not including light vehicles with commercial plates) and are designed to accommodate one 40-foot truck.

Loading zones of either type without an adjacent parking stall on one or both ends may be shorter than the dimensions given above. For the purposes of discussion in this document, each yellow or red metered stall is described as a loading zone. It is noted where multiple commercial stalls/zones are adjacent, effectively providing a single long zone with capacity for multiple vehicles or long trucks.

Passenger loading zones on Second Street range in length from 20 to 164 feet. Passenger loading zones are designated with white-painted curb, are reserved for 5-minute loading and

[15] The 15 passenger loading zones on Second Street have a combined length of 787 feet. The TIS estimated the passenger loading capacity within these zones as approximately 39 passenger loading spaces, which represents the total number of vehicles that can be accommodated at one time.

Table 2-3: Existing and Proposed Loading Supply along Second Street

Project Area (segment)	Loading Supply by Type			
	Commercial Zones (metered stalls)[1]		Passenger Zones (approximate length in feet)[2]	
	Existing	Proposed	Existing	Proposed
Second Street				
Market to Mission streets				
East side	2 (4 stalls)		3 (172 ft)	1 (40 ft)
West side	4 (11 stalls)[3]	3 (9 stalls)[3]	1 (22 ft)	1 (20 ft)
Mission to Howard streets				
East side	2 (10 stalls)		1 (42 ft)	
West side	3 (6 stalls)	1 (2 stalls)	1 (21 ft)	
Howard to Folsom streets				
East side	1 (2 stalls)	1 (2 stalls)	2 (112 ft)	2 (110 ft)
West side			2 (45 ft)	
Folsom to Harrison streets				
East side	1 (3 stalls)	1 (3 stalls)	1 (44 ft)	1 (44 ft)
West side	1 (2 stalls)			
Harrison to Bryant streets				
East side	2 (3 stalls)	1 (2 stalls)	1 (40 ft)	1 (40 ft)
West side				
Bryant to Brannan streets				
East side		1 (2 stalls)	1 (20 ft)	1 (20 ft)
West side				
Brannan to Townsend streets				
East side				
West side			1 (164)	1 (164 ft)
Townsend to King streets				
East side				
West side			1 (105)	1 (85 ft)
Second Street Subtotal	**16 (41 stalls)**	**8 (20 stalls)**	**15 (787 ft)**	**9 (523 ft)**
Side Streets[4]				
Harrison Street (Hawthorne to Second streets)				
North side			1 (44 ft)	1 (44 ft)
South side	1 (1 stall)	1 (1 stall)	1 (44 ft)	1 (44 ft)
Side Street Subtotal	**1 (1 stall)**	**1 (1 stall)**	**2 (88 ft)**	**2 (88 ft)**
Total supply	**17 (42 stalls)**	**9 (21 stalls)**	**17 (875 ft)**	**11 (611 ft)**

[1] Most commercial zones are comprised of multiple adjacent commercial (yellow or red capped) metered stalls.
[2] Passenger loading zones include taxi and tour bus zones (white zones).
[3] The 147-foot unmetered commercial truck loading zone between Market and Stevenson streets that would be located in the part-time bus terminal would provide 5 metered stalls based on 26 feet per stall.
[4] There are no commercial or passenger loading zones on Brannan Street between Second and Colin P. Kelly Jr. streets. Source: SFMTA parking meter records, collected March 2012. Records are on file at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

unloading activities, and time restrictions are based on the associated businesses' hours of operations. The loading zones may be composed of one or more stalls or spaces, capacity is based on approximately one vehicle per 20 feet, and some are comprised of multiple stalls that allow off-hours metered parking.

2.4.6 Street Trees

There are approximately 151 street trees along the Second Street corridor. Some trees are planted in sidewalk tree wells and others are potted in areas with sub-sidewalk basements[16]. The trees are generally located along Second Street as follows: on the east side of the street from Market to Tehama streets; along both sides of the street from Tehama to Townsend streets; and on the west side of the street from Townsend to King streets.

2.4.7 Sewer

The sewer runs under Second Street between Market and King streets, typically in the center of the ROW. The sewer under the corridor was constructed as early as 1880; the most recent construction within the Second Street corridor was slip lining the existing brick sewer with 12-inch plastic pipe, which was completed in 2001. The sewer ranges from approximately 6 feet to 21 feet below ground.

2.4.8 Utilities

Utilities on Second Street include electrical and gas provided by Pacific Gas & Electric and telecommunications provided by AT&T and Comcast. These utilities are underground along most of the street. However, from Stillman to Townsend streets, electrical and telecommunications utilities are on overhead utility poles along the east side of Second Street and extend across the street to service properties on the west side of the street.

2.5 PROJECT CHARACTERISTICS

As described in Chapter 1, Introduction, the proposed project is based on Project 2-1 Modified Option 1 in the 2009 San Francisco Bicycle Plan, as analyzed in that plan's Final EIR.[17] Section 4.2 of this SEIR provides a comparison of the proposed project and the project as previously proposed in 2009. A variant to the proposed project (project variant) is analyzed in this SEIR and is described below. The proposed project components are

[16] As defined by the San Francisco Building Code 4503, a sub-sidewalk basement is that part of the underground building structure which extends into the Public Right of Way.

[17] San Francisco Planning Department, 2009. San Francisco Bicycle Plan Project Final EIR, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case File 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828.

summarized below; further details of these components are provided under the respective subsections that follow. Figure 2-4 provides an overview of the project components and the locations along the Second Street corridor where they would be constructed. The proposed project plans are shown on Figures 2-5a and 2-5b; the proposed street cross-sections and a cross-section of a typical bus boarding island are shown on Figures 2-6a and 2-6b.

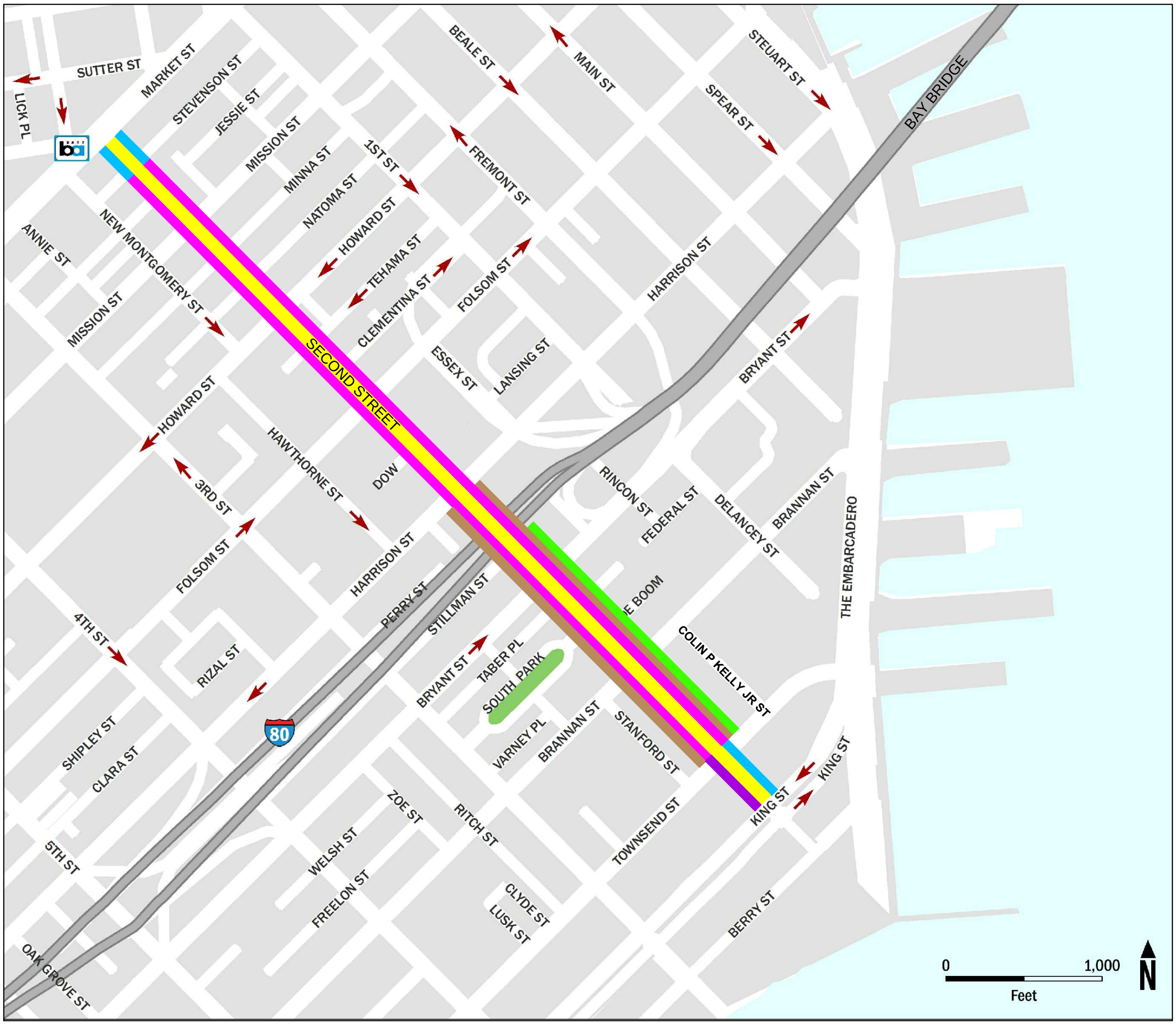
Changes to the ROW would include reducing travel lanes along the Second Street corridor from two in each direction to one in each direction. This would be to implement bicycle facilities, consistent with the Bicycle Plan. The one exception to this would be the corridor segment between Harrison and Bryant streets, where the lane configuration would be changed in the northbound direction from three travel lanes to two. The three northbound lanes—one through-lane, one right-turn through-lane, and one right-turn only lane—would be changed to two northbound lanes: one right-turn only lane and a through-lane.

Pedestrian improvements proposed as part of the project are the following: widened sidewalks between Harrison and Townsend streets; pedestrian bulb-outs at Second Street and South Park Street; raised crosswalks at all alleys (Stevenson, Jessie, Minna, Natoma, Tehama, and Clementina streets, Dow Place, Stillman Street, Taber Place, Federal, South Park, and De Boom streets); and pedestrian-scale lighting. A new signal would be installed at the intersection of Second and South Park streets to facilitate pedestrian crossing and traffic movements from eastbound South Park Street.

Outside of the Second Street corridor, changes would be made to the parking configurations, loading and curb designations (i.e., the red, yellow, and white zones), and bus zones along Brannan Street, Harrison Street, and a portion of Townsend Street near their intersections with Second Street.

Bicycle Facilities proposed as part of the project include installing a one-way cycle track in each direction along Second Street, between Stevenson and Townsend streets, along with right-turn pockets at a number of Second Street intersections. Signal timing would be modified to include combined bicycle, pedestrian, and through-traffic phases at all intersections along Second Street, with a separate right-turn phase at right-turn pockets.

Transit improvements would include the consolidation of transit stops along Second Street, reducing the number of stops from 13 to nine, and relocating the existing outbound flag stop at Townsend Street around the corner to a new bus zone on the north side of Townsend Street. In addition, the proposed project would entail the installation of bus-boarding islands at all nine of the remaining transit stops along Second Street. In addition, the existing evening bus terminal for the 9-San Bruno bus route that is located at the southwest corner of Market Street would remain curbside; commercial loading would continue to be allowed during the day.



LEGEND

(BART icon)	BART/Muni Metro Station
(yellow)	Roadway and Streetscape Improvements, Sewer Replacement
(magenta)	Cycle Track (Class IV Bicycle Facility)
(blue)	Striped Bicycle Lane (Class II Bicycle Facility)
(purple)	Sharrow (Class III Bicycle Facility)
(brown)	Sidewalk Widening
(green)	Utilities Relocation, Underground

PROJECT COMPONENTS OVERVIEW

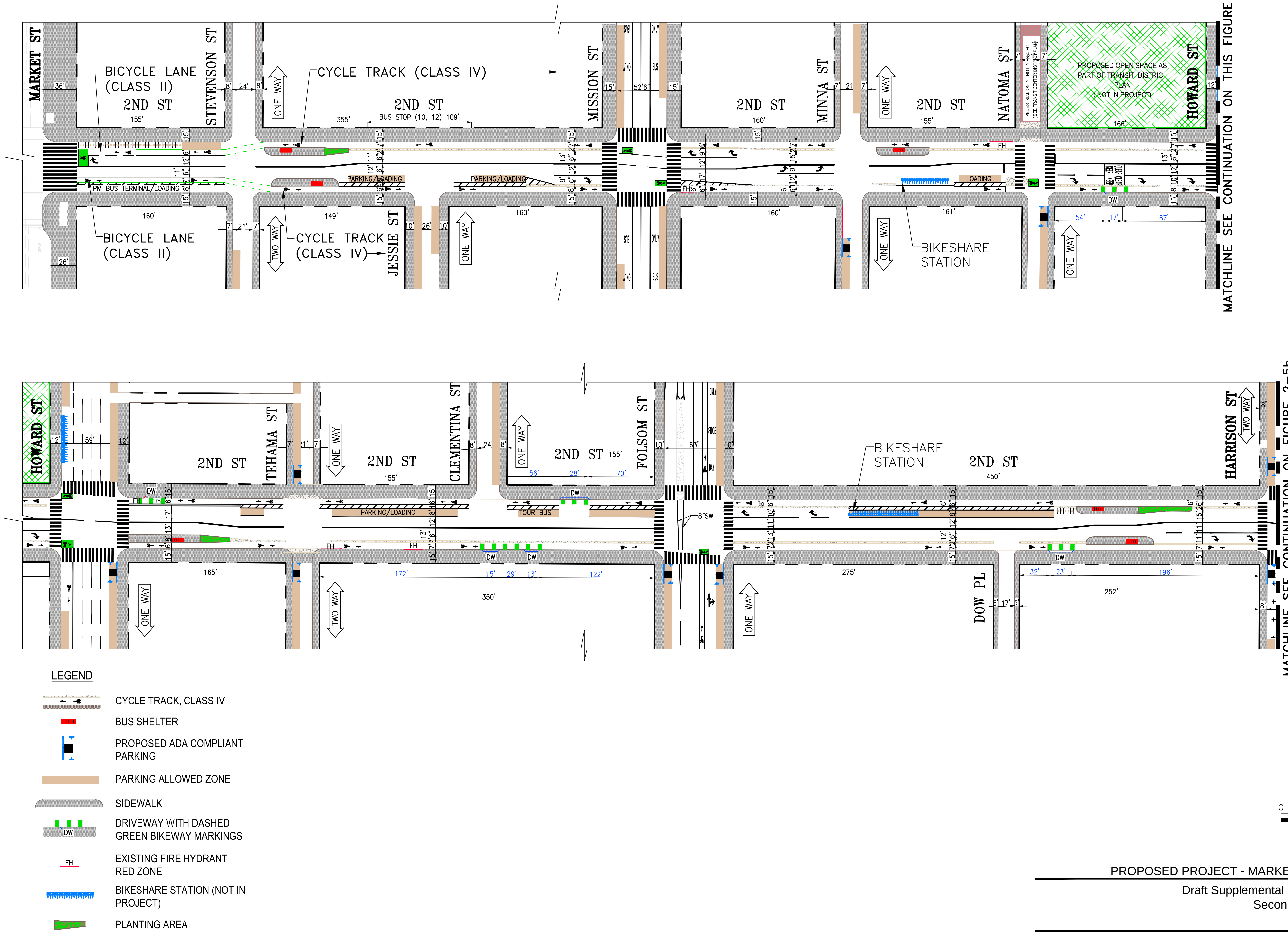
Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-4

Source: City of San Francisco GIS Program

dahlia_mendoza Jan 20, 2015 – 4:15pm T:\SFDPW 2nd Street Improvement\Figures_EIR\FIGURE 2-4.dwg

XREFS: Figures TB 8.5x11 PORTR.dwg

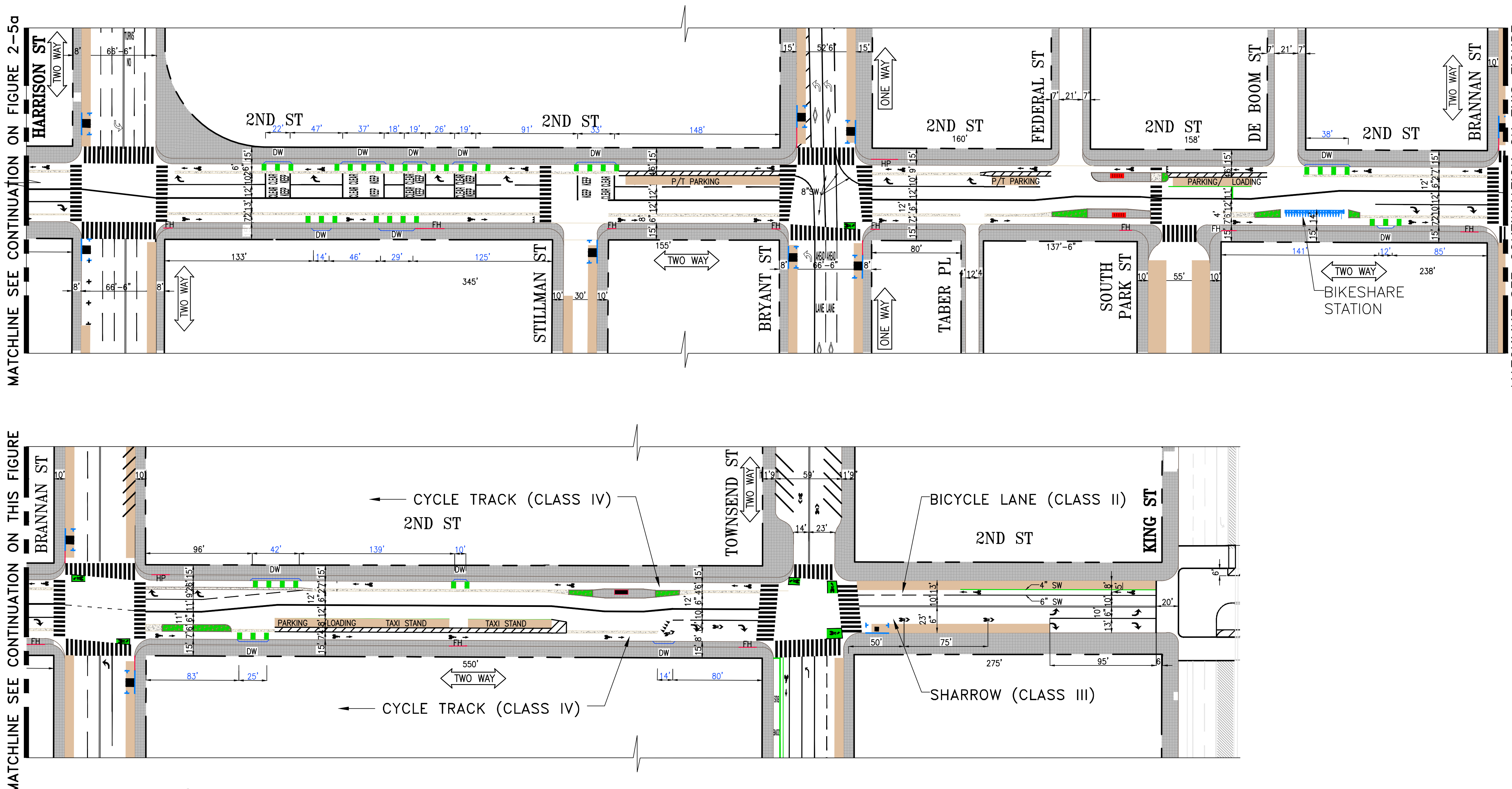


Source: Public Works 2014

PROPOSED PROJECT - MARKET TO HARRISON STREETS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-5a



LEGEND

- CYCLE TRACK, CLASS IV
- BUS SHELTER
- PROPOSED ADA COMPLIANT PARKING
- PARKING ALLOWED ZONE
- SIDEWALK
- DRIVEWAY WITH DASHED GREEN BIKEWAY MARKINGS
- EXISTING FIRE HYDRANT RED ZONE
- BIKESHARE STATION (NOT IN PROJECT)

0 25 50 100 150

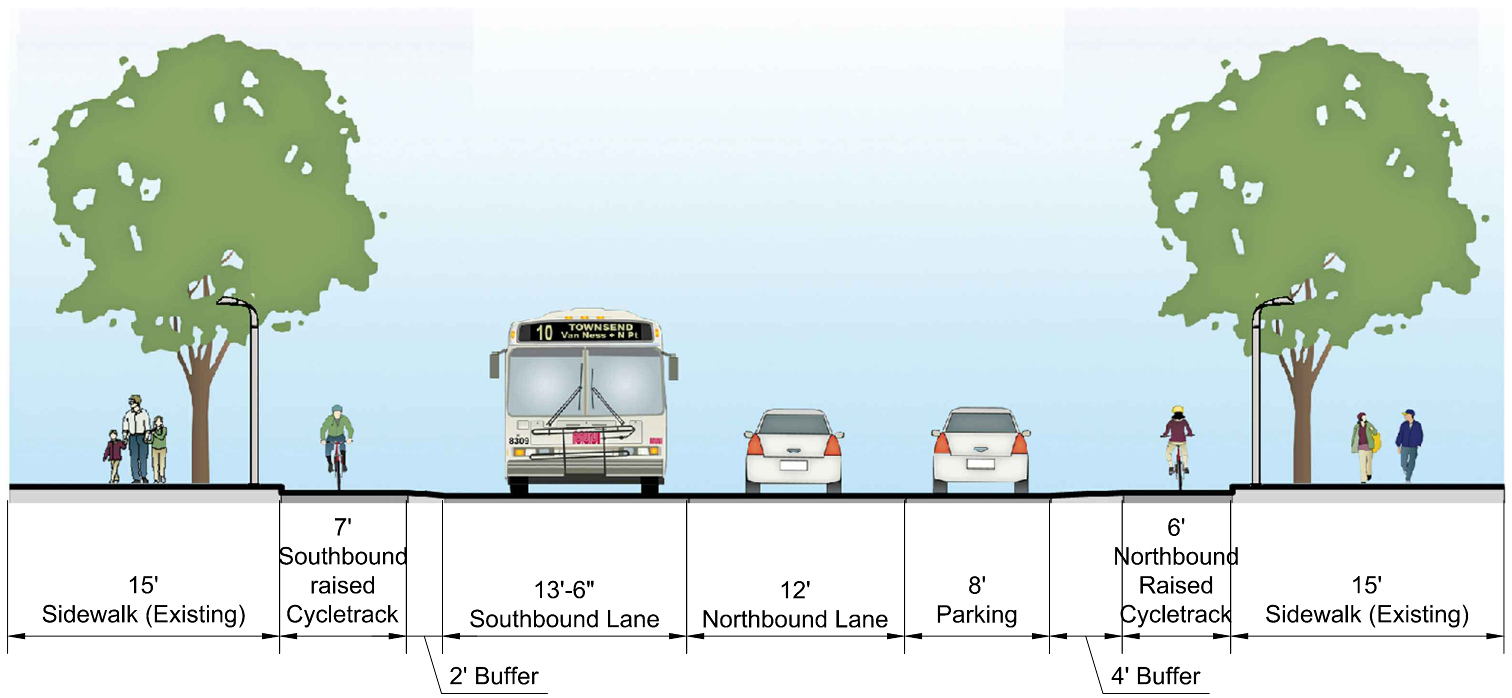
SCALE: 1"= 50'

Source: Public Works 2014

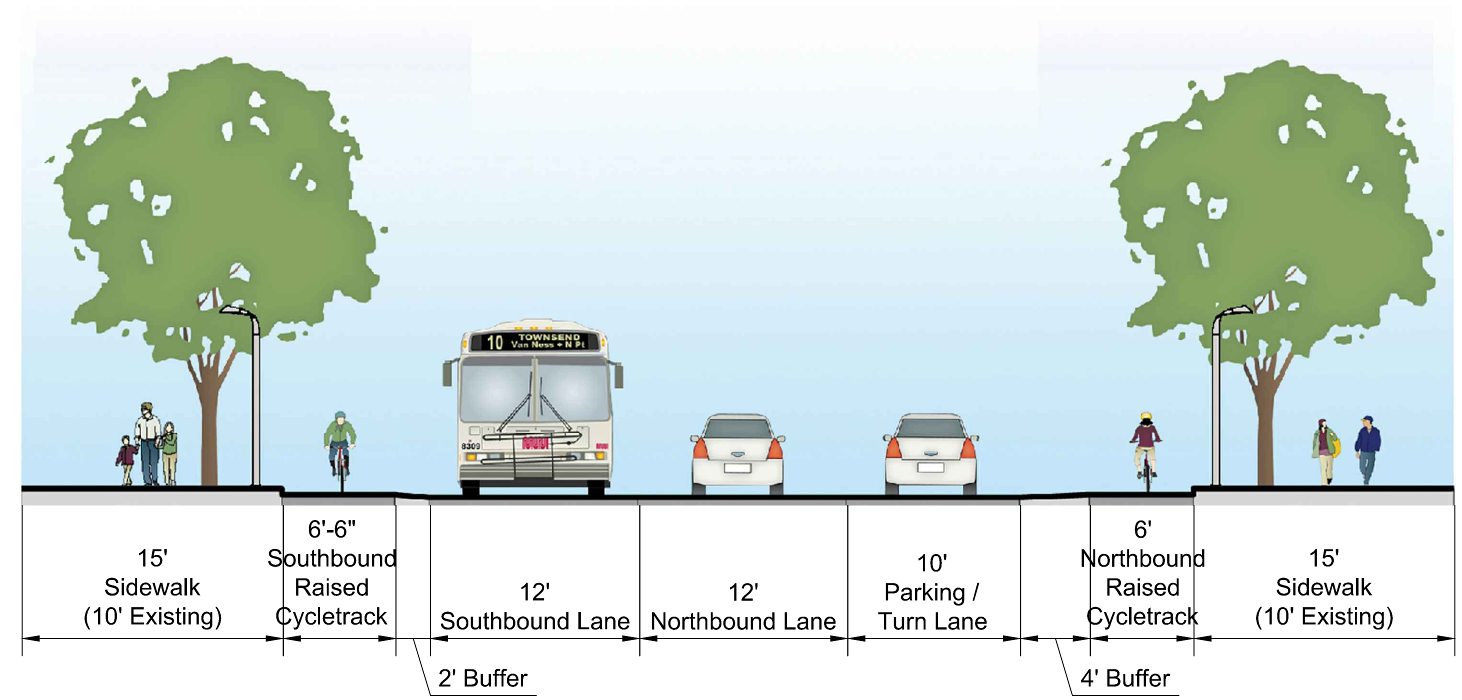
PROPOSED PROJECT - HARRISON TO KING STREETS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

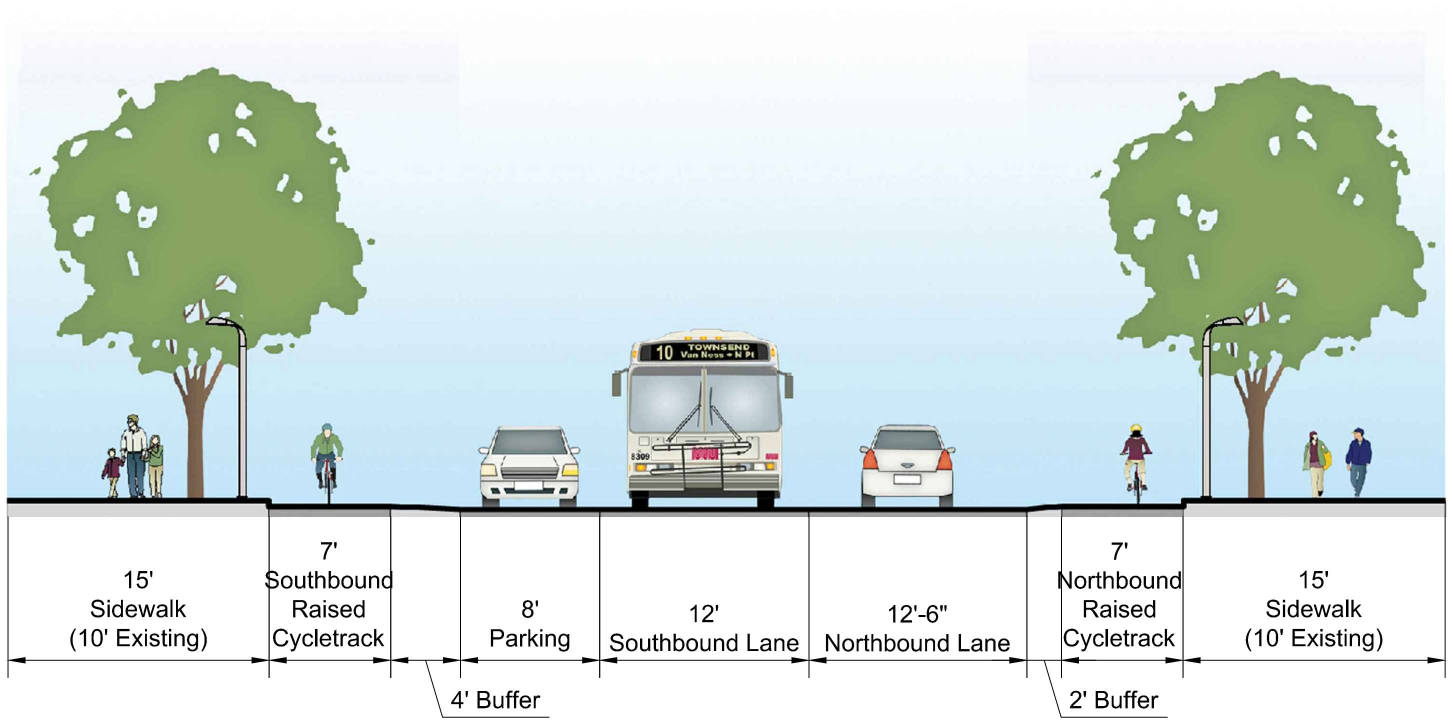
FIGURE 2-5b



Mission Street to Harrison Street



Harrison Street to Brannan Street



Brannan Street to Townsend Street

Not to scale

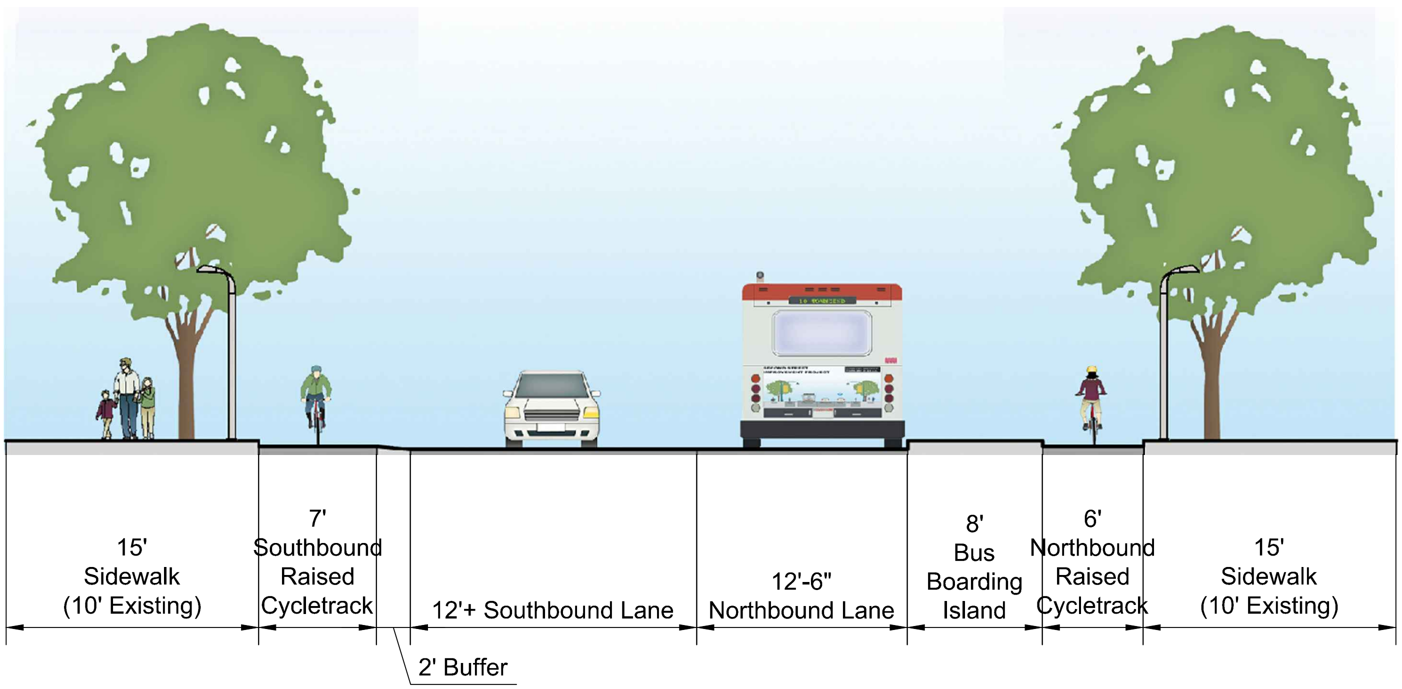
Source: Public Works 2014

PROPOSED PROJECT - STREET CROSS SECTIONS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-6a

This page intentionally left blank.



Typical Bus Boarding Island

Not to scale

Source: Public Works 2014

PROPOSED PROJECT - TYPICAL BUS BOARDING ISLAND CROSS SECTION

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 2-6b

Streetscape improvements would include planted medians, generally aligned at the ends of bus-boarding islands; new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.

The proposed project improvements would be coordinated with the rehabilitation and replacement of portions of the City's underground sewer infrastructure along the Second Street corridor between Market and King streets. In addition, existing overhead electrical and telecommunication utilities between Stillman and Townsend streets would be placed underground.

2.5.1 Project Variant

A project variant was developed based on input from area residents who use the southbound left turn at Second and Brannan streets to access their building. The project variant includes the same physical changes to Second Street as the proposed project; however, southbound left-turning traffic along Second Street at the intersection of Brannan Street would be permitted, and the crosswalk and cycle track on the east side of the intersection would not be separated from left- or right-turning vehicles through signal phasing.

2.5.2 Right-of-Way

The proposed project would widen the sidewalks on Second Street, between Harrison and Townsend streets, from 10 feet to 15 feet, as requested by the community. In addition, to address the difficulty that northbound pedestrians encounter crossing Harrison Street at Second Street (east side), the southeast corner of the intersection would be reconfigured to eliminate the two uncontrolled northbound right-turn lanes; vehicles would be required to make right turns from Second Street onto Harrison Street at the intersection. Right-turn pockets with a dedicated signal phase would be provided on Second Street at the following locations: northbound at Market Street, northbound and southbound at Mission Street, southbound at Howard Street, northbound at Folsom Street, northbound and southbound at Harrison Street, northbound at Bryant Street, northbound and southbound at Brannan Street, and southbound at Townsend Street.

Raised crosswalks level with the sidewalk would be constructed on Second Street across all alleys (Stevenson, Jessie, Minna, Natoma, Tehama, and Clementina streets, Dow Place, Stillman Street, Taber Place, Federal, South Park, and De Boom streets) between Market and Townsend streets. New curb ramps would also be provided at all Second Street intersections where the existing curb ramp does not meet ADA requirements.

Throughout the corridor, conflicts between turning motorists and pedestrians or bicyclists would be managed with modified timing and phasing of traffic signals and raised crosswalks at alleys. Motorists and bicyclists would be prohibited from making left turns in both the northbound and southbound directions on Second Street at the following intersections: Jessie Street, Mission Street, Howard Street, Folsom Street, Harrison Street, Bryant Street, South Park Street, and Brannan Street.[18] Left turns would be prohibited at all intersections with the exception of southbound Second Street at Minna Street and at King Street and both northbound and southbound Second Street onto Townsend Street. Northbound and southbound left turns would be allowed on Second Street at Townsend Street. A new traffic signal would be installed at the intersection of Second Street and South Park Street to provide controlled turns from South Park Street onto Second Street and a controlled crosswalk for pedestrians.

2.5.3 Bicycle Facilities

The proposed project includes installation of a cycle track in the northbound and southbound directions on Second Street, between Stevenson and Townsend streets. The proposed cycle tracks would be a Class IV[19] bicycle facility and would consist of asphalt paving raised 2 inches from the level of either the parking lane or vehicle travel lane. The elevation of the cycle track would change within a painted buffer strip, which separates the cycle track from either the parking or vehicle lane. The painted buffer strip would be 4 feet wide where the cycle track is next to parking lanes, and 2 feet wide where the cycle track is next to travel lanes. The raised separation would be continuous, with the cycle track ramping down to the level of the travel lane at major intersections. The width of the cycle tracks would range from 6 to 7 feet. The proposed cycle track design meets ADA and accessibility requirements.[20]

Between Market and Stevenson streets, a Class II[21] bicycle lane would be added in both the northbound and southbound directions. Between Townsend and King streets, a Class II bicycle lane would be added in the northbound direction and sharrows (a Class III bicycle facility) would be added in the southbound direction.[22]

Bicycles would be controlled by a separated bicycle and pedestrian traffic signal phase at all major intersections along the Second Street corridor. This would allow bicycles, pedestrians, and through-vehicle traffic to proceed at the same time. Right-turning motorists would proceed after the bicycle signal has turned red. This would include the installation of bicycle-

---

[18] The project variant, if implemented, would allow for southbound left turns at Brannan Street.

[19] Cycle tracks are similar to Class II bicycle lanes in that they provide a designated and dedicated space within the right-of-way for bicyclists.

[20] Public Works, SFMTA, and the Mayor's Office on Disability are developing standards that may result in minor changes to the final design of the proposed cycle track facility along Second Street. These changes would not be expected to affect the environmental analysis provided in this SEIR.

[21] A Class II bicycle facility provides a striped lane for one-way bike travel on a street or highway, as defined by the California Streets and Highway Code Section 890.4.

[22] A Class III bicycle facility provides for shared use with pedestrian or motor vehicle traffic, as defined by the California Streets and Highway Code Section 890.4.

specific signal heads and right-turn arrow signal heads. To accommodate this additional equipment, some signal poles may need to be replaced along Second Street, between Mission and Brannan streets. Specific pole replacement locations and types would be determined during the design phase. The pole footings would extend a maximum of 10 feet below ground.

A green-painted, two-stage bicycle left-turn queue box[23] would be provided at the intersection of Second and Market streets in the northbound lane. Bicyclists waiting to turn left or right would be able to queue in this space, separated from vehicles in the travel lane behind. An additional two-stage, left-turn bicycle queue box would be provided at the southwest corner of Second and Townsend streets. This bicycle queue box would allow bicyclists making a left turn onto eastbound Townsend Street to queue for the east-west signal phase. Additional two-stage, left-turn bicycle queue boxes may be included for other intersections along the Second Street corridor including at the following intersections: Second and Mission streets for northbound and southbound lefts onto Mission Street, Second and Natoma streets for southbound lefts onto Natoma Street, Second and Howard streets for northbound lefts onto Howard Street and westbound lefts onto Second Street, Second and Folsom streets for southbound lefts onto Folsom Street, Second and Bryant streets for southbound lefts onto Bryant Street, Second and Brannan streets for northbound and southbound lefts onto Brannan Street, and Second and Townsend streets for northbound and southbound lefts onto Townsend Street (in addition to the one for eastbound lefts onto Second Street).

2.5.4 Transit

The proposed project would maintain Muni transit operations for routes 10 Townsend and 12 Folsom/Pacific along Second Street, as described under Section 2.4, Existing Conditions, above. The proposed project would move some near-side Muni stops to the far side of the intersection and would remove some transit stops along Second Street. This was recommended by SFMTA's Service Planning Division and is consistent with the SFMTA's Stop Spacing Guidelines. All remaining bus stops on Second Street would be converted to bus-boarding islands, located between the travel lane and the cycle track. The one exception would be at the northwest corner of Second and Townsend streets in the outbound direction, where a bus zone would be installed on Townsend Street. The boarding islands would allow bus operators to stop within the travel lane. This would minimize delays,

[23] Two-stage bicycle left-turn queue boxes facilitate left turns by people on bicycles from a bikeway on the right side of the street, thereby avoiding the need to merge with motor vehicle traffic. On a green light, bicyclists travel straight across the intersection from the right-hand bicycle lane to the marked turn box, where they can turn to their left and wait until the light changes to proceed with the cross-street traffic along their route. The queue box is outside the path of travel for through-moving bicyclists and is separate from the pedestrian crosswalk.

compared to the existing conditions which require the operator to pull in and out of traffic at stops. The boarding islands would be 8 feet wide and would vary in length, depending on the length of the vehicles using the boarding island. A transit boarding island anticipated to be used by two buses would typically be 80 to 130 feet long. Proposed bus-boarding island locations are shown in Table 2-4. Most left turns from Second Street would be restricted to reduce transit delays.

Table 2-4: Proposed Bus-boarding Islands

Block	Location
Stevenson to Jessie streets	• East side, near-side intersection at Stevenson Street • West side, far-side intersection at Stevenson Street
Minna to Natoma streets	• East side, near-side intersection at Minna Street
Howard to Tehama streets	• West side, far-side intersection at Howard Street
Dow Place to Harrison Street	• East side, midblock • West side, midblock
Taber Place to South Park Street	• West side, at near-side intersection of South Park Street
Federal to De Boom streets	• East side, near-side intersection at Federal Street
Brannan to Townsend streets	• East side, far-side intersection at Townsend Street
Source: Public Works 2014.	

2.5.5 Parking

The proposed project would result in the removal of approximately 137 of the 168 standard street parking spaces and 19 of the 56 motorcycle spaces on Second Street between Market and King streets, resulting in a total of 30 general metered spaces, 1 blue ADA-accessible space, and 37 motorcycle spaces, as shown in Table 2-2. It would create approximately eight new on-street parking spaces on side streets, which would include creation of 1 blue ADA-accessible space on Harrison Street, resulting in an overall net reduction of approximately 129 standard on-street parking spaces[24] and 19 motorcycle parking spaces, as described below.

[24] For the purpose of environmental analysis the blue ADA-accessible parking spaces on Second Street are included in the total parking number of parking spaces being removed. Five existing blue ADA-accessible parking spaces along Second Street would be removed. For each one being removed, an existing general metered parking space on the nearby side street would be converted to a blue ADA-accessible parking space. This change in designation from general metered parking space to blue ADA-accessible parking space is not considered parking removal.

The proposed project would remove all of the on-street parking on the east side of Second Street, between Market and Howard streets; on the west side of Second Street, between Howard and Brannan streets; and on the east side of Second Street, between Brannan and Townsend streets, which in total comprises approximately 81 on-street parking spaces. Approximately 56 of the total on-street parking spaces being removed would be removed for the installation of right-turn pockets, bus-boarding islands, and improved sight lines at Second Street corridor alley intersections.

Approximately 60 percent of the on-street parking spaces along Second Street retained in the project design would be designated for passenger and commercial loading activity during weekdays, as described in the loading section below.

The proposed project would add approximately six on-street general metered parking spaces along Brannan Street, between Second and Colin P. Kelly Jr. streets, by converting parallel parking spaces to angled parking spaces. Additionally, the project would add approximately two on-street parking spaces along the north side of Harrison Street, immediately west of Second Street, by relocating the 12-Folsom bus stop from that location to a combined bus stop with the 10-Townsend on Second Street, north of Harrison Street.

The proposed project would not inhibit driveway access to any off-street parking facilities along Second Street corridor or in its vicinity.

2.5.6 Loading Zones

The proposed project would remove 23 of the 41 yellow commercial loading metered stalls in the project area. However, as described below, approximately four of these commercial loading metered stalls could be relocated nearby, and an additional two new commercial loading stalls could be created. Overall, as shown in Table 2-3, the proposed project would result in a net loss of approximately 19 to 21 on-street commercial loading stalls, depending on whether the two new commercial loading stalls are created. Approximately eight commercial loading zones, accommodating 20 metered stalls, would remain on Second Street.

The proposed commercial loading changes are described in detail below, from north to south, along Second Street.

- **Market to Howard streets.** Thirty-one metered commercial loading stalls on the two blocks of Second Street between Market and Howard streets, constitute most of the designated commercial loading space on this length of Second Street. By implementing the proposed project, approximately 20 of the 31 commercial loading stalls on these two blocks would be removed, including all of the yellow zones on the east side. Commercial loading zones on this block of Second Street are occupied approximately 60 percent of the time during the hours of operation, generally from 7:00 a.m. to 6:00 p.m., Monday through Friday. Eleven metered commercial loading stalls would remain on the west site of Second Street.

- **Folsom to Harrison streets.** There are five yellow commercial loading stalls on this block of Second Street. Two metered commercial loading stalls on the west side of Second Street would be removed, and three metered commercial loading stalls on the east side would remain on this block of Second Street. Commercial loading spaces on this block (all of which are designated for six-wheeled or larger vehicles) are occupied approximately 34 percent of the time during the hours of operation, generally from 7:00 a.m. to 6:00 p.m., Monday through Friday.

- **Harrison to Bryant streets.** The three metered yellow commercial loading stalls on the east side of Second Street between Harrison and Bryant streets, which currently serve a commercial building and a live/work space, would be removed. Two metered yellow commercial loading stalls would be replaced farther south on Second Street, along the frontage of the live/work space (still between Harrison and Bryant streets) and within 300 feet of the original loading stalls. Commercial loading spaces on this block are occupied approximately 27 percent of the time during the hours of operation, from 7:00 a.m. to 4:00 p.m., Monday through Friday.

- **Bryant and Brannan streets.** There are no commercial loading zones on this block of Second Street between Bryant and Brannan streets. Two new metered yellow commercial loading stalls, would be established to serve restaurants and bars on this block of Second Street.

Passenger loading zones would be constructed between the vehicle travel lane and the cycle track. They would be painted with white cross-hatching to indicate the area is for loading. A curb ramp would be provided on the sidewalk to allow ADA-compliant access from the loading zone. The proposed passenger loading zone changes are described in detail below.

- **Market to Mission streets.** Of the four passenger loading zones on this block, the proposed project would remove two passenger loading zones on the east side of Second Street, between Stevenson and Mission streets. These two passenger loading zones serve two large office buildings, both of which have publicly accessible parking garages. Two passenger loading zones would remain, one on the east and one on the west side of this block of Second Street.

- **Mission to Howard streets.** The proposed project would remove the two existing passenger loading zones on this length of Second Street, one on the east side and one on the west side. The passenger loading zone on the west side of the street serves a restaurant. The one on the east side of the street serves a large office building with a publicly accessible parking garage.

- **Howard to Folsom streets.** The two passenger loading zones on the west side of Second Street, between Tehama and Folsom streets, would be removed under the proposed project. These two passenger loading zones proposed to be removed serve a large residential building without a side street or alley frontage. The proposed project would preserve the tour bus and taxi loading zones serving the Marriott Hotel on the east side of Second Street.

- **Brannan to Townsend streets.** The 164-foot long, game-day taxi loading zone on the west side of Second Street between Brannan and Townsend streets would remain. This zone is enforced and functions as a passenger loading zone during AT&T Park post-game hours only and is general metered parking at other times.

- **Townsend to King streets.** The pre-game period taxi stand on the west side of Second Street, between Townsend and King streets, would be shortened from 105 feet to 85 feet. This would be done to accommodate a new blue ADA-accessible parking zone, approximately 20 feet in length.

2.5.7 Streetscape

Proposed streetscape elements along Second Street are street furniture, lighting, planted medians, and additional street trees. Approximately 120 street trees would be planted along the corridor. Although no street trees are planned to be removed, trees in poor condition or that are hazardous would be replaced following procedures specified in the City's Tree Protection Ordinance.[25] In addition, proposed street furnishings include: trash receptacles and benches typically placed two-each at major intersections, for a total of 14 receptacles and 14 benches; 42 bicycle racks (generally six racks per block); and approximately 70 pedestrian-scale light fixtures, in addition to the existing street lighting. The existing roadway light fixtures would be upgraded with new LED light fixtures. Planted medians would align with and generally would be at either end of the proposed bus-boarding islands. Medians would range in length from approximately 5 to 75 feet and would be approximately 6 to 8 feet wide. Proposed locations for planted medians are listed in Table 2-5. Two bulb-outs would be installed on Second Street at the entrance to South Park Street in order to shorten the crossing distance for pedestrians.

[25] Prior to construction, the Public Works Bureau of Urban Forestry would conduct an assessment of the existing street trees along Second Street. Any trees that are determined to be hazardous or in poor condition would be removed and replaced.

Table 2-5: Proposed Planted Medians

Block	Location
Stevenson to Jessie streets	• East side, south end of bus-boarding island
Minna to Natoma streets	• West side, north end of bike share station
Howard to Tehama streets	• West side, south end of bus-boarding island
Dow Place to Harrison Street	• East side, south end of bus-boarding island
Taber Place to South Park Street	• West side, north end of bus-boarding island
Federal to South Park streets	• East side, south end of bus-boarding island
South Park to Brannan streets	• West side, north end of bike share station • West side, south end of bike share station
Brannan to Townsend streets	• West side of far-side intersection at Brannan Street • East side, north end of bus-boarding island • East side, south end of bus-boarding island
Source: Public Works 2014.	

2.5.8 Sewer Rehabilitation and Replacement

Sewer rehabilitation and replacement would entail repairing and replacing main sewers that extend between 16 and 21.1 feet below Second Street between Market and King streets, as well as the side sewers that connect from the main sewer to the adjacent building sewer pipes. Approximately 1,050 linear feet of main sewer and approximately 1,000 linear feet of side sewer and culvert would be replaced or repaired.[26] New drainage facilities would be constructed for certain streetscape elements, specifically curb ramps requiring catch basin relocation, raised crosswalks, and bulb-outs. In addition, sewer manholes would be replaced.

Sewer assessment was conducted by the San Francisco Public Utilities Commission (SFPUC) Wastewater Enterprise. Public Works prepared preliminary design plans (based on the assessments) for planning purposes, and will provide the project sponsor with contract documents for sewer works.

[26] A culvert is a structure, such as a pipe, that is typically below ground and allows water to flow under a road or similar type of obstruction.

The proposed improvements to the main sewer would occur at several locations along Second Street, as shown in Table 2-6. These locations were determined based on a video inspection of the sewer system.[27] The total volume of excavated material for the main sewer replacement work is anticipated to be approximately 1,400 cubic yards. In addition to the main sewer rehabilitation or replacement, which would generally occur in the center of the street, all side sewers within the blocks that have main sewer work proposed would be inspected and replaced as needed. Also, sidewalk widening or bus-boarding island and planted median construction would trigger the inspection and possible replacement of side sewers. Moreover, this may result in the relocation of side sewer air inlets[28] on the sidewalks along Second Street, from the existing location to 1 foot from the new curb line.

Rehabilitation of sewer lines would entail mortaring, lining, or slip-lining pipes. Mortaring would not require excavation because it entails applying mortar to the interior of sewer lines through existing manholes. Lining and slip-lining large diameter sewers would require the excavation of an insertion pit to an approximate depth, as described in Table 2-6. Lining work would entail installing a resin-impregnated tube into the pipeline using a column of water. Once the tube is in place, 170-degree water would be pumped through it for approximately 2 hours until the liner adheres to the pipe. Slip-lining would entail placing a smaller diameter pipe inside the existing larger diameter sewer pipe.

On the other hand, replacing sewer pipes would use the traditional open-cut trench construction method for excavation. The main and side sewers would be replaced in generally the same locations where they are currently sited; therefore, excavation would generally be within previously disturbed soils. The main sewer pipes would generally be replaced with the same size pipe as the existing pipe, except for pipes that are currently less than 12 inches in diameter; these pipes would be upsized to meet code requirements that stipulate a minimum of 12-inch-diameter pipe.[29]

For the typical main sewer replacement, an open-cut trench approximately 4 to 5 feet wide would be excavated for the length of the replacement, as shown in Table 2-6. The depth of excavation would vary based on the existing depth of the sewer per street segment, as shown in Table 2-6; the maximum depth of the existing sewer is 21 feet below ground. An additional 5 inches would be excavated below the existing pipes to accommodate pipe bedding materials. In compliance with the Occupational Safety and Health Administration

[27] Rieger, Michael, 2014. Personal communication from Michael Rieger, Project Manager, San Francisco Public Works. November 13.

[28] Side sewer air inlets are openings, usually at grade in the sidewalk, that allow fresh air into the sewer system.

[29] Per Public Works Order No. 124,677, main sewers must be a minimum of 12 inches unless otherwise permitted by the Director of Public Works.

Table 2-6: Proposed Main Sewer Improvements

Street Segment	Year Constructed	Existing Sewer Diameter (inches)/ Material	Existing Sewer Depth (feet)	Trench Width (feet)[1]	Improvement Type
Market to Stevenson streets[2]	1968	18/VCP and 18/VCP encased in 30-inch steel liner pipe	16.5 and 21.1	4.5	Replacement or possibly line/rehabilitate
Stevenson Street (intersection)	1968	12/VCP	16	4	Rehabilitate or line approximately 10 feet of main sewer
Howard Street (intersection)	1972	15/VCP	13	4.25	Rehabilitate approximately 20 feet of main sewer
Federal to De Boom streets	1880	3x5/Brick	9.8	NA[3]	Rehabilitation/lining along entire block, starting from manhole at Federal Street to manhole at De Boom Street. Excavation would be through either manhole.
Townsend to King streets[4]	1900	8/VCP	6, 8.9, and 9	5	Replacement[5]

Notes:
NA = Not applicable
VCP = Vitrified clay pipe
[1]Trench width includes the outside diameter of the pipe, plus approximately 1.5 feet on each side of the pipe. The trench dimensions include the shoring system.
[2]This segment has two sections of the same pipe, at different depths, connected by a manhole.
[3]Lining work would not require trenching.
[4]This segment has three sections of the same pipe that are at different depths.
[5]Per Public Works Order No. 124,677, main sewers must be a minimum of 12 inches in diameter unless otherwise permitted by the Director of Public Works. Therefore, the sewer would be upsized.
Source: Public Works 2014.

(OSHA), shoring would be required for open-cut construction greater than 5 feet deep. Typical shoring would consist of sheet pile or soldier pile and lagging type reinforcement.[30] The sheet pile/soldier pile would be installed along the wall of the trench and may be driven down approximately 6 inches beyond the bottom of the trench, depending on soil condition, groundwater level, and depth of excavation.

[30] Sheet pile shoring entails installing interlocking sheets of steel that form a continuous trench wall. Soldier pile and lagging entails installing steel H-beams at intervals along the trench and extending below the trench and installing a steel plate or timber lagging between the beams to form the walls of the trench. Additional bracing within the trench may be installed.

Sewer manholes would also be replaced. The typical area of excavation for a manhole would be 8 feet in length by 8 feet wide by the depth of the existing sewer, plus an additional 8 inches for the base of the manhole.

The locations of the proposed new drainage facilities associated with certain streetscape elements are listed in Table 2-7; however, the location for the facilities will be finalized once the final roadway design has been completed. The typical area of excavation for the catch basins would be approximately 7 feet long by 7 feet wide by 7.3 feet average depth. Culverts consist of 10-inch-diameter VCP storm drain lines from the catch basin to the main sewer/ sewer manhole; they would have varying depths depending on the depth of the main sewer/ sewer manhole. The depth of these culverts would not be lower than the main sewer that it would discharge into.

Table 2-7: Proposed New Drainage Facilities

For Bulb-Outs	
South Park Street (west corner)	1 new catch basin and culvert
For Raised Crosswalks	
Stevenson Street (east side)	3 new catch basins and culvert
Stevenson Street (west side)	1 new catch basin and culvert
Jessie Street	3 new catch basins and culvert
Minna Street (east side)	3 new catch basins and culvert
Minna Street (west side)	3 new catch basins and culvert
Natoma Street (east side)	3 new catch basins and culvert
Natoma Street (west side)	3 new catch basins and culvert
Tehama Street (east side)	No catch basins
Tehama Street (west side)	2 new catch basins and culvert
Clementina Street	No catch basins
Dow Place	3 new catch basins and culvert
Stillman Street	3 new catch basins and culvert
Taber Place	No catch basins
Federal Street	2 new catch basins and culvert
De Boom Street	2 new catch basins and culvert
For Curb Ramps with Catch Basin Relocation	
Howard Street (north and south corners)	2 new catch basins and culvert
Harrison Street (pedestrian island expansion)	1 new catch basin and culvert
Bryant Street (north, west, and east corners)	3 new catch basins and culvert
Townsend Street (west and south corners)	2 new catch basins and culvert
Source: Public Works 2014.	

2.5.9 Undergrounding of Overhead Utilities

As part of the proposed project, above-ground utility wires on a 0.27-mile portion of Second Street, between Stillman and Townsend streets, may be placed underground, if additional funding can be identified. The current pole configuration is along the east sidewalk on Second Street, with overhead power lines extending to properties on the west side of the street. The overhead poles accommodate electricity (Pacific Gas & Electric) and telecommunications (Comcast and AT&T). As part of the proposed project, these utilities would be placed underground. The trench required for the utility undergrounding would not exceed 5 feet each in depth or width.

2.6 CONSTRUCTION

2.6.1 Schedule

Construction of the proposed project would take approximately one year. The anticipated date for construction to begin is fall 2016.

Public Works anticipates that construction would occur one block at a time along Second Street, requiring up to 6 weeks per block. Construction activities would occur sequentially with construction related to sewer replacement or rehabilitation and to undergrounding of overhead utilities completed first, if required for the block. This would be followed by the construction of roadway and streetscape improvements. Construction activities would generally be as follows:

- Undergrounding of overhead utilities, including wire pulling and gear setting (on Second Street, from Stillman to Townsend streets);
- Sewer rehabilitation/replacement;
- Catch basin and culvert construction and relocation;
- Electrical wire and irrigation pipe installation;
- Bus boarding island construction, parking strip and sidewalk bulb-out construction, curb construction and sidewalk widening, curb ramp construction;
- Traffic signal conduit and equipment installation, including new poles;
- Cycle track installation;
- Road base repair or replacement and road grinding and temporary repaving;

- Landscaping installation;
- Streetscape furnishings installation (trash receptacles, benches, bike racks); and
- Final repaving and roadway restriping after other activities are completed for the entire corridor.

Construction-related activities would typically occur Monday through Friday, between 9:00 a.m. and 3:00 p.m. Because Second Street is a street of major importance in the downtown, as identified in SFMTA's Regulations for Working in San Francisco Streets handbook (the Blue Book),[31] construction is prohibited during commute hours – 7 a.m. to 9 a.m. and 3 p.m. to 7 p.m., Monday through Friday. In addition, Second Street is important for events at AT&T Park,[32] and construction activities are not permitted from 2 hours before to 2 hours after major events at AT&T Park. Moscone Center restrictions also apply to Second Street at Mission Street.[33]

Construction is not anticipated to occur on Saturdays, Sundays, or major legal holidays but could occur during those times on an as-needed basis. Public Works would stipulate the hours of construction, and the contractor would be required to comply with the San Francisco Noise Ordinance, including avoiding traffic peak-hour construction on adjacent streets. Work may be allowed on weekends or holidays or between 10 p.m. and 7 a.m. if a night noise permit is obtained.

Holiday restrictions apply to the section of Second Street from Market to Folsom streets, as well as other areas with 50 percent or more commercial frontage. No work would be allowed during the holiday moratorium, from the day after Thanksgiving to January 1, inclusive of these days. All openings in the street and in the sidewalk must be closed by backfilling and paving or by plating over, to provide safe and adequate passage for bicyclists, motorists, and pedestrians.

2.6.2 Workers

There would be an average of about 10 construction workers per day at the project site, with up to 20 workers. Some construction workers would be anticipated to use transit or carpool to the site. See Section 4.4, Transportation and Circulation, for further discussion of project-related worker trips.

---

[31] SFMTA, 2012. *City of San Francisco's Regulations for Working in San Francisco Streets.* 8th Edition. Available online: www.sfmta.com/services/streets-sidewalks/construction-regulations.

[32] Restricted area includes all of Second Street from Market Street to The Embarcadero.

[33] Restrictions apply to Mission Street from Second to Fifth streets. No construction activity is permitted from 1 hour before until 1 hour after major events in the Moscone Center.

2.6.3 Haul Trips and Routes

During construction of the proposed project, there would be an average of 10 construction truck trips (one-way trips) traveling to or from the site daily during the peak periods of construction, carrying supplies to and from the project site.

Most of the construction-related truck traffic would use I-80/US 101 to travel to and from the project site. From I-80/US 101, truck operators would use the off-ramps at Fremont and First streets and Fourth and Bryant streets and would travel on Second and Howard streets to the project site. To return to I-80/US 101, truck operators would use Harrison Street to access the freeway on-ramps at Harrison and Essex streets in the eastbound direction or Fourth and Harrison streets in the westbound direction.

The project site could also be accessed from the south by I-280. Truck operators would take the off-ramp at the King Street exit from I-280 and would access the project site via the left-turn lane from eastbound King Street to Second Street. To return to I-280, operators would head southbound on Second Street and turn right onto King Street to access the I-280 on-ramp.

2.6.4 Lane Closures

Construction of the proposed project would require the temporary closure of travel lanes and sidewalks, as well as the temporary removal of on-street parking. In some instances, construction may require temporary street closures and rerouting of traffic and transit. Parking and travel lane and sidewalk closures are subject to review and approval by the City's Transportation Advisory Staff Committee (TASC), which consists of representatives of SFMTA, Public Works, and the Fire, Police, and the Planning Departments. TASC review takes into consideration other construction projects in the vicinity. See Section 4.4, Transportation and Circulation, for further discussion of construction coordination.

2.6.5 Construction Equipment

The construction equipment used for the proposed project would include saw-cutting machines, a robotic lateral cutter, excavators, loaders, backhoes, pavers, grinders, rollers, compressors, wire pullers, concrete mixers, an air inverter, bypass pumps, hydraulic cylinders, flatbed trucks, steam/hot water trucks, and haul/dump trucks.

2.7 PROJECT APPROVALS

The following project approvals would be required; they are listed below in the order they are expected to occur:

- SFMTA Board of Directors approval of the proposed project, which will include: changes to parking, passenger loading zones, including taxi stands and tour bus loading zones, and commercial loading zones; left turn restrictions; “Right Lane Must Turn Right” at right-turn pocket locations; establishment of bike lanes on Second Street from Market to King streets; relocation of existing bus zones and flag stops to new bus bulbs and bus zones; and a new traffic signal at Second and South Park streets;

- SFMTA approval of a Special Traffic Permit in instances where work would not comply with Blue Book regulations or traffic routing specifications in a City contract;

- Public Works Director’s Order and public hearing for removal of existing trees and new tree plantings;

- San Francisco Public Utilities Commission approval of an erosion and sediment control plan before construction begins; and

- San Francisco Board of Supervisors approval of legislation for sidewalk widening.

CHAPTER 3: PLANS AND POLICIES

3.1 OVERVIEW

In accordance with the California Environmental Quality Act (CEQA) Guidelines Section 15125(d), this section describes land use plans and policies and how they apply to the proposed project and its variant and then analyzes the project's consistency with applicable plans. Project-related policy conflicts and inconsistencies do not constitute, in and of themselves, significant environmental impacts. The project's compatibility with plans and policies that do not relate to physical environmental issues will be considered by decision makers in choosing whether to approve, modify, or disapprove the project.

All physical impacts of the proposed project and its variant are discussed in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures.

This section supplements the consistency analysis of the plans and policies discussed in the Bicycle Plan Final Environmental Impact Report (FEIR).

3.2 PLANS AND POLICIES FROM THE BICYCLE PLAN FEIR

As part of the environmental review process, the San Francisco Bicycle Plan was assessed for consistency with the following applicable plans and policies. In this Supplemental Environmental Impact Report (SEIR), the modified proposal for the Second Street Corridor (the Second Street Improvement Project) has been reviewed to examine if the current project would remain consistent with the following plans and policies:

- San Francisco Planning Code;
- San Francisco General Plan;
- Better Streets Plan;
- The Sustainability Plan for the City of San Francisco;
- Bay Area Air Quality Plan, Water and Wastewater Resources and Treatment Plans;
- Habitat Conservation Plans; and
- Housing Plans and Policies.

The Second Street Improvement Project does not conflict with the plans analyzed in the Bicycle Plan FEIR. It does not propose any amendments to the Planning Code beyond those already approved as part of the approval process for the San Francisco Bicycle Plan;

therefore, the project does not contradict any of the provisions of the Planning Code. Similarly, the project does not conflict with any element of the San Francisco General Plan.

In Section 4.6, Air Quality, the SEIR includes a detailed analysis of potential air quality impacts from the proposed project or its variant. The proposed project or its variant is an infrastructure project that would support the use of alternate modes of travel to the private automobile, such as walking, bicycling, and using transit. Therefore, the project would not conflict with the goals of the General Plan, the Bay Area Air Quality Plan, or any other air quality management plan.

The Transportation Element of the San Francisco General Plan designates Second Street as a secondary transit street as defined by the following criteria:

- Medium transit ridership and low-to-medium frequency of service;
- Medium frequency of service and low-to-medium transit ridership; or
- Connects two or more major destinations.

The General Plan identifies Transit Preferential Streets (TPS) measures and treatments. Some examples of such measures are transit exclusive/priority lanes, bus stop reduction programs, stop sign placement or reduction programs, traffic signal phase modification, traffic signal preemptions, sidewalk bus bulbs, and traffic law enforcement improvements to improve transit service on identified transit streets. Therefore, it is appropriate to use TPS measures to improve transit service along Second Street. The proposed project or its variant would implement a number of these measures and would not conflict with any policies in the General Plan.

The San Francisco Better Streets Plan was adopted in 2010 to support the City's efforts to enhance the streetscape and the pedestrian environment. The 2014 Green Connections project under the Better Streets Plan was created to improve access to parks and open space through a network of walking and biking routes that meets three goals: public health, sustainability, and livability. Second Street is identified as a "green connection" between San Francisco's Downtown and the Mission Bay area. It is defined as a special street that connects people to parks and open spaces and enhances the ecology of the street environment. The proposed project or its variant would not conflict with the Better Streets Plan, because recommended Better Streets Plan streetscape improvements would be implemented as part of the project.

3.3 ADDITIONAL PLANS AND POLICIES RELEVANT TO THE PROJECT

The Second Street Improvement Project was reviewed for its consistency with the plans, policies, and applicable programs discussed below, and no conflicts or inconsistencies were identified. The project's compatibility with plans and policies that do not relate to physical environmental issues will be considered by decision-makers in choosing whether to approve, modify, or disapprove the proposed project or its variant.

3.3.1 Proposition M, Accountable Planning Initiative

In November 1986, the voters of San Francisco approved Proposition M, the Accountable Planning Initiative. Proposition M added Section 101.1 to the San Francisco Planning Code to establish eight priority policies, as follows:

1. Preserve and enhance neighborhood-serving retail uses and future opportunities for resident employment in and ownership of such businesses;
2. Conserve and protect housing and neighborhood character to preserve the cultural and economic diversity of neighborhoods;
3. Preserve and enhance affordable housing;
4. Discourage commuter automobiles that impede Muni transit service or that overburden streets or neighborhood parking;
5. Protect industrial and service land uses from commercial office development and enhance resident employment and business ownership;
6. Maximize earthquake preparedness;
7. Preserve landmarks and historic buildings; and
8. Protect parks and open space and their access to sunlight and vistas.

The proposed project or its variant would improve safety and accessibility for pedestrians, bicyclists, and transit passengers along the entirety of the Second Street corridor. Further, it would prioritize the needs of people walking, bicycling, and using transit. Therefore, the project would not conflict with any policies of the Accountable Planning Initiative.

3.3.2 Transit First Policy

The Board of Supervisors adopted the Transit First policy in 1973. It encourages reliance on alternative modes of transportation, such as transit, bicycling, and walking, and mandates the promotion of transit policy improvements, enhancement of pedestrian areas, and bicycling. The project would promote alternative modes of transportation for drivers of private passenger vehicles and thus would be generally consistent with the Transit First policy. Chapter 4.4 SEIR, Transportation and Circulation, analyzes potential transportation impacts of the project, including possible impacts on alternative transportation modes.

3.3.3 Mayor's Pedestrian Safety Executive Directive

The Mayor's Pedestrian Safety Executive Directive of 2010 calls for a 25 percent reduction in serious and fatal pedestrian injuries by 2016 and a 50 percent reduction by 2021. The objectives of the proposed project and its variant include improving safety and accessibility for pedestrians, bicyclists, and transit passengers along the entirety of the Second Street corridor. In particular, in fulfilling these objectives with respect to pedestrians, the proposed project and its variant includes design features intended to decrease the likelihood of pedestrian and bicycle collisions with vehicles by reducing the number of conflicts between vehicles and pedestrians and bicycles. Therefore, the project would directly promote the goals of the directive; no inconsistencies with the directive were found.

3.3.4 Board of Supervisors Resolution No. 511-10

Resolution No. 511-10 sets a bicycle mode-share goal of 20 percent by 2020. The project would directly meet the goals of Resolution No. 511-10 by creating additional infrastructure aimed at making bicycling a safer experience along this corridor; therefore, implementing the project would be consistent with Resolution No. 511-10.

3.3.5 Muni Forward (Formerly Transit Effectiveness Project)

The SFMTA's Transit Effectiveness Project has been renamed Muni Forward and will be referred to that way in this document. Muni Forward is composed of service improvements, service-related capital improvements, and transit travel time reduction proposals. The Second Street Improvement Project would install TPS Toolkit Elements along Second Street to facilitate transit service. An example of this is bus boarding islands at most Second Street transit stops. The project would also consolidate transit stops to reduce transit travel time, as recommended by the SFMTA's Service Planning Division. These proposed changes would be consistent with the Muni Forward.

3.3.6 2011 Climate Action Strategy for San Francisco's Transportation System

The San Francisco Community Climate Action Plan details six key strategies and related policies, programs, goals, funding, and relationships with other City departments to reduce greenhouse gas emissions in the transportation sector.

The project would be consistent with Strategy 5: Complete Streets, the goals of which are implementing green streets and slow zones citywide; developing a comprehensive protected cycle track network; dedicating self-enforcing transit-only lanes, especially in the northeast quadrant; and implementing bicycle sharing and creating electric bicycle capacity.

The project would promote accessibility for pedestrians, bicyclists, and transit passengers and would be consistent with the goals of Strategy 5.

3.3.7 2013 San Francisco Congestion Management Program

The San Francisco Congestion Management Program (CMP) is prepared biannually to comply with state law and to ensure the City's eligibility for the state fuel tax revenues authorized by CMP legislation. The CMP also guides San Francisco agencies in congestion management. The project would be consistent with all relevant work program items, such as corridor improvement and bicycle network development.

3.3.8 Transit Center District Plan

The Transit Center District Plan (TCDP) outlines policies to be implemented in the new Transbay Transit Center area, which is bounded on the north by Market Street, on the south by Folsom Street, on the east by Steuart Street, and on the west by a straight line southward from Annie Street on the north.

The transportation objectives of the TCDP that are relevant to the proposed project and its variant are prioritizing transit; prioritizing pedestrian amenity and safety; making cycling a safe, pleasant, and convenient means of transportation; ensuring high-quality on-street bicycle connections to the Transbay Transit Center; enhancing facilities for intra-district bicycle travel; and ensuring local connections to regional bicycle facilities.

The proposed project and its variant would promote safety and accessibility for pedestrians, bicyclists, and transit passengers along the entirety of the Second Street corridor; therefore, it would be consistent with the policies of the Transit Center District Plan.

3.3.9 East SoMa Area Plan

The East SoMa area is bordered by Folsom and Mission streets to the northwest, the Embarcadero and Mission Creek to the southeast, and Fourth Street and Seventh Street to the southwest. The East SoMa Area Plan (Area Plan) encourages an appropriate mix of uses in the East SoMa area. The Area Plan encourages a mix of incomes in renter- and owner-occupied households, increases affordable household opportunities, improves the character of streets, and encourages pedestrian safety. Further, it improves community facilities, enhances open space, and offers a variety of transportation options. Specifically, Area Plan objectives are to improve and expand the infrastructure for bicycling and encourage alternatives to car ownership.

The project would promote alternative modes of transportation and thus would be generally consistent with the East SoMa Area Plan.

3.3.10 Draft Central SoMa Plan

The purpose of the Draft Central SoMa Plan is to develop an integrated community vision of the Central Corridor Area, which is located generally in the vicinity of Fourth Street between Townsend and Market streets. The changes proposed under this plan would support transit-oriented growth in the Central Corridor Area, maintain the area's economic and physical diversity, support growth with improved streets and additional open space, and create a model of sustainable growth.

This draft plan encompasses the area bounded on the north by Market Street, on the south by Townsend Street, on the west by Sixth Street, and on the east by Second Street. The Second Street Improvement Project would be consistent with all applicable principles under the proposed plan, including to the following:

- Principle 1—Provide a safe, convenient, and attractive walking environment on all streets in the plan area; and
- Principle 3—Make cycling an attractive transportation option throughout the plan area for all ages and abilities.

CHAPTER 4: ENVIRONMENTAL SETTING, IMPACTS, AND MITIGATION MEASURES

4.1 INTRODUCTION

This chapter supplements the analysis of environmental effects identified for the Bicycle Plan and associated projects, which included improvements along Second Street in the Near-Term Improvement Project 2-1. Three options for bicycle improvements along Second Street were previously analyzed in the Bicycle Plan Initial Study (IS), published on March 15, 2008 and in the San Francisco Bicycle Plan Final Environmental Impact Report (FEIR), certified June 25, 2009.

As stated in Chapter 2, Project Description, the proposal for Second Street has been further refined by the San Francisco Municipal Transportation Agency (SFMTA) and San Francisco Public Works (Public Works) through an extensive community outreach process. The proposed project includes additional streetscape elements, such as bus boarding islands and pedestrian-scale street lighting that were not contemplated during the prior Bicycle Plan environmental review process.

In addition, following the City's current Better Streets Policy (Public Works Code Section 2.4.13) for efficient completion of excavation in the right-of-way, such improvements as sewer repair or replacement are recommended to occur simultaneously with other public right-of-way projects to achieve a complete street; this is discussed in more detail on p. 1-4.[1] Lastly, for efficiency, Public Works is considering undergrounding the overhead utilities along the east side of Second Street between Stillman and Townsend streets at the time of proposed project construction. Therefore, the Bicycle Plan FEIR is supplemented through the preparation of this Supplemental Environmental Impact Report (SEIR) to analyze and present the environmental effects of the proposed project.

This section presents the organization of the topic sections of the chapter and summarizes the overall approach to the analyses.

---

[1] The San Francisco Public Works Code, Article 2.4 Excavation in the public right of way, Section 2.4.13, Transit, Pedestrian, Bicycle, Stormwater, and Communications infrastructure improvements as part of planning, construction, reconstruction, and repaving projects states that whenever Public Works or any other municipal excavator undertakes a project involving the planning, construction, reconstruction, or repaving of a public right-of-way, such project shall include, to the maximum extent practicable and feasible, transit, pedestrian, bicycle, stormwater, and communications infrastructure improvements. In combination, these improvements constitute a complete street project.

The Bicycle Plan IS determined that the program-level and the project-level components of the Bicycle Plan project would have no impacts or would have less-than-significant impacts with or without mitigation incorporated in certain topic areas; therefore, these topics were not evaluated in the Bicycle Plan EIR: Land Use and Land Use Planning, Aesthetics, Population and Housing, Cultural and Paleontological Resources, Air Quality and Noise (except for transportation-related air quality and noise), Wind and Shadow, Recreation, Utilities and Service Systems, Public Services, Biological Resources, Geology and Soils, Hydrology and Water Quality, Hazards and Hazardous Materials, Mineral and Energy Resources, and Agricultural and Forest Resources.

Transportation and circulation, transportation-related air quality, and transportation-related noise were identified in the Bicycle Plan IS as topic areas resulting in potentially significant impacts; therefore, these topics were analyzed in the Bicycle Plan EIR.

This document supplements the analysis in the Bicycle Plan EIR to address potential impacts associated with the additional components included in the proposed project or its variant. The nature of the construction activities associated with the additional streetscape and pedestrian improvements, rehabilitation and replacement of sewer facilities, and undergrounding of utilities require a supplemental analysis of some of the Bicycle Plan IS topics. This is due to a greater depth and amount of excavation and additional construction activities needed for these components than was analyzed in the Bicycle Plan EIR. Supplemental analysis for all the environmental topics is provided in Section 4.2 except for the following topics, which are addressed in Section 4.3 through Section 4.6: Cultural and Paleontological Resources, Transportation and Circulation, Noise, and Air Quality.

4.1.1 Format of the Environmental Analysis

Chapter 4, Environmental Setting, Impacts, and Mitigation Measures, contains these sections: Section 4.2, Supplement to the Bicycle Plan IS; Section 4.3, Cultural and Paleontological Resources; Section 4.4, Transportation and Circulation; Section 4.5, Noise; and Section 4.6, Air Quality.

Section 4.2 provides an overview of the proposed project's components (or its variant's) that were analyzed in the Bicycle Plan IS (included as Appendix A of the Bicycle Plan FEIR) and the additional project components analyzed in this SEIR. It also provides supplemental analysis to the environmental topics analyzed in the Bicycle Plan IS, as necessary. It references the page numbers in the IS that address the given topic. Section 4.2 also includes an analysis of greenhouse gas emissions because the City's approach to greenhouse gas analysis has changed since the preparation of the Bicycle Plan FEIR.

Subsections 4.3 to 4.6 for the remaining environmental topics provide the analysis required to supplement the Bicycle Plan FEIR analysis. Pages in the Bicycle Plan IS or FEIR, as appropriate, are referenced in these subsections.

The Environmental Setting subsection describes existing physical environmental conditions at the time the Planning Department issued the Neighborhood Notice, July 2014. The existing conditions serve as the baseline for the analysis of environmental impacts that would result from implementing the proposed project, subsequently presented in the Impacts and Mitigation Measures subsection. The Environmental Setting subsection also presents fundamental details about the particular topic to assist in understanding the technical analyses presented in the Impacts and Mitigation Measures subsection.

The Regulatory Framework subsection summarizes federal, state, and local laws, regulations, and ordinances that are applicable to the environmental topic being discussed.

The Impacts and Mitigation Measures subsection presents the significance thresholds the Planning Department uses to assess the severity of environmental impacts for the topic. An explanation of the approach to the analysis of each topic is provided. The Approach to Analysis explains technical parameters, assumptions, and methods used in the analysis; it may include a brief summary of project features particularly relevant to the topic being analyzed.

The impact evaluation discussion in this subsection presents impact statements that relate to the significance thresholds used to determine if a significant environmental impact would result from the proposed project. Each impact statement is keyed to its subject area using an abbreviation for that topic and a number. (For example, the first impact statement in the Transportation and Circulation topic is Impact TR-1.)

Mitigation measures identified that would reduce or eliminate a significant impact of the proposed project, when feasible, are correspondingly identified with M and the letters and number of the impact statement (e.g., M-TR-1 for a mitigation measure that corresponds to Impact TR-1). If there is more than one mitigation measure for the same impact statement, the mitigation measures each end with a lowercase letter suffix (e.g., M-TR-1a and M-TR-1b for two separate mitigation measures under transportation Impact TR-1).

Cumulative impacts are discussed in a separate subsection for each topic following the complete analysis of the proposed project for that topic. Cumulative impact statements are numbered consecutively, where more than one impact statement is presented, with a similar combined alpha-numeric code, beginning with a C to signify that it is a cumulative impact (e.g., C-TR-1 refers to the first cumulative impact for Transportation and Circulation).

4.1.2 Significance Determinations

The significance criteria used in this SEIR are based on the San Francisco Planning Department's Environmental Planning Division guidance regarding the thresholds of significance used to assess the severity of the proposed project's environmental impacts. The Planning Department's guidance is in turn based on California Environmental Quality Act (CEQA) Guidelines Appendix G, with some modifications. Each impact statement describes the impact as it would occur without mitigation. The level of significance of the impact is indicated in parentheses at the end of the impact statement, using the following terms:

- **No Impact—**No adverse changes (or impacts) to the environment are expected.
- **Less-than-Significant Impact—**Impact that does not exceed the defined significance criteria or would be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and/or federal laws and regulations.
- **Less-than-Significant Impact with Mitigation—**Impact that is reduced to a less-than-significant level through implementation of the identified mitigation measure(s).
- **Significant and Unavoidable Impact with Mitigation—**Impact that exceeds the defined significance criteria and can be reduced through compliance with existing local, state, and federal laws and regulations and/or implementation of all feasible mitigation measures, but cannot be reduced to a less-than-significant level.
- **Significant and Unavoidable Impact—**Impact that exceeds the defined significance criteria and cannot be eliminated or reduced to a less-than-significant level through compliance with existing local, state, and federal laws and regulations and for which there are no feasible mitigation measures.

4.1.3 Cumulative Impacts

Cumulative impacts, as defined in Section 15355 of the CEQA Guidelines, refer to two or more individual effects that, when taken together, are "considerable" or that compound or increase other environmental impacts. A cumulative impact from several projects is the change in the environment that would result from the incremental impact of the project when added to those of other closely related past, present, or reasonably foreseeable future projects. Pertinent guidance for cumulative impact analysis is provided in Section 15130 of the CEQA Guidelines:

- An EIR shall discuss cumulative impacts of a project when the project's incremental effect is "cumulatively considerable" (i.e., the incremental effects of an individual project are considerable when viewed in connection with the effects of past, current, and probable future projects, including those outside the control of the agency, if necessary).

- An EIR should not address impacts that do not result in part from the project evaluated in the EIR.
- A project's contribution is less than cumulatively considerable, and thus not significant, if the project is required to implement or fund its fair share of a mitigation measure or measures designed to alleviate the cumulative impact.
- The discussion of impact severity and likelihood of occurrence need not be as detailed as for the effects attributable to the project alone.
- The focus of analysis should be on the cumulative impact to which the identified other projects contribute, rather than the attributes of other cumulative projects that do not contribute to the cumulative impact.

APPROACH TO CUMULATIVE ANALYSIS

Potential cumulative impacts from the proposed project are analyzed for each environmental topic analyzed in this SEIR. Project contributions to significant cumulative impacts for each environmental topic, where identified in the impact analysis, are assessed to determine whether project contributions would be considerable.

In accordance with CEQA, cumulative impacts may be analyzed by applying a list-based approach (a list of past, present, and reasonably foreseeable future projects, including projects outside the control of the lead agency); a plan-based approach (a summary of projections in an adopted general plan or related planning document); or a reasonable combination of the two. In general, San Francisco uses a plan-based approach that relies on local/regional growth projections (i.e., population, jobs, and number and type of residential units). A combination of the two approaches was used for the analysis of cumulative impacts in this SEIR; that is, the plan-based approach is used, and augmented where appropriate with the list-based approach of past, present, and reasonably foreseeable future projects identified under the relevant plans.

The relevant plans and projects for the cumulative analysis are summarized below.

Transit Center District Plan (TCDP)—The San Francisco Board of Supervisors adopted the TCDP on July 31, 2012, and Mayor Lee signed it on August 8, 2012. The overall purpose of the TCDP is to develop a vision and to establish strategies to redevelop and revitalize the area surrounding the Transbay Transit Center. In addition, the TCDP is aimed at implementing planning policies to enhance the land use, urban form, public access, and circulation of the downtown area.

Further, the TCDP includes several transit improvements within the downtown area. Specific improvements in the vicinity of the project are removing one travel lane along Fremont Street and extending the transit-only lane to Howard Street and removing on-street parking along one side of the street. Similarly, the TCDP includes removing one travel lane along Beale Street, adding a transit-only lane between Market Street and the Transbay Transit Center, and removing on-street parking along one side of the street.

Additional transit-only lanes are proposed along Folsom Street from First Street to Essex Street; along Fremont Street between Howard Street and Mission Street; and along Mission Street from Steuart Street to Beale Street. In addition, the TCDP proposes adding bicycle lanes along Fremont, Beale, and Main streets between Market and Folsom streets.

The TCDP's specific roadway and transportation-related improvement projects that are in the vicinity of the proposed project are as follows:

- Convert Folsom Street (east of Second Street) from one-way to two-way;
- Convert Howard Street (east of New Montgomery) from one-way to two-way;
- Change Minna Street from one-way westbound to one-way eastbound between First and Second streets; and
- Convert Natoma Street, from Second Street east to midway between First and Second streets, to pedestrian access and emergency vehicles only.

Draft Central SoMa Plan—This plan provides the vision and strategies for improvements along and around the Fourth Street transit spine. The Draft Central SoMa Plan aims to implement existing San Francisco policies to improve transit conditions in the plan area. As such, the plan recommends creating new dedicated transit lanes along Third, Fourth, Folsom, Howard, Harrison, and Bryant streets to enhance transit operations.

The Planning Department published a Notice of Preparation of an Environmental Impact Report in April 2013 and an Initial Study for this plan on February 12, 2014. Environmental review of the Draft Central SoMa Plan is proceeding. Roadway improvements near Second Street are proposed as follows:

- Reconfigure Folsom Street (from Second Street to Eleventh Street) to allow for two eastbound general travel lanes, an eastbound transit-only lane (during peak commute periods), wider sidewalks, mid-block crosswalks, on-street parking, and a two-way cycle track along the north side of the roadway;

- Reconfigure Howard Street (from Second Street to Eleventh Street) to allow for two general westbound travel lanes, an additional westbound travel lane (during peak commute periods and an on-street parking lane during off-peak hours), wider sidewalks, mid-block crosswalks, on-street parking, and a two-way cycle track along the south side of the roadway;[2]

- Reconfigure Harrison Street (from Second Street to Seventh or Eleventh Street) to allow for three westbound general travel lanes and on-street parking, a dedicated westbound transit lane and an additional westbound travel lane during peak periods, and wider sidewalks;

- On Bryant Street (from Second Street to Seventh Street), reduce the number of general one-way (eastbound) travel lanes from five to three, provide an additional travel lane during peak commute periods and on-street parking during off-peak periods, provide a dedicated transit lane along the south-side curb lane during daytime and on-street parking during nighttime, and widen the sidewalks;

- On Brannan Street (from Second Street to Sixth Street), reduce the number of general travel lanes from four (two eastbound and two westbound) to two (one in each direction), widen sidewalks, and provide two one-way cycle tracks along the north and south sides of the roadway;

- On Third Street (from King Street to Market Street), reduce the number of general one-way (northbound) travel lanes from five to three, widen the sidewalks, and provide a cycle track, an enhanced transit-only lane, and on-street loading bays; and

- On Fourth Street (from Market Street to Harrison Street), reduce the number of general one-way (southbound) travel lanes from four to three, widen the sidewalks, and provide a cycle track, an enhanced transit-only lane, and on-street loading bays.

The following bicycle improvements in the vicinity of the proposed project are proposed under the Draft Central SoMa Plan:

---

[2] The Draft Central SoMa Plan also proposes a second option for Folsom and Howard streets, which would convert both streets to two-way operation and would close Essex Street between Folsom and Harrison streets. However, because this two-way option would result in a greater number of overall general travel lanes than the one-way option this Supplemental EIR's analysis assumes the implementation of the one-way option in order to present the most conservative analysis (i.e., fewer travel lanes).

- Upgrade the bicycle facilities along Folsom Street from The Embarcadero to Eleventh Street;
- Upgrade the bicycle facilities along Howard Street, from Third Street to Eleventh Street;
- Locate a new one-way (northbound) cycle track along Third Street, on the west side of the roadway (left-hand curb lane); and
- Locate a new one-way (southbound) cycle track along Fourth Street, from Market to Harrison streets, on the east side of the roadway (left-hand curb lane); two new one-way cycle tracks would be located on Brannan Street, from Sixth Street to Second Street along the north and south sides of the roadway.

Central Subway Project—This project is under construction and will extend the Muni Metro T Third Street Line through SoMa, Union Square, and Chinatown in a subway. When the Central Subway is completed, the T Third Streetcar Line trains would travel mostly underground from the Fourth Street Caltrain Station to Chinatown, bypassing traffic on Fourth and Stockton streets. An underground transit station, Yerba Buena/Moscone Station, is planned at the intersection of Fourth Street and Folsom Street. The Central Subway is scheduled to open to the public in 2019.

The Muni Forward Project (formerly Transit Effectiveness Project)—The SFMTA has developed Muni Forward, which is a set of proposals to make Muni service more reliable and to reduce transit travel times, particularly for the Rapid Network.[3] The Planning Commission certified the Final EIR for the Muni Forward proposals on March 27, 2014. The SFMTA approved a majority of the Service Improvements on March 28, 2014, and anticipates that many of them will be implemented in Fiscal Year (FY) 2014-2015, and that the remainder of the Service Improvements will occur in FY 2016.[4,5] Muni Forward proposes the potential changes described below to transit routes within the study area.

---

[3] Rapid Network is developed by the City to build transit priority lanes with efficient stop spacing to move vehicles quickly along their routes. Further, the City intends to create better boarding zones to make it safer and faster for passengers to get on board, and make it easier to find stops and shelters with improved signage.

[4] San Francisco Planning Department. 2014. *Transit Effectiveness Project Environmental Impact Report*. Available online: http://sf-planning.org/index.aspx?page=2970. Accessed January 29, 2015.

[5] SFMTA. 2014. Transit Effectiveness Project. Available online: http://www.sfmta.com/projects-planning/projects/tep-transit-effectiveness-project. Accessed July 18, 2014

10 Townsend

- This route would be renamed the 10 Sansome.
- Service would continue to operate between Jackson and Steiner streets and 24th Street and Potrero Avenue via Potrero Hill, but it would be rerouted at Fourth Street south of the Caltrain Station and through Mission Bay. Service would continue to operate along Second Street between Market and Townsend streets as under existing conditions.
- The northern terminus would continue to be on Jackson Street between Fillmore and Steiner streets.

11 Downtown Connector

- New 11 Downtown Connector would provide SoMa with two connections to Market Street, at the Van Ness and Montgomery Muni stations, and would provide North Beach with a direct connection to the Financial District and the Montgomery Muni Station.
- Southbound, the new route would run on Van Ness Avenue, Bay, Polk, North Point, and Powell streets, on Columbus Avenue, on Montgomery, Clay, Sansome, Market, Second, Harrison, 11th, and Mission streets, to a southern terminal on South Van Ness Avenue. Northbound (inbound), the new route would run on South Van Ness Avenue, Market, 11th, Folsom, Second, Market, Sutter, Sansome, and Washington streets, on Columbus Avenue, Powell, North Point, and Bay streets to the northern terminal on Van Ness Avenue.
- The proposed route in SoMa would operate on an east/west couplet on Folsom and Harrison streets.

12 Folsom/Pacific

- This route would be discontinued. However, transit service on Second Street formerly provided by the 12 Folsom/Pacific would continue to be provided by the proposed 11 Downtown Connector between Market Street and Folsom and Harrison streets. In addition, the new 11 Downtown Connector route would provide transit service on Folsom and Harrison streets from Second to Eleventh streets; the 27 Bryant (renamed the 27 Folsom) would provide transit service on Folsom Street from Second to Cesar Chavez streets and the terminal loop to the 24th Street BART station; and the 10 Sansome would provide transit service along Pacific Avenue and Second and Sansome streets.

Under Muni Forward, the frequency of the 10 Sansome would be increased from 20 minutes to 6 minutes in the a.m. and p.m. peak periods. The 12 Folsom/Pacific's current frequency is 20 minutes at all times. The new 11 Downtown Connector's frequency would be 15 minutes at all times.

In addition, Muni Forward includes a transit travel time reduction proposal (TTRP.14) on Mission Street. The proposal consists of transit improvements for the 14 Mission and 14L Mission Limited routes along the length of the Mission Street corridor, extending from the Ferry Building to Daly City.

Three alternatives for the TTRP.14 are proposed: TTRP.14 Moderate Alternative Variants 1 and 2 and TTRP.14 Expanded Alternative. These alternatives would include transit stop changes, parking and turn restrictions, lane modifications, and traffic signal and stop sign changes. In the vicinity of Second Street, under the Moderate Alternatives, the existing transit-only lane hours of 7 a.m. to 6 p.m. between Fourth and Main streets in the outbound direction and between Fourth and Beale streets in the inbound direction would be extended to full-time. The TTRP.14 Expanded Alternative would relocate the side-running transit-only lanes so that they become center-running transit-only lanes from First to Fifth streets outbound and from Sixth to First streets inbound. In addition, this alternative would maintain the outbound transit-only lane back to its existing curbside configuration and would rescind the inbound transit-only lane from Seventh to Sixth streets; then it would establish a new outbound transit-only lane extending from 11th to Cesar Chavez streets.

San Francisco Better Streets Plan—In December 2010, the Board of Supervisors and the Mayor adopted the Better Streets Plan. This plan provides guidelines for the pedestrian environment and generally calls for development projects to include pedestrian-level treatments, including widening sidewalks, constructing crosswalks and ADA-accessible ramps, installing curb extensions and mid-block crossings, and constructing other streetscape designs that would enhance the pedestrian experience.[6] The Better Streets Plan is a programmatic document to guide development of streetscape improvements throughout the City; no specific projects were included in the plan.

Better Market Street (BMS)—San Francisco Public Works (Public Works), in coordination with the Citywide Planning Division of the San Francisco Planning Department and the San Francisco Municipal Transportation Agency (SFMTA), proposes to redesign and provide various transportation and streetscape improvements to the 2.2-mile segment of Market Street between Octavia Boulevard and The Embarcadero (Market Street) and potentially to the 2.3-mile segments of Mission Street between Valencia Street and The Embarcadero, as

[6] Additional information about the Better Streets Plan is available online: http://www.sfbetterstreets.org/. Accessed on July 18, 2014.

well as Valencia Street between Market and McCoppin streets and 10th Street between Market and Mission streets (Mission Street). The proposed Better Market Street (BMS) project's elements consist of both transportation and streetscape improvements, including changes to roadway configuration and private vehicle access; traffic signals; surface transit, including transit-only lanes, stop spacing, service, stop location, stop characteristics and infrastructure; bicycle facilities; pedestrian facilities; streetscapes; commercial and passenger loading; vehicular parking; plazas; and utilities. A Notice of Preparation of an Environmental Impact Report (NOP) was issued by the Planning Department on January 14, 2015, the environmental review is ongoing. The BMS EIR will study several Alternatives for the proposed BMS project and would consider the Second Street Improvement Project in its cumulative analysis.

The Caltrain Downtown Rail Extension (DTX) Project—The Caltrain Downtown Rail Extension (DTX) project would extend Caltrain 1.3 miles underground from its current terminus at 4th and King streets into the new downtown Transbay Transit Center and accommodate California's future High Speed Rail from San Francisco to Los Angeles/Anaheim. The preferred alignment for the DTX is along Townsend and Second Streets. This below grade project would overlap with the Second Street Improvement project along Second Street between Townsend and the block of Second Street between Howard and Mission streets where the DTX tunnel would connect to the Transbay Transit Center subsurface rail facilities.[7] The Transbay Joint Powers Authority (TJPA), the Federal Transit Administration (FTA), and the Federal Railroad Administration (FRA), are preparing a joint Supplemental Environmental Impact Statement/Environmental Impact Report (SEIS/EIR) for the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project (Transbay Transit Center Program or Program). The SEIS/EIR will address proposed changes to Phase 2 of the Program including the Downtown Rail Extension track curvature entering the train box, extension of below-grade rail levels of the Transbay Transit Center to accommodate high-speed train requirements, and other refinements to the approved Program. More information regarding this project is available at the TJPA Web site online at http://transbaycenter.org/uploads/2013/04/NOP-of-a-SEIS-EIR-on-the-Transbay-Transit-Center-Program1.pdf. This environmental review is ongoing and a specific timeline for construction of this phase is not known. The construction is not anticipated to occur simultaneously with the Second Street Improvement Project so there is no potential for cumulative effects with this project.

---

7 Transbay Joint Powers Authority. 2007. Second Addendum to the Transbay Terminal/Caltrain Downtown Extension/Redevelopment Project Final EIS/EIR. Available online at http://transbaycenter.org/uploads/2009/10/FEIR-2nd-Addendum.pdf. Accessed January 23, 2015.

This page intentionally left blank.

4.2 SUPPLEMENT TO THE BICYCLE PLAN INITIAL STUDY

This section supplements the environmental analysis provided in the Bicycle Plan IS, which is included as Appendix A of the Bicycle Plan FEIR. The environmental review for the Bicycle Plan and associated projects analyzed three options for bicycle facilities along the Second Street corridor, referred to as the Near-Term Improvement Project 2-1, Option 1, Option 2, and Modified Option 1.

Both Options 1 and 2 would add a Class II bicycle lane in both directions between King and Market streets, except for the following three sections where sharrows would be added instead:

- Northbound approach to Market Street;
- The section between Harrison and Bryant Streets in the northbound direction; and
- The southbound approach to King Street.

Option 1, described in the Bicycle Plan EIR on Pages IV.B.10a – IV.B.11, would remove one southbound travel lane between Market and Mission streets, one travel lane in both directions between Mission and Harrison streets, and one northbound travel lane between Harrison and Townsend streets. Additional left-turn and right-turn pockets would be added at various intersections in both northbound and southbound directions. Option 1 would remove approximately 97 on-street parking spaces between Market and King Streets.

Option 2, described in the Bicycle Plan EIR on Page IV.B.11, would remove one southbound travel lane between Market and Mission streets, one travel lane in both directions between Mission and Harrison streets, and one southbound travel lane between Harrison and Townsend streets. Additional left-turn and right-turn pockets would be added at various intersections in both northbound and southbound directions. Option 2 would remove approximately 88 on-street parking spaces between Market and King Streets.

Modified Option 1, described in the Bicycle Plan FEIR on Page IV.B.10, included Class II bicycle lanes in both directions and other traffic engineering elements. Left turns would be restricted from Second Street at several intersections in order to permit better traffic flow through the single lane of traffic. Modified Option 1 would also relocate passenger loading zones along the Second Street corridor and would remove substantially fewer on-street parking spaces and freight loading zones than Option 1. As indicated on pages C&R 280 to C&R 296 of the Bicycle Plan FEIR, the modification to the Project 2-1 options did not change the conclusions made in the Bicycle Plan IS for Options 1 and 2.

Following the certification of the Bicycle Plan FEIR, San Francisco Municipal Transportation Agency (SFMTA) and San Francisco Public Works (Public Works) worked with the Second Street neighborhood and other stakeholders to refine the design for the Second Street corridor. The refined proposal for Second Street (proposed project or its variant) described in Chapter 2, Project Description, includes elements similar to Project 2-1, Options 1 and 2, and Modified Option 1 that were analyzed in the Bicycle Plan FEIR. It includes additional elements that resulted from further project planning and community outreach, as well as changes in City policy to proceed with Complete Streets projects (discussed previously on p. 2-1 of this SEIR). The additional elements are as follows:

- Installing streetscape refinements with raised and buffered cycle tracks;
- Raising crosswalks;
- Consolidating transit stops;
- Installing bus boarding islands;
- Widening sidewalks;
- Reconfiguring the southeast corner of the intersection of Harrison and Second streets to eliminate the two uncontrolled northbound right-turn lanes;
- Implementing signal phasing to address safety;
- Planting infill trees;
- Installing pedestrian-scale street lighting;
- Repairing or replacing sewers; and
- Undergrounding overhead utilities.

Further, compared with the Project 2-1 Modified Option 1, which would result in the loss of approximately 14 standard parking spaces, no motorcycle spaces, and 2 commercial and 7 passenger loading zones along Second Street, the proposed refinements to the Second Street corridor would result in the additional loss of approximately 115 standard parking spaces, 19 motorcycle spaces, and 17 commercial and 2 passenger loading zones along Second Street.

Some of the additional elements currently proposed would result in construction similar to the project components of the Near-term Improvement Project 2-1 in the Bicycle Plan EIR options (Options 1 and 2 and Modified Option 1). Examples of elements that are similar are: the reconfiguration of the right-of-way with restriping to accommodate bicycle facilities; the removal or relocation of loading and parking spaces; and the installation of bicycle parking racks on sidewalks. However, other elements, such as the sewer repair and replacement, undergrounding of existing overhead utilities, and the installation of pedestrian-scale street lighting, would require more extensive construction and excavation than that analyzed in the IS for the Bicycle Plan FEIR.

This section supplements the Bicycle Plan IS and describes potential impacts of the proposed project or its variant for those environmental topics previously determined to have a less-than-significant impact. It also analyzes whether the proposed project or its variant, with its modified/additional components, would change those impact determinations. Section 4.2.1 describes environmental topics that would not be affected by project refinements and for which impacts would be similar to those identified in the Bicycle Plan IS; impacts on these topics would remain less than significant but are not analyzed further in this SEIR (see Section 4.2.1). The topics are Land Use and Land Use Planning, Aesthetics, Population and Housing, Wind and Shadow, Recreation, Public Services, Biological Resources, Geology and Soils, Minerals and Energy Resources, and Agricultural and Forest Resources.

Section 4.2.2 provides additional analysis of three topics, and impacts on these topics (noted ahead) would result in minor changes from those analyzed in the Bicycle Plan FEIR: Utilities and Service Systems, Hydrology and Water Quality, and Hazards and Hazardous Materials. This analysis has determined that impacts related to these environmental topics would remain less than significant; therefore, similar to the other environmental topics listed above, these topics are not analyzed further in this EIR.

Section 4.2.2 also provides an analysis of the impacts associated with greenhouse gas emissions. This is because the City's approach to greenhouse gas emissions analysis has changed since the preparation of the Bicycle Plan FEIR; it is not because there is any potential for significant impacts associated with this environmental topic.

After the Bicycle Plan EIR was certified in 2010, the Bay Area Air Quality Management District (BAAQMD) issued new CEQA Guidelines for analyzing air quality impacts. San Francisco's approach to assessing air quality impacts has evolved consistently with the BAAQMD's guidance. Therefore, the topic of air quality is addressed in a separate section of this SEIR. Other environmental topics for which impacts of the proposed project or its variant could be significant are analyzed in this SEIR and therefore are not included in this section. These topics are cultural and paleontological resources, transportation and circulation, and noise.

As described in Chapter 2, Project Description, the project variant would include the same physical changes to the Second Street corridor as the proposed project except at one intersection. The project variant would result in slightly different operations at the Second and Brannan streets intersection. Unlike the proposed project, the project variant would allow southbound left turns from Second Street onto Brannan Street and would not provide a separate signal phase for pedestrians and bicyclists traveling along Second Street and left-turning vehicles.

4.2.1 Environmental Topics for Which the Proposed Project or the Project Variant Would not Change the Analysis in the Bicycle Plan IS

The proposed project or its variant would not change the analysis in the Bicycle Plan IS for the following environmental topics: Land Use and Land Use Planning, Aesthetics, Population and Housing, Wind and Shadow, Recreation, Public Services, Biological Resources, Geology and Soils, Mineral and Energy Resources, and Agriculture and Forest Resources.

Table 4.2-1 presents the conclusion and the page number of the analysis in the Bicycle Plan IS for each environmental topic analyzed in this section.

Table 4.2-1: Bicycle Plan IS Analysis for Environmental Topics Determined to be Less Than Significant

Environmental Topic	Analysis Conclusion	Bicycle Plan IS Page(s)
Land Use and Land Use Planning	Less than significant	52
Aesthetics	Less than significant	53-56
Population and Housing	Less than significant	56-57
Wind and Shadow	No impact	66
Recreation	Less than significant	67
Utilities and Service Systems	Less than significant	68-69
Public Services	Less than significant	69-70
Biological Resources	Less than significant with mitigation	70-72
Geology and Soils	Less than significant	72-74
Hydrology and Water Quality	Less than significant	74-77
Hazards and Hazardous Materials	Less than significant	77-81
Mineral and Energy Resources	Less than significant	81-82
Agriculture Resources	No Impact	82-83

Source: San Francisco Planning Department, 2009, San Francisco Bicycle Plan Project Final EIR – Appendix A – Initial Study, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case No. 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828

As with the components analyzed in the Bicycle Plan FEIR, the proposed infrastructure project would be implemented within the public ROW along the Second Street corridor. It would not alter the City's established street grid and would not permanently close any streets or sidewalks. Therefore, it would not result in any significant individual or cumulative land use or land use planning impacts. It would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, page 52).

The proposed project would include above ground project components such as raised and buffered cycle tracks, raised crosswalks at alleys, bus boarding islands, infill street tree planting, and pedestrian-scale street lighting. However, the proposed project or its variant would not result in significant visual impacts or create a substantial additional source of light or glare. Therefore, the proposed project or its variant would not result in any significant individual or cumulative aesthetic impacts; it would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, pages 53-56).

The proposed project's or project variant's repair and replacement of the sewer pipeline and undergrounding of overhead utilities would not extend the capacity of the existing infrastructure, instead it would bring sewer lines up to current City standards. Therefore, the proposed project or its variant would not induce or increase population or employment beyond the growth that the City has already anticipated and planned for. Moreover, it would not introduce new businesses to the project area nor directly or indirectly induce new development or increase population in the project area. Therefore, it would not generate demand for new public services, such as police and fire protection and emergency services, schools, and libraries. As such, the proposed project or its variant would not result in any significant individual or cumulative population and housing or public services impacts. Furthermore, it would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, pages 56-57 and 69-70).

The proposed project's or project variant's components include streetscape elements, underground sewer facilities, and relocation of overhead utilities underground. These components would not alter local wind patterns or create new shadow; therefore, they would not result in any significant individual or cumulative wind and shadow impacts and would not change the analyses or conclusions in the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, pages 66).

Because the proposed project or its variant would improve part of the City's bicycle route network, it would increase accessibility to parks and other recreation facilities. Nevertheless, it would not result in substantial physical deterioration of these facilities because it would not include new development that would change the land use or increase the population. Therefore, the proposed project or its variant would not result in any significant individual or cumulative recreation impacts and would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, page 67).

The proposed project or its variant would be constructed within the right of way. The project site is entirely paved and does not provide habitat for any species. In addition, the proposed project would not remove any trees. A mitigation measure identified in the Bicycle Plan IS to protect nesting birds would not be applicable to the proposed project or its variant as any effects would be addressed through compliance with state law. Should any trees or other vegetation be removed as part of the project, the project sponsor would be required to comply with the Migratory Bird Treaty Act, which specifies required steps to protect nesting birds. Therefore, the proposed project or its variant would not result in any significant individual or cumulative impacts on biological resources and would not change the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, pages 70-72).

The proposed project or its variant would result in deeper excavation and greater construction activities than those addressed in the Bicycle Plan FEIR. However, it would not expose people to substantial new seismic hazards or result in substantial erosion or loss of top soil. This is because the existing right-of-way consists of paved surface in the affected area. Therefore, the proposed project or its variant would not result in any significant individual or cumulative impacts on geology or soils and would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, page 73).

The project site is not in a designated area of significant mineral deposits. Also, there are no operational mineral resource recovery sites in the area whose operations or accessibility would be affected by the construction or operation of the proposed project or its variant. Installation of the pedestrian-scale street lighting would not use large amounts of energy and consequently would not be considered wasteful. Further, no land within the project area is zoned for agricultural or forest uses. Therefore, the proposed project or its variant would not result in any significant individual or cumulative mineral resources, agriculture, or forestry impacts; moreover, it would not change any of the analyses or conclusions of the Bicycle Plan FEIR (Bicycle Plan FEIR – Appendix A – Initial Study, pages 81-82).

For the reasons discussed above, the proposed project or its variant would not create any significant individual or cumulative impacts related to the environmental topics: Land Use and Land Use Planning, Aesthetics, Population and Housing, Wind and Shadow, Recreation, Public Services, Biological Resources, Geology and Soils, Mineral and Energy Resources, and Agriculture and Forest Resources. Therefore, the proposed project or its variant would not change the analyses or conclusions in the Bicycle Plan IS of these environmental topics.

4.2.2 Environmental Topics Requiring Supplemental Analysis

UTILITIES AND SERVICE SYSTEMS

Impact UT-1: Implementation of the proposed project or its variant would not exceed wastewater treatment requirements, result in the construction or the project variant of new water or wastewater treatment facilities, exceed the capacity of wastewater treatment provider, require the construction of new stormwater drainage facilities, or require a new or expanded water supply. *(Less than Significant)*

The proposed project or its variant would rehabilitate or replace the main sewer and side sewer pipelines under the Second Street corridor in a limited number of locations, as determined by Public Works and San Francisco Public Utilities Commission (SFPUC) inspection. However, the proposed project or its variant would not expand wastewater treatment facilities or extend the sewer pipeline. The sewer repair component would comply with Public Works Order No. 124,677, approved on January 6, 1982. The order requires that for any replacement of sewer pipelines with a diameter less than 12 inches, the replaced pipelines should be upsized. This would be done due to lack of existing sewer capacity in these locations and is not an expansion of the sewer system within the project area. It is intended to facilitate the operation of the existing sewer system. Therefore, the proposed sewer rehabilitation or replacement component would have ***less-than-significant*** impacts related to utilities and service systems.

The proposed new drainage facilities associated with certain streetscape elements of the proposed project or its variant would be approximately 7 feet by 7 feet by 7.3 feet average depth. Similar to the Project 2-1 improvements discussed in the Bicycle Plan FEIR – Appendix A – Initial Study on pages 68-69, changes in drainage resulting from the proposed project or its variant would be within the public right-of-way. Although installing project features may alter drainage in the project area's right-of-way, such changes would be designed in accordance with the City's Stormwater Management Guidelines. Drainage in the project area would be similar to existing conditions. Stormwater would continue to flow to the City's combined stormwater and sewer system. As discussed in the Bicycle Plan IS, discharges would be treated up to standards contained in the City's National Pollutant Discharge Elimination System Permit before being discharged into the San Francisco Bay. As such, the proposed project or its variant would have ***less-than-significant*** impacts related to water, wastewater, and stormwater.

The green landscaping proposed within the project corridor would increase the amount of water demand. However, the estimated increase in demand would not be substantial and would be accommodated within the City's current water usage. Further, implementation of the proposed project or its variant would comply with San Francisco's Water Efficient Irrigation Ordinance, adopted as Chapter 63 of the San Francisco Administrative Code

(Ordinance Number 301-10, Approved December 3, 2010). The ordinance regulates landscape irrigation practices by setting criteria for water conservation and water efficient irrigation.

The proposed project or its variant would be required to meet Maximum Applied Water Allowances using state mandated formulas and accounting for local climatic conditions as described in Administrative Code Chapter 63. In addition, construction activities would be in compliance with Article 21, Section 1100 et seq. of the San Francisco Public Works Code, which requires the use of non-potable water for soil compaction and dust control. Therefore, the proposed project or its variant would not substantially increase water use and would have ***less-than-significant*** impacts related to water demand.

Impact UT-2: The proposed project or the project variant would be served by a landfill with sufficient permitted capacity to accommodate its solid waste disposal needs, and it would comply with applicable statutes and regulations related to solid waste. *(Less than Significant)*

As discussed in the Bicycle Plan IS on page 69, solid waste associated with the proposed project or its variant would be mainly generated by temporary (one-year-long) construction activities. Project-related construction waste would be disposed of at the Altamont Landfill in Alameda County, after recyclable materials had been sorted at the Norcal transfer station near Candlestick Park. Recyclable materials sorted on site would be sent directly to the Brisbane Recycling Company in Brisbane. Therefore, implementing the proposed project or its variant would have ***less-than-significant*** impacts related to solid waste.

In addition, for reasons similar to those described in the Bicycle Plan IS, the proposed project or its variant would not contribute considerably to cumulative impacts related to public utilities and service systems; moreover, it would not change any of the conclusions on page 77 of the Bicycle Plan IS related to cumulative utilities and service systems impacts. Therefore, the proposed project or its variant would result in ***less-than-significant*** individual or cumulative impacts related to utilities and service systems.

HYDROLOGY AND WATER QUALITY

Impact HY-1: The proposed project or the project variant would not create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems, alter the existing drainage pattern of the site, provide substantial additional sources of polluted runoff, deplete or interfere with groundwater supplies, violate water quality standards, or otherwise substantially degrade water quality. *(Less than Significant)*

The proposed project or its variant would have impacts related to hydrology and water quality similar to those discussed in the Bicycle Plan FEIR (Appendix A – Initial Study on page 75-77). Project-related construction would include excavation and shoring to repair or replace the sewer pipelines, underground the utilities and improve the Second Street corridor streetscape by adding bicycle, pedestrian, and transit facilities. Although the proposed project or its variant would require more excavation than the improvements analyzed in the Bicycle Plan FEIR, the impacts would be similar, and the proposed project or its variant would not substantially increase suspended solids in runoff and local receiving waters.

The proposed project or its variant would comply with regulations related to construction (e.g., the National Pollution Discharge Elimination System Permit and Article 2, Section 2.4 of the Public Works Code) and would implement construction Best Management Practices to prevent illicit discharge into the combined or separate sewer systems. The methods are presented in the Best Management Practices Handbook by the SFPUC and are designed to prevent the discharge of sediment, non-stormwater and waste runoff from a site. Therefore, the proposed project or its variant would have ***less-than-significant*** runoff impacts.

The proposed project or its variant would include new drainage facilities associated with certain proposed streetscape elements for the Second Street corridor. The drainage facilities would be approximately 7 feet by 7 feet by 7.3 feet average depth. Similar to the improvements discussed in the Bicycle Plan FEIR (Appendix A – Initial Study on page 75), changes in drainage would not be substantial and would not substantially affect drainage patterns or affect groundwater recharge.

As discussed in the Bicycle Plan IS, stormwater would continue to flow to the City's combined stormwater and sewer system and discharges would be treated to standards contained in the City's National Pollutant Discharge Elimination System Permit before being discharged into the Pacific Ocean. Therefore, implementation of the proposed project or its variant would have ***less-than-significant*** impacts related to water quality.

In addition, for reasons similar to those described in the Bicycle Plan IS, the proposed project or its variant would not contribute considerably to cumulative impacts related to water quality and runoff. Therefore, the proposed project or its variant would result in ***less-than-***

significant individual or cumulative impacts related to water quality and runoff, and it would not change any of the analyses or conclusions on page 75-77 of the Bicycle Plan IS.

HAZARDS AND HAZARDOUS MATERIALS

Impact HZ-1: The proposed project or the project variant would not create a significant hazard through routine transport, use, disposal, and handling of hazardous materials. *(Less than Significant)*

Similar to the improvements analyzed in the Bicycle Plan FEIR, the proposed project or its variant would be constructed and implemented in the existing public right-of-way and would likely require the handling and disposal of hazardous materials during construction. However, the proposed project or its variant would require greater excavation than the improvements analyzed in the Bicycle FEIR for the Second Street corridor. In addition, as identified in the Bicycle Plan FEIR analysis (Appendix A – Initial Study pages 78-81), the project site is in an area known to contain fill material from the 1906 Earthquake and Fire. This fill may contain elevated concentrations of metal and petroleum hydrocarbons. The City has adopted the Maher Ordinance,[1] which requires analyzing soil for hazardous wastes within specified areas and on sites specifically designated by the Director of Public Works when more than 50 cubic yards of soil is to be disturbed. The Maher Ordinance was amended on August 16, 2013, which expanded the Maher area that will require DPH review as a condition of issuing a permit. It now includes properties that the DPH determines might contain hazardous materials. The expanded criteria for inclusion under the Maher Ordinance are the following:

- Zoned or used for industrial occupancy, currently or historically;
- Current or former presence of hazardous substances or underground storage tanks;
- Located within 100 feet of underground storage tanks; and
- Located within 150 feet of elevated freeways.

Some segments of the project site (Second Street corridor) are within the Maher expanded area. During proposed excavation in the Maher-designated areas, soils with hazardous concentrations of metals or petroleum hydrocarbons could be encountered. Similar to the impacts discussed in the Bicycle Plan IS on page 79, the proposed project or its variant could create a significant hazardous materials impact related to excavation and transport of and exposure to contaminated soil during the project construction phase. The proposed project

[1] Maher Ordinance as Article 22A of the San Francisco Health Code, Ordinance Number 155-13, Approved July 25, 2013, Effective August 24, 2013.

or its variant would be required to comply with the local, state, and federal requirements regarding handling and disposing of soil and groundwater containing chemical contaminants. In compliance with the San Francisco Public Works Code Article 2.4, Excavation in the Public Right-of-Way, Section 2.4.53, Regulations Concerning Excavation Sites (d) Hazardous Material, the project sponsor, Public Works, would consult with the San Francisco Department of Public Health (DPH) and submit a site history documenting past presence of hazardous substances in the project site's soil or groundwater. The amended Maher Ordinance also addresses soil vapor, in addition to hazardous materials in soil and groundwater.

As discussed in the Bicycle Plan IS on page 80 and also in compliance with Article 2.4, DPH may require that before groundbreaking Public Works may need to conduct soil surveys to identify potentially hazardous materials and prepare a site safety and health plan. In addition to measures that protect on-site workers, the plan would be required to include measures to minimize public exposure to contaminated soils. Such measures could include dust control, site security, public access restriction, and warning signs. Such measures would apply from the surface disruption during the construction phase through the completion of earthwork construction.

Soil contamination levels in excess of applicable federal, state, or local limits for petroleum hydrocarbon or lead concentrations would be disposed of off-site, in accordance with California hazardous waste disposal regulations (CCR Title 26). Regarding compliance with San Francisco's Maher Ordinance and San Francisco Public Works Code Article 2.4, impacts from the presence of hazardous materials during excavation would be ***less than significant***.

Three daycare facilities are less than a quarter-mile from the project site: Bright Horizon Day Care, at 303 Second Street, approximately 140 feet east of the project site, is the closest sensitive receptor. Two other day care facilities are near the project site: California Child Care Resources and Referral Network, at 111 New Montgomery Street, is approximately 250 feet west of Second Street; Healthy Environmental Child Development Center, at 75 New Hawthorne Street, is approximately 400 feet west of the project site. As discussed above, the proposed project or its variant would comply with all applicable regulations regarding the treatment of potential hazardous material encountered during project construction. This would include the San Francisco Public Works Code Article 2.4, and impacts on nearby schools would be ***less than significant***.

As discussed for the improvements analyzed in the Bicycle Plan FEIR (Appendix A – Initial Study page 81), the proposed project or its variant would be within the public ROW and would comply with the Public Works Code and the Fire Code. It would not affect existing emergency response or evacuation plans, nor would it alter the current exposure of people or structures to potential fire hazards. Access to buildings along the Second Street corridor would be maintained at all times during construction. Therefore, there would be ***less-than-significant*** impacts related to emergency response, evacuation plans, or fire hazards.

For reasons similar to those described in the Bicycle Plan IS, the proposed project or its variant would not contribute considerably to any potentially significant cumulative hazards and hazardous materials impacts, and it would have ***less-than-significant*** cumulative impacts. Therefore, the proposed project or its variant would not change the conclusions on pages 78-81 of the Bicycle Plan IS.

GREENHOUSE GAS EMISSIONS

As noted above, this section supplements the analysis of potential impacts of the proposed project or its variant from greenhouse gases (GHGs). It is included because the City's approach to GHG analysis has changed since the preparation of the Bicycle Plan FEIR.

The GHG analysis assesses the proposed project's or its variant's compliance with the San Francisco Greenhouse Gas Ordinance and San Francisco Greenhouse Gas Reduction Strategy developed after the completion of the Bicycle Plan FEIR. The Bicycle Plan FEIR analysis on pages V.B-19 to V.B-24 identified less-than-significant impacts from GHGs. The GHG emissions are evaluated based on demonstration of compliance with plans and policies adopted to reduce GHG emissions. Specifically, this is the City's local GHG reduction plan, Strategies to Address Greenhouse Gas Emissions, which is a qualified GHG reduction plan.

Environmental Setting

GHG emissions and global climate change represent cumulative impacts. GHG emissions cumulatively contribute to the significant adverse environmental impacts of global climate change. No single project could generate enough GHG emissions to noticeably change the global average temperature; instead, the combination of GHG emissions from past, present, and future projects have contributed to and will contribute to global climate change and its associated environmental impacts.

The Bay Area Air Quality Management District (BAAQMD) has prepared guidelines and methods for analyzing GHGs. These guidelines are consistent with CEQA Guidelines Sections 15064.4 and 15183.5, which address the analysis and determination of significant impacts from a proposed project's or its variant's GHG emissions.

CEQA Guidelines Section 15064.4 allows lead agencies to rely on a qualitative analysis to describe GHG emissions resulting from a project. CEQA Guidelines Section 15183.5 allows for public agencies to analyze and mitigate GHG emissions as part of a larger plan for the reduction of greenhouse gases and describes the required contents of such a plan.

Accordingly, San Francisco has prepared Strategies to Address Greenhouse Gas Emissions (GHG Reduction Strategy).[2] This document presents a comprehensive assessment of policies, programs, and ordinances that collectively represent San Francisco's Qualified GHG Reduction Strategy, in compliance with CEQA guidelines. The actions outlined in the strategy have resulted in a 14.5 percent reduction in GHG emissions in 2010 compared to 1990 levels. This exceeds the year 2020 reduction goals outlined in the BAAQMD's 2010 Clean Air Plan, Executive Order S-3-05,[3] and Assembly Bill 32 (also known as the Global Warming Solutions Act.)[4, 5]

The City's local greenhouse gas reduction targets are more aggressive than the 2020 GHG reduction targets of the State and Region, and they are consistent with the long-term 2050 reduction targets. For these reasons, the City's Greenhouse Gas Reduction Strategy is consistent with the goals of EO S-3-05, AB 32, and the Bay Area 2010 Clean Air Plan. Therefore, proposed projects that are consistent with the City's Greenhouse Gas Reduction Strategy would also be consistent with the goals of EO S-3-05, AB 32, and the Bay Area 2010 Clean Air Plan. Moreover, the City's proposed projects would not conflict with these plans and would therefore not exceed the City's applicable GHG threshold of significance.

The following analysis of the proposed project's or its variant's impact on climate change focuses on its contribution to cumulatively significant GHG emissions. Given that the analysis is in a cumulative context, this section does not include an individual project-specific impact statement.

Impact C-CG-1: The proposed project or the project variant would generate greenhouse gas emissions, but not at levels that would result in a significant impact on the environment or conflict with any policy, plan, or regulation adopted for the purpose of reducing greenhouse gas emissions. *(Less than Significant)*

Individual projects contribute to the cumulative effects of climate change by directly or indirectly emitting GHGs during construction and operation. Indirect emissions include those

---

[2] San Francisco Planning Department. 2010, *Strategies to Address Greenhouse Gas Emissions in San Francisco*, 2010. Available online at: http://www.sf-planning.org/index.aspx?page=2627. Accessed on January 29, 2015

[3] Executive Order S-3-05, sets forth a series of target dates by which statewide emissions of GHGs need to be progressively reduced, as follows: by 2010, reduce GHG emissions to 2000 levels (approximately 457 million $MTCO_2E$); by 2020, reduce emissions to 1990 levels (estimated at 427 million $MTCO_2E$); and by 2050 reduce emissions to 80 percent below 1990 levels (approximately 85 million $MTCO_2E$).

[4] San Francisco Department of Environment (DOE), *San Francisco Climate Action Strategy, 2013 Update*.

[5] The *Clean Air Plan*, Executive Order S-3-05, and Assembly Bill 32 goals, among others, are to reduce GHGs in the year 2020 to 1990 levels.

from electricity providers and energy required to pump, treat, and convey water and those emissions associated with waste removal, disposal, and landfill operations.

The proposed project or its variant would construct bicycle, pedestrian, and transit facilities, as well as other streetscape, sewer, and utility improvements along the Second Street corridor. Construction is anticipated to occur over one year, as described in Chapter 2, Project Description. Construction would temporarily increase GHG emissions, directly and indirectly, as follows:

- Demolition and disposal of debris from the existing roadway;
- Construction haul trips carrying supplies to the project site and removing demolition debris;
- Operation of construction equipment for excavation and respective rehabilitation/ replacement of the sewer and undergrounding utilities;
- Construction of roadway and streetscape features, including the cycle track, bus boarding islands, and planted medians; and
- Roadway grinding and repaving.

The intended purpose of the proposed project or its variant is to prioritize the needs of people walking, bicycling, and taking transit, which are consistent with the San Francisco Transit First Policy. During operations, the proposed project or its variant would contribute to annual long-term increases in GHG emissions through lighting and landscape irrigation.

The GHG emissions related to vehicle trips are not anticipated to significantly change from existing conditions due to implementation of the proposed project or its variant. However, while the proposed project or its variant would not directly reduce vehicle trips or associated GHG emissions, it would encourage the use of alternative modes of transportation by providing improved transit, pedestrian, and bicycle facilities. This would help San Francisco achieve GHG reduction goals.

The proposed project or its variant would be required to comply with several regulations to reduce GHG emissions, as identified in the GHG reduction strategy. The regulations that are applicable to the proposed project or its variant are as follows:

- The Commuter Benefits Ordinance;
- Emergency Ride Home Program;

- Healthy Air and Clean Transportation Ordinance;
- Clean Construction Ordinance;
- Resource Conservation Ordinance for Clean Construction Ordinance;
- Energy Efficient Lighting Retrofit Requirements (part of the City's Green Building requirements);
- Construction Recycled Content Ordinance;
- San Francisco Resource Conservation Ordinance; and
- San Francisco's Stormwater Management Ordinance.

These regulations, as outlined in San Francisco's Strategies to Address Greenhouse Gas Emissions, have proven effective: San Francisco's GHG emissions have been measurably reduced when compared to 1990 emissions levels. This demonstrates that the City has met and exceeded EO S-3-05, AB 32, and the Bay Area 2010 Clean Air Plan GHG reduction goals for 2020.

The proposed project or its variant was determined to be consistent with San Francisco's GHG reduction strategy.[6] Other existing regulations, such as those implemented through AB 32, will continue to reduce a proposed project's or its variant's contribution to climate change. Therefore, the proposed project's or its variant's GHG emissions would not conflict with state, regional, or local GHG reduction plans and regulations. The proposed project's or its variant's contribution to GHG emissions would not be cumulatively considerable. Moreover, it would not generate GHG emissions, either directly or indirectly, that would have a significant impact on the environment. As such, the proposed project or its variant would result in a ***less-than-significant*** impact with respect to GHG emissions. No mitigation measures are necessary.

In addition to complying with the City's regulations, the 2008 Green Building Ordinance requires that all City departments prepare an annual department-specific climate action plan. In March of 2013, Public Works released its climate action plan, and its environmental goals as stated in the plan are as follows:

- Reduce operational CO_2e emissions;

[6] San Francisco Planning Department, 2014. GHG Analysis Compliance Checklist, for the Second Street Improvement Project, May 6. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

- Achieve zero waste;
- Ensure that all Public Works buildings are designed, managed, and maintained to meet and that construction projects strive to meet LEED Gold Standards; and
- Green Public Works's business practices, including the use of construction materials and construction methods.

The plan states that Public Works is committed to reducing its carbon footprint and to reducing community emissions through policies, such as the following:

- Increasing uses of efficient clean energy, clean fuels, and public transportation (including biking, walking, and taking taxis);
- Enhancing public education;
- Planting and caring for trees and community gardens; and
- Greening business practices to achieve zero waste.

The proposed project or its variant would reduce the city's carbon footprint along the corridor by supporting alternative modes of transportation including bicycling, walking, and taking buses, planting approximately 120 trees, and reducing construction waste by adhering to the Clean Construction Ordinance and would be consistent with the Public Works' Climate Action Plan.

4.3 CULTURAL AND PALEONTOLOGICAL RESOURCES

4.3.1 Introduction

This section supplements the analysis of potential impacts related to cultural and paleontological resources provided in the Bicycle Plan IS on pages 57-60. The IS analysis identified less-than-significant impacts historic architectural and paleontological resources for the Bicycle Plan and associated projects and less-than-significant impacts on archeological resources and human remains with incorporation of mitigation to address accidental discovery. This supplemental analysis addresses potential impacts associated with the additional project components not previously part of any options of Project 2-1 in the Bicycle Plan, in particular the additional streetscape features, the sewer repair and replacement, and undergrounding of overhead utilities.

The project-specific cultural analyses presented herein are based on the Preliminary Archeological Review[1] and the Historical Resources Memorandum,[2] both completed for the proposed project and its variant by the cultural resources staff of the San Francisco Planning Department. The paleontological analysis is based on a review of geologic mapping[3] and a search of online data held by the University of California Museum of Paleontology.[4]

4.3.2 Environmental Setting

This section provides a discussion of the potential cultural and paleontological resources within the project area. It includes an overview of the prehistory of the study area, an ethnographic discussion focusing on Native American groups that occupied the area at the time of European contact, and a review of local history, particularly as it relates to the project area and vicinity.

---

[1] San Francisco Planning Department, 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case No. 2007.0347E.

[2] San Francisco Planning Department, 2014. Memorandum from Pilar LaValley to Debra Dwyer regarding Second Street Improvement Project – Historical Resources. April 21, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case No. 2007.0347E.

[3] United States Department of Agriculture, Natural Resources Conservation Service (formerly the United States Geological Survey), *Geologic Map of the San Francisco Bay Region*, W. Graymer, B.C. Moring, G.J. Saucedo, C.M. Wentworth, E.E. Brabb, and K.L. Knudsen. Available online: http://pubs.usgs.gov/sim/2006/2918/sim2918_geolposter-hires.pdf. Accessed on October 20, 2014

[4] University of California Museum of Paleontology Available online at http://www.ucmp.berkeley.edu/. Accessed on October 22, 2014.

PREHISTORIC BACKGROUND

San Francisco Bay, as we know it, was formed during a period of relatively rapid sea-level rise (average rate of 2 centimeters per year) between 9,000 and 6,000 B.C. After 4,000 B.C., when the sea-level rise slowed to a rate of 0.1 to 0.2 centimeter per year, marshes began to develop around the bay. During this post-4,000 B.C. period, numerous shell middens were created as a result of human activity in the Bay Area. Because of rising sea levels, many of these early sites may have been destroyed or may currently be submerged. The changing environment would have also played a role in shifts in subsistence through time.[5, 6]

The rate of sea level rise markedly changed approximately 6,000 B.C. Eventually, sedimentation rates exceeded the sea level rise, and extensive intertidal mudflats developed. Many of the marshlands surrounding the bay were established no more than 3,000 years ago.[7] The growth of the tidal marshes is of archeological interest because most of the San Francisco Bay shellmounds were in close to marshes. Marshes are particularly productive ecosystems. The area's prehistoric populations took advantage of this productivity by harvesting fish, shellfish, birds, and land mammals that live or feed in or near the marsh, as well as the marsh plants themselves.[8]

Given the preponderance of shellmounds close to marshlands, archeological investigations in the San Francisco Bay Area have generally concentrated on the regions bordering the bay. The first detailed archeological survey of the Bay Area was conducted by N. C. Nelson during a 1906 to 1908 inventory, from Half Moon Bay to the Russian River.[9] Nelson documented hundreds of prehistoric midden deposits, including sites CA-SFR-2, CA-SFR-7, and CA-SFR-19, within the confines of San Francisco.

---

[5] Bickel, Polly. 1978. "Changing sea levels along the California coast." *Journal of California Anthropology* 5(1):6 20. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[6] Moratto, Michael J. 1984. *California Archeology*. Academic Press, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[7] Ibid.

[8] Bickel, Polly. 1978. "Changing sea levels along the California coast." *Journal of California Anthropology* 5(1):6 20. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E

[9] Nelson, N. C. 1909. "Shell mounds of the San Francisco Bay Region." University of California Publications. *American Archeology and Ethnology* 7(4) 310-357. Berkeley. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

Since the time of Nelson's monumental work, a number of prehistoric archeological sites with shell middens have been discovered within San Francisco. A particularly dense collection occurs in the South of Market area through which the Second Street corridor traverses.

Some of the sites in the general vicinity of the Second Street corridor are as follows:

- CA-SFR-112 is a shell midden that contains large quantities of compacted marine shell, faunal bone, flaked and ground-stone artifacts, culturally modified bone and ornamental artifacts, including shell and stone beads.

- CA-SFR-113 is comprised of marine shell remains (predominantly mussel), faunal bones, flaked- and ground-stone artifacts, and debitage.[10]

- CA-SFR-114 is a shell midden that is believed to represent a large village site as it contains a wide variety of artifact types and faunal remains. In addition to the large assemblage, a possible sweathouse feature was identified. Also recorded were a minimum of 11 human burials, some with associated grave goods, including Olivella beads and abalone pendants.

- CA-SFR-135 is near CA-SFR-112 and exhibits a similar assemblage. Given the proximity of these two sites, it is likely that they are in fact one site.

- CA-SFR-147 is a small midden deposit containing marine shell remains, faunal bone, flaked stone artifacts, and debitage.

- CA-SFR-151/H exhibits highly fragmented marine shell, faunal bone fragments, charcoal, and numerous small to medium angular to rounded pebbles.

- CA SFR 154/H, discovered during archeological testing associated with the San Francisco-Oakland Bay Bridge West Approach Replacement Project, is a 40-centimeter-thick layer of shell midden, with faunal bone, ground stone, bone tools, debitage, and fire-affected rock (ASC 2010).

- CA-SFR-155 may represent an extension of CA-SFR-147, given their proximity and nearly identical assemblage.

- CA-SFR-175 is a large shell midden deposit exhibiting marine shell refuse, faunal remains, and fire-affected rock.

[10] Debitage is the sharp-edged waste material left over when someone creates a stone tool.

The presence of this cluster of prehistoric archeological deposits in the South of Market area resulted in the identification of a National Register of Historic Places (NRHP)-eligible prehistoric shell midden district. The district as currently defined[11] consists of seven well-developed Late Holocene shell middens (CA-SFR-2, -113, -114, -147, -154/H, -155, and -175) that once overlooked the shores of Mission Bay. Note that this NRHP-eligible prehistoric district has not been completely delineated; therefore, any prehistoric deposits in this general vicinity, including any discovered in the Second Street corridor, should likely be considered a contributing element of the district and treated accordingly.

Data from these and other archeological sites in and around the San Francisco Bay Area indicate that sparse populations of hunter-gatherers occupied this region before 2000 B.C.. Sites from this period are in the interior hills and valleys and on bay and ocean shores. Sometime between 2500 and 2000 B.C., Utian-speaking peoples, who were ancestors of the Ohlone, occupied what is now eastern Contra Costa County and then expanded westward to San Francisco Bay. Between 2000 and 1000 B.C., bayshore- and marsh-adapted peoples began to settle in the Bay Area. By circa 1500 B.C., Utian-speaking peoples had settled the area around the south end of San Francisco Bay, from which they expanded to the north, west, and south. By circa 500 B.C., peoples known today as either Costanoan or Ohlone occupied essentially the same territory until Euro-American contact.[12]

ETHNOGRAPHIC BACKGROUND

The entire project area is on lands occupied during the ethnographic period by a subgroup of a larger group referred to as Costanoan. Today, the name Ohlone is commonly used for these peoples.[13] (This group herein are referred to as the Ohlone/Costanoan, in accordance with the convention used by Milliken and his colleagues.[14])

The territory inhabited by the Ohlone/Costanoan extended from the Carquinez Strait southward to the Sur River, and from the Pacific Coast possibly eastward to the Diablo

[11] Anthropological Studies Center, Sonoma State University (ASC) 2010. Site Specific Archeological Research Design, Evaluation, and Data Recovery and Treatment Plan for Prehistoric Midden Deposits at Fourth and Howard Streets, San Francisco. Submitted to San Francisco Municipal Transportation Agency.

[12] Moratto, Michael J. 1984. *California Archeology*. Academic Press, New York, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[13] Milliken, Randall, Laurence H. Shoup, and Beverly R. Ortiz. 2009. “Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today.” Report prepared for the National Park Service, Golden Gate National Recreation Area, San Francisco, California. Archaeological and Historical Consultants, Oakland, California.

[14] Ibid.

Range.[15, 16] This area was significantly affected by the Spanish presence in California. Between 1769 and 1776, seven Spanish expeditions entered Ohlone/Costanoan lands, and by the close of the eighteenth century, seven missions had been established. During this period of early contact, approximately 10,000 Ohlone/Costanoan inhabited roughly 50 politically autonomous villages, often referred to as tribelets. The Ohlone/Costanoan, like most aboriginal Californians, possessed no larger political organization than the tribelet. These were generally composed of one or more loosely affiliated villages and associated logistical camps situated in a recognized territory.[17]

According to Milliken,[18] the Ohlone/Costanoan subgroup that inhabited present day San Francisco at the time the Spanish arrived in the region were the *Yelamu*. They were composed of three groups who occupied five villages in present-day San Francisco. Those potentially in the general vicinity of the Second Street corridor are as follows:

- *Chutchi*, who were purportedly situated along Mission Creek; and
- *Sitlintac*, who were also along Mission Creek and believed to be affiliated with *Chutchi*.

The *Yelamu*, along with other Ohlone/Costanoan groups from the San Francisco Peninsula—the *Lamchin, Ssalson,* and *Ureburewere*—were early sources of neophytes for the mission in what is now San Francisco. It is reported that the *Yelamu* were all brought into the mission system by the late 1770s/early 1880s.[19] The primary facilities of this system were the Presidio de San Francisco and Mission San Francisco de Asís (better known today as Mission Dolores). However, not all Ohlone/Costanoan willfully moved to Mission lands. Rather than becoming missionized, some Ohlone/Costanoan sought and received refuge among neighboring aboriginal groups.[20]

---

[15] Moratto, Michael J. 1984. *California Archeology*. Academic Press, New York, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[16] Ibid.

[17] Levy, Richard. 1978. “Costanoan.” In: *Handbook of North American Indians*, Volume 8, California, Robert F. Heizer (ed.), pp. 485-499. Smithsonian Institution, Washington, DC. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[18] Milliken, Randall, Laurence H. Shoup, and Beverly R. Ortiz. 2009. “Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today.” Report prepared for the National Park Service, Golden Gate National Recreation Area, San Francisco, California. Archaeological and Historical Consultants, Oakland, California.

[19] Ibid.

[20] Ibid.

Those Ohlone/Costanoan who freely moved to Mission lands, as well as those who were captured by the Spanish during punitive expeditions, were often forced to assimilate with individuals of other ethnic or linguistic affiliations, resulting in the disruption of indigenous lifeways. In additional to the loss of their aboriginal culture, the Ohlone/Costanoan population was decimated primarily due to introduced diseases to which they had no natural immunity. By 1800 it is estimated that there were only 41 surviving *Yelamu*, and that number had dropped to 32 by 1806. In 1806 a measles epidemic broke out at Mission Dolores, taking among the many casualties the lives of 10 of the surviving *Yelamu*. Using mission records, Milliken calculates that by the close of 1817

> *…the Yelamu contingent at Mission Dolores included 2 tribally-born people who had been young children at the time of the Spanish settlement, 3 mission-born children of Yelamu couples, and 12 mission-born children who had one Yelamu parent.*[21]

This early mixing of previously separate groups, compounded by the sharp decline in the population of the indigenous population, prevented nineteenth and twentieth century ethnographers from interviewing Ohlone/Costanoan individuals with knowledge of pre-contact lifeways. This in turn resulted in a relatively large gap in our understanding of their aboriginal culture.

By the early decades of the twentieth century, three communities of Ohlone/Costanoan were found in the San Francisco Bay Area, each associated with one of the Spanish missions that were founded in their ancestral homelands. None of these communities were, however, associated with Mission Dolores.[22] Levy[23] estimated that in the early 1970s, the total number of persons of claiming Ohlone/Costanoan descent was greater than 200.

HISTORIC BACKGROUND

Before the discovery of gold at Sutter's Mill on January 24, 1848, development in what is now San Francisco consisted of the Spanish/Mexican facilities (i.e., the Presidio de San Francisco and Mission San Francisco de Asís) mentioned above and a small settlement known as Yerba Buena on the shores of the cove of the same name. The inhabitants of Yerba Buena were predominantly non-Spanish, English-speaking immigrants (e.g., United States or British

---

[21] Milliken, Randall, Laurence H. Shoup, and Beverly R. Ortiz. 2009. "Ohlone/Costanoan Indians of the San Francisco Peninsula and their Neighbors, Yesterday and Today." Report prepared for the National Park Service, Golden Gate National Recreation Area, San Francisco, California. Archaeological and Historical Consultants, Oakland, California.

[22] Ibid.

[23] Levy, Richard. 1978. "Costanoan." In: *Handbook of North American Indians*, Volume 8, California, Robert F. Heizer (ed.), pp. 485-499. Smithsonian Institution, Washington, DC. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

citizens). Sometime before the gold rush, the inhabitants of Yerba Buena officially changed the name of their settlement to San Francisco. Following the discovery of gold, San Francisco transformed rather quickly from an isolated hamlet into a bustling center of commerce. According to historic accounts cited by Hupman and Chavez, after the discovery of gold, the population of San Francisco grew from 375 people in 1847 to 2,000 by February 1849; by the end of 1849, there may have been as many as 20,000 people living in the City.

Development along and around Second Street during the Gold Rush period generally followed the grid system of intersecting streets laid out by Jasper O'Farrell in 1847.[24] During these early years of the Gold Rush, small settlement clusters sprang up in the low spots between the numerous hills that were found in what is now San Francisco. In the project vicinity were the established enclaves of Happy Valley (centered around the current intersection of First and Market streets and extending down toward Mission Street) and Pleasant Valley (situated between First, Third, Folsom, and Bryant streets). Although in the immediate vicinity of Second Street, these settlements only loosely followed the planned street grid at this time.[25]

Happy Valley was perhaps the most famous of the early ad hoc settlements that sprang up with the influx of fortune seekers following the discovery of gold in 1849. Initially it was just a massive collection of tents. Inhabiting this ramshackle settlement were over a thousand miners of many nationalities, heading to or returning from the gold fields. There were no sanitation facilities and drinking water was procured from shallow wells. By the close of the decade and continuing into 1850, dysentery and other diseases related to the unsanitary conditions was wreaking havoc among the inhabitants. During the same time, sections of tents were being replaced by wood-framed structures, erected for both residential and commercial use.[26, 27, 28]

---

[24] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[25] Ibid.

[26] URS. 2011. Transbay Transit Center Program. Archeological Resources Report for Shaft and Shoring Wall Test Construction. Prepared by William Self Associates with URS for submittal to the Transbay Joint Powers Authority. San Francisco.

[27] Anthropological Studies Center. 1993 Tar Flat, Rincon Hill, and the Shore of Mission Bay: Archeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild. Mary Praetzellis and Adrian Praetzellis (eds.). Prepared for Caltrans District 4. Oakland, California.

[28] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

Adherence to the grid perhaps became more rigorous as the rudimentary, often expediently constructed roads were graded and/or planked. In large part this was coincident with the construction of the wood-framed structures that began replacing the tents. During the 1850s, based on US Coast Survey maps, Second Street was opened in waves, with cutting along Second Street near Market Street and near Brannan and Townsend streets. Sections of Second Street and intersecting cross streets continued to be graded and planked through the early 1850s. Mission and Folsom streets were planked by 1852 up to but not east of Third Street. Based on the 1857/1859 US Coast Survey map, Second Street from Market to Folsom streets, had been graded, which required cutting down some areas (mainly near Market Street and Howard Street) and filling in others. Grading continued along Second Street in the 1860s, with the section between Townsend and King streets being graded during the latter half of the decade.[29]

The section of Second Street that traversed Rincon Hill, in particular near the crest at Harrison Street, became one of San Francisco's most exclusive residential neighborhoods. The commanding views of the bay from Rincon Hill were a natural draw to San Francisco's Gold Rush and immediately post-Gold Rush elite. Large mansions with formal gardens were constructed, and Rincon Hill became San Francisco's preeminent neighborhood. A plaque, maintained by the California Office of Historic Preservation, reads "A fashionable neighborhood in the 1860s, Rincon Hill was the home of William Tecumseh Sherman, William C. Ralston, William Gwin, H. H. Bancroft, and others."[30]

The biggest development along the project corridor occurred in 1869. Second Street was the most direct route between the southern waterfront and the rest of the City; however, Rincon Hill stood along the route with its peak at Harrison Street. The steepness of the hill was an impediment to the efficient transfer of goods between the wharves and the commercial ventures downtown. In order to improve transportation from downtown to the waterfront, the Second Street Cut was undertaken. Ultimately, Rincon Hill from approximately Folsom Street to Bryant Street was lowered by approximately 30 to 80 feet, with the most extreme grade change (87 feet lower) at the intersection of Harrison and Second streets. The result was a nearly 100-foot-deep chasm cut through Rincon Hill. Where the peak once stood, a

---

[29] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[30] California State Parks, Office of Historic Preservation. 2014. Rincon Hill. Historic Landmark. Available online at: http://ohp.parks.ca.gov/ListedResources/Detail/84. Accessed on October 22, 2014.

wooden bridge, almost 100 feet above the new level of Second Street, connected the now bisected Harrison Street.[31, 32]

The resulting cut signaled the end of Rincon Hill's standing as San Francisco's most prestigious residential district. With the Second Street Cut, property values plummeted and the wealthy homeowners abandoned the neighborhood, moving to now more fashionable areas in San Francisco, such as Nob Hill. As the wealthy left, the neighborhood transformed into a home for San Francisco's working class.

With the reestablishment of Second Street at a much lower elevation along much of its length, construction of infrastructure, such as water, gas, and sewers lines, started to support the burgeoning population. The 1887 Sanborn Insurance Company Map shows multiple water lines running down Second Street by this time.[33]

During the 1906 Earthquake and Fire, most of the properties along Second Street were destroyed, from Market to Brannan and Townsend streets. The area along the remainder of the Second Street corridor (south of Townsend Street) was spared from the conflagration. In place of the Rincon Hill mansions that were destroyed, a large number of shacks were erected to house some of San Francisco's displaced population. While much of San Francisco was more formally (and quickly) rebuilt following the earthquake and fire, for decades Rincon Hill remained relatively undeveloped save for these hastily constructed shanties.[34]

The construction of the San Francisco-Oakland Bay Bridge in the 1930s resulted in another significant change to the character of Rincon Hill. The bridge needed to tie into bedrock, which was found at Rincon Hill. Perhaps more important, however, bringing the bridge deck to the summit of Rincon Hill provided the elevation necessary to allow ships to pass safely under the bridge, a requirement of the US Navy. With the construction of the bridge

---

[31] California State Parks, Office of Historic Preservation. 2014. Rincon Hill. Historic Landmark. Available online at: http://ohp.parks.ca.gov/ListedResources/Detail/84. Accessed on October 22, 2014.

[32] Shaping San Francisco, 2014. Second Street Cut. Available online at: http://foundsf.org/index.php?title=2nd_St._Cut. Accessed on October 22, 2014.

[33] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[34] Anthropological Studies Center. 1993. Tar Flat, Rincon Hill, and the Shore of Mission Bay: Archeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild. Mary Praetzellis and Adtrian Praetzellis eds. Prepared for Caltrans District 4. Oakland.

abutment and approaches, much of the post-quake shanty neighborhood was cleared away.[35]

HISTORIC MARITIME BACKGROUND

Since its inception, San Francisco was tied to maritime activities. As the City rapidly grew with the onslaught of gold seekers, the maritime industry also experienced rapid expansion. Not only were vessels being repaired and updated during this period, but many abandoned hulks were being salvaged for their valuable materials.

The southeastern end of the project site, specifically the section between Townsend and King streets, was at least partially submerged under San Francisco Bay. Historically this area was a tidal flat, and the adjoining shoreline extended between Rincon and Steamboat points. Maps produced by the United States Coast Survey indicate that the waters here ranged in depth from between 1 or 2 feet at mean low tide to 6 or 7 feet at mean high tide. Before it was filled, the shoreline was at the corner of Third and King streets, approximately 150 feet east of where Second and King streets are today. In addition, much of the Second Street corridor was within 1,000 feet of the shoreline of Yerba Buena Cove, another focal point of San Francisco's early maritime industry. It was the presence of the tidal flats at the foot of Second Street, the general vicinity of today's intersection of Second and Townsend streets, that allowed for the first commercial ventures. This vicinity provided the requisite shallows and was adjacent to the City's primary harbor facilities.

Initially, it is likely that vessels requiring maintenance would sail in as close as possible to the shore during high tide. When the waters receded, the hull of the vessel would be exposed and any necessary repairs made. The vessel would then await the next sufficient high tide to set sail. Unfortunately, not all of the hull could be accessed, limiting the effectiveness of the repairs. Furthermore, this technique only worked for smaller vessels, those drawing less than maximum high tide. Thus, in this vicinity, vessels drawing more than approximately 6 feet could not be subjected to below waterline repairs. To improve on these primitive methods, parallel runners, or "grease ways," were constructed into the shallow waters of this area. Ships would be hauled up on these using horse-powered capstans. Ships could also be constructed on the grease ways and lowered into the water once completed.[36]

---

[35] Anthropological Studies Center. 1993. Tar Flat, Rincon Hill, and the Shore of Mission Bay: Archeological Research Design and Treatment Plan for SF-480 Terminal Separation Rebuild. Mary Praetzellis and Adtrian Praetzellis eds. Prepared for Caltrans District 4. Oakland.

[36] Kemble, John H. 1957. *San Francisco Bay: A Pictorial Maritime History*. Bonanza Books. New York, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

In 1851, Henry R. Tichenor constructed the first marine railway in the City, at the foot of Second Street (which was at the time at Townsend). Basically, an enlarged and strengthened grease way, Tichenor's operation consisted of a wheeled cradle that rode on iron tracks. The tracks extended into the bay, out to water of sufficient depth that larger vessels could be reached. Similar to a grease way, ships were hauled onto the cradle, up the rails, and out of the water by capstan.[37, 38]

Other shipyards were established near the foot of Second Street during this period, including those of Nathaniel Brew, John Little, and William Stone. At the foot of Fourth Street, the established shipyards were Domingo Marcucci, Henry Owens, and Patrick Tiernan. At the intersection of Third and King streets, John North constructed his shipyard. All of these ventures were in vessel construction and repair. According to Olmstead et al.,[39] all manner of vessel, including the largest class of riverboat, were built along this "starkly unimproved" strip of land.

In the 1850s, commercial fishing in San Francisco Bay began with whaling and salmon fishing. Chinese immigrants turned to shrimp fishing in the years following the gold rush. Throughout California's coastal waters, shrimp were harvested and sold. By 1855, more than 50 Chinese shrimping vessels, mostly sampans and junks, operated from settlements scattered along the shores of San Francisco Bay. Among these Chinese fishing settlements on the bay was the camp on the south side of Rincon Point, just east of the project corridor. This settlement, as well as others on the bay, was likely founded by displaced Chinese miners, forced out of the gold diggings by intolerant white miners.[40] This camp was relatively short lived, perhaps owing to the rapidly escalating value of land in San Francisco that occurred as the fortunes of many whites were being made. According to Armentrout-Ma[41] this settlement of Chinese fisherman seems to have disappeared by 1865.

After 1870, shrimp fishing evolved into a major industry along the shores of San Pablo and San Francisco bays; approximately 26 fishing camps or villages have been recorded in this region. During the 1870s, the ethnic makeup of the general fishing industry expanded significantly due to the increased immigration of fisherman from Italy, Greece, and Portugal.

---

[37] Olmstead, R., N. Olmstead, and A. Pastron. 1977a. Channel Outfalls Consolidation Project. Report submitted to the San Francisco Wastewater Management Program.

[38] Olmstead, R., N. Olmstead, and A. Pastron. 1977b. San Francisco Waterfront: Report on Historical Cultural Resources. Report submitted to the San Francisco Wastewater Management Program.

[39] Olmstead, R., N. Olmstead, and A. Pastron. 1977a. Channel Outfalls Consolidation Project. Report submitted to the San Francisco Wastewater Management Program.

[40] Armentrout-Ma L. E. 1981. Chinese in California's Fishing Industry, 1850-1941. California History: The Magazine of the California Historical Society 60(2):142-157.

[41] Ibid.

However, shrimp was a "Chinese monopoly after 1871," according to Kemble.[42] By the beginning of the twentieth century, the staple yields of the fishing industry were salmon, crabs, cod, and oysters.[43]

The decade of the 1860s was one of change in the vicinity surrounding the current foot of Second Street. As the decade began, the shipyards discussed above dominated the shallow tidal flats that characterized the area. The Pacific Main Steamship Company soon built a wharf at the foot of First Street, and the area was then flooded with freight and passenger traffic. A railroad ferry slip was constructed at the foot of Second Street, displacing the boat builders by the mid- to late 1860s. By 1869, however, it is apparent that most of the shallow waters were being reclaimed and that nearly all of the accompanying shipyards were gone.[44] This transformation was in large part due to the filling and development activities associated with southward expansion of the City.

Cutting and street grading in the project vicinity south of Townsend Street began around 1860, but it was not until after 1863 that there was any significant modification in the configuration of the shoreline (Olmstead et al., 1977a:20). The Citizens Gas Company initially filled the area, having purchased the "water lots" bounded by present-day Second, Third, Berry, and Townsend streets. This initial filling, however, appears to have been confined to the parcel bound by present-day Second, Third, King, and Townsend streets.[45]

PALEONTOLOGICAL BACKGROUND

The San Francisco Bay region contains a diverse record of geologic and biologic history, which spans more than 100 million years, dating from the Upper Cretaceous period. Fossils of marine and terrestrial organisms have accumulated to produce a significant record of prehistoric life, under the combined influences of regional tectonic events. Examples of these events are the creation of the Sacramento Basin, the uplift of the Coast Range foothill region, the deposition of sedimentary sequences, and the fluctuating worldwide sea level changes.

---

[42] Kemble, J. H. 1957. *San Francisco Bay, a Pictorial Maritime History*. Bonanza Books, New York, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[43] Hart, J. P. 1978. *A Companion to California*. Oxford University Press, New York, New York. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[44] United States Coast Survey. 1869. City of San Francisco and its Vicinity, California. Relevant portions of this document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[45] Olmstead, R., N. Olmstead, and A. Pastron. 1977a. Channel Outfalls Consolidation Project. Report submitted to the San Francisco Wastewater Management Program.

Much of our current San Francisco Bay Region paleontological knowledge comes from discoveries of Pleistocene age (10,000 to 1 million years ago) fossil vertebrate faunas derived from Quaternary age geologic units (present to 1 million years ago).

Geology and Stratigraphy

As described previously, the project area and the surrounding vicinity has been significantly developed, including the massive grading of Rincon Hill and the artificial filling of the waterfront south of Townsend Street. As mapped,[46] the project corridor bisects the following geologic units:

- Beach and Dune Sand of Holocene age;
- Artificial Fill deposited since the Gold Rush of 1849;
- Franciscan Complex sedimentary rocks of Jurassic/Cretaceous age; and
- Alluvium of Pleistocene age.

ARCHEOLOGY EXISTING CONDITIONS

The CEQA-Area of Potential Effects (C-APE), as defined for archeological resources, includes all areas where project activities could have direct impacts on archeological resources. The archeological C-APE is composed of those areas where project ground-disturbing activities would occur, and it is thus confined to the Second Street ROW.

Prehistoric Archeology

In general, previously identified prehistoric resources in San Francisco represent either residential or nonresidential resource types. The most common type represented in the archeological record is residential. These resource types typically contain midden deposits and, in this region, dense accumulations of shellfish fragments. Residential resource types contain evidence of long-term occupation, usually with more than one of the following components: midden, hearth and ash features, house pits, or burials.

Nonresidential resource types generally lack evidence of prolonged occupation; however, they can contain evidence of resource procurement and processing and can represent a wide range of human behavior. Resources of this type include temporary campsites,

[46] United States Department of Agriculture, Natural Resources Conservation Service (formerly the United States Geological Survey). 2006. Geologic map of the San Francisco Bay Region, W. Graymer, B. C. Moring, G. J. Saucedo, C. M. Wentworth, E. E. Brabb, and K. L. Knudsen. Available online at: http://pubs.usgs.gov/sim/2006/2918/sim2918_geolposter-hires.pdf, 2006. Accessed on: October 20, 2014.

specific-use areas (e.g., lithic reduction and tool production locations), and isolated burials and features.

Shellmounds are a distinctive Bay Area residential resource type that may have mortuary or ceremonial elements. These resource types may contain flaked-stone tools and debitage (waste from stone tool making); food milling and grinding implements; modified or dietary bone, antler, and shell; charmstones; bone or shell ornaments, tubes, whistles, and other ceremonial paraphernalia; cooking stones; and imported stone and shell, as well as human remains, often in burial contexts.

There are no known prehistoric archeological resources in the Second Street ROW.[47] There are, however, several sites that exhibit prehistoric components; some of these contain human remains that have been recorded within the project vicinity (CA-SFR-2 [Nelson No. 439], -112, -113, -114, -135, -147, 151/H, -154H, -155 and -175).

The Prehistoric Native American shell middens on Mission Bay consist of several Late Holocene-period shell mounds, with possibly ancillary occupation and workshop areas in the South of Market vicinity.[48] This prehistoric archeological district is eligible for listing on the National Register of Historic Places (NRHP) and is important to the current investigation because it has not been completely delineated. As such, if a prehistoric deposit were to be discovered within the project corridor, it would require evaluation as a contributing element of this prehistoric shell midden district.

Given the extent of the Second Street Cut discussed above as well as the presence of numerous utilities that have been placed in the Second Street corridor over the ensuing decades, it is unlikely that any intact in situ prehistoric deposits remain in the current Second Street ROW. However, the possibility still remains that prehistoric deposits may be encountered. This is because of the proximity to the Second Street corridor of previously recorded prehistoric sites, the identification of intact, in situ, prehistoric remains under other South of Market streets, and because portions of the corridor were not impacted by the Second Street Cut. Additionally, according to the San Francisco Draft General Plan Preservation Element, a disturbed or secondarily deposited prehistoric midden is presumed to be significant for its information potential; under CEQA, it is legally significant until it is

[47] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

[48] Anthropological Studies Center, Sonoma State University (ASC). 2010. Site Specific Archeological Research Design, Evaluation, and Data Recovery and Treatment Plan for Prehistoric Midden Deposits at Fourth and Howard streets, San Francisco. Submitted to San Francisco Municipal Transportation Agency.

demonstrated to the contrary. Thus, any prehistoric midden deposits encountered within the project corridor, including those within highly disturbed contexts, would be treated as individually significant as well.

Historic Archeology

Among the most common historic archeological resource types encountered within San Francisco are refuse or trash deposits, which can contain a wide spectrum of cultural materials. Refuse scatters can consist of localized, dense deposits in excavated pits, privies, or wells, or they can consist of scatters spread over large areas. Refuse scatters can reveal important information on the daily activities of the area's inhabitants, and this information can assist in addressing research themes and questions.

Although unlikely to occur within the project corridor, given its long history as a major City thoroughfare, it is possible that architectural remnants could occur within the project area. Examples are structural remains, such as foundations and wall footings, and collapsed wood and brick buildings from as long ago as the Gold Rush. It is also possible that structural remains associated with the City's maritime industry could occur within the C-APE. This resource type essentially encompasses all buildings and structures, including those for residential, agricultural, commercial, or industrial purposes.

There are no known historic archeological resources in the Second Street ROW. There are, however, several historic archeological sites that have been recorded in the project vicinity: CA-SFR-94H (the whale ship *Lydia*), -119H (Gold Rush structures), -130H (Tichenor's Boatways), -150H (pre-1906 industrial and commercial center), -151H (pre-1906 residential area), and -154H (seven NRHP-eligible nineteenth-century privies, two NRHP-eligible wells, and the aforementioned prehistoric component).[49]

Given the presence of the numerous underground utilities, it is possible that some of the archeological deposits in the project corridor have been disturbed.

HISTORIC ARCHITECTURE EXISTING CONDITIONS

The proposed project and its variant would involve reconfiguring a modern urbanized streetscape and upgrading underground utilities; as such, the project would not alter the physical setting of the project corridor by introducing intrusive elements or other features that

---

[49] San Francisco Planning Department. 2014. Environmental Planning Preliminary Archeological Review (PAR) for the Second Street Improvement Project/Second Street Sewer Replacement Project. March 4, 2014. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

could adversely affect neighboring historic properties. Therefore, the C-APE, as defined for historic architectural resources, is confined to the Second Street ROW.

There are numerous individually significant historic structures along Second Street and countless more close to the corridor; however, none extend into the C-APE defined for the project. Given that, these historic resources are not further considered herein.

There are also no historic features of the streetscape, such as streetlights, pavement, or ornamental vegetation, within the Second Street Improvement Project C-APE. However, the project corridor does bisect three historic districts between Market and King streets. As described below, with one the exception, these historical resource designations extend only to the public ROW and do not include features of the streetscape. The exception is historic paving materials on Federal and De Boom streets in the South End Historic District, which are close to but not within the C-APE defined for the proposed project or its variant.

Second and Howard Historic District

This district, which includes Second Street between Minna and Howard streets, is listed on the National Register of Historic Places. No features or fabric within the public ROW are identified as character-defining features of the district in the designation.

South End Historic District

This district, which includes Second Street between the US Highway 101 freeway underpass and King Street, has been determined eligible for listing on the National Register of Historic Places, and is locally designated under Article 10 of the San Francisco Planning Code. The district, which has a period of significance from 1867-1935, is significant as the largest and most intact collection of 19th- and early 20th-century warehouses and light industrial buildings along San Francisco's working waterfront. The district designation identifies extant historic brick and stone paving materials on Federal and De Boom streets as character-defining features. These contributing elements do not, however, occur within the project C-APE for the Second Street Improvement Project. No other features or fabric within the public ROW are identified in the designation.

New Montgomery-Mission-Second Street Conservation District

This district, which includes Second Street between Market and Howard streets, is eligible for listing on the California Register of Historical Resources (CRHR) and is locally designated under Article 11 of the San Francisco Planning Code. The district consists of masonry commercial loft buildings and light industrial buildings constructed or reconstructed between 1906 and 1933, which is the district's period of significance. It is in an area that encompasses both the locally designated New Montgomery-Second Street Conservation District and the Second and Howard National Register District. It also includes a surrounding belt of undesignated post-1906 commercial loft buildings and smaller-scale machine shops that are contemporaneous to and compatible with the designated historic districts. No features or fabric within the public ROW are identified as character-defining features of the district in the designation.

PALEONTOLOGICAL EXISTING CONDITIONS

The potential for an area to contain significant paleontological resources is determined by its geology.

The Society of Vertebrate Paleontology (SVP) developed the Conformable Impact Mitigation Guidelines (SVP Guidelines; SVP 1995). The guidelines outline criteria to assess paleontological sensitivity based on the potential of a geologic unit to contain significant paleontological resources. Based on these guidelines, a vertebrate fossil is considered significant unless otherwise demonstrated, due to the relative rarity of vertebrate fossils. Vertebrate fossils are so uncommon that, in many cases, each recovered specimen will provide additional important information about the morphological variation or the geographic distribution of its species. Additionally, certain invertebrate or botanical fossils are considered significant paleontological resources if they provide new and substantial taxonomic, phylogenetic, ecologic, or stratigraphic data.

The SVP defines paleontological resources to be significant fossils or assemblages of fossils if they are unique, unusual, rare, uncommon, and diagnostically or stratigraphically[50] important or add to an existing body of knowledge in specific areas—stratigraphically, taxonomically, or regionally.

A rock unit is considered to be sensitive to adverse impacts if there is a high probability that grading, excavation, or other earth-moving will jeopardize significant fossil remains.

The paleontological sensitivity of a stratigraphic unit reflects its potential paleontological productivity, as well as the scientific significance of the fossils it has produced. This method is the most appropriate because discrete levels of paleontological importance can be delineated on a topographic or geologic map.

The SVP Guidelines establish three categories of sensitivity for paleontological resources under the standard guidelines for assessment and mitigation of adverse impacts on paleontological resources: low, high, and undetermined. Each is described below.

[50] Pertaining to the layers of the earth's surface.

Rock units that are not sedimentary in origin (e.g., most igneous and metamorphic rocks) are categorized as low-sensitivity paleontological resources. However, sedimentary rock units may also be categorized as low-sensitivity resources if they have been well examined and have not produced paleontological resources. Monitoring is not usually recommended or needed during excavation in a rock unit with low sensitivity.

High-sensitivity paleontological resources are categorized as rock units older than Holocene (recent)[51] from which vertebrate, significant invertebrate, or a suite of plant fossils have been recovered.

Paleontological resources in sedimentary rock units for which little information is available are categorized as undetermined paleontological sensitivity. It is often possible for an experienced paleontologist to determine whether such a rock unit should be assigned a high or low sensitivity categorization after a pedestrian survey is performed and detailed observations of both natural and artificial exposures of the rock unit are made.

Four geological units are bisected by the project corridor. Using the SVP Guidelines, these units were ranked as having either high or low paleontological sensitivity.

High Paleontological Sensitivity Geologic Units

Based on previously recorded vertebrate fossil localities, the Alluvium of Pleistocene age in the study area is considered to have a high potential to contain significant fossils and therefore is ranked as having high paleontological sensitivity. Perhaps most relevant to the project corridor was the discovery of a fossilized tooth from a Columbian Mammoth at the neighboring Transbay Transit Center. Other recorded Pleistocene megafauna examples were not found in the project vicinity during the University of California Museum of Paleontology records search. Nevertheless, based on the age of this geological unit (Pleistocene), it is possible that it could contain undiscovered vertebrate fossils.

Low Paleontological Sensitivity Geologic Units

Artificial fill placed in the vicinity during the last 150 years or so is not old enough to preserve fossils. Being previously disturbed, artificial fill is considered to have low potential to contain significant fossils and therefore is ranked as having low paleontological sensitivity.

Beach and dune sand of Holocene age are considered too recent to preserve fossils. As such, beach and dune sand deposits are considered to have low potential to contain significant fossils and therefore are ranked as having low paleontological sensitivity.

---

[51] Holocene or recent age sediments (less than 10,000 years old) are generally considered to be too young to preserve significant fossils.

Vertebrate fossils have been recovered from Franciscan units within California, including three Mesozoic marine reptiles; however, from the records search results, it appears that within San Francisco such discoveries are absent. Within the San Francisco Bay Area, the fossils recovered from Franciscan formations are composed primarily of radiolarians and planktonic foraminifera microfossils. Macrofossils representing mollusk species have also been recovered from Franciscan formations.[52] However, based on the rarity of recorded vertebrate localities and the disturbed and sheared nature of the Franciscan Complex in the study area, the project area's Franciscan formation is considered to have low potential to contain significant fossils; therefore, it is ranked as having low paleontological sensitivity.

Synthesis of Paleontological Sensitivity Ratings within the Project Corridor

The sensitivity data presented above reveals that only one geologic unit bisected by the project corridor exhibits high paleontological sensitivity. This geologic unit, the Pleistocene age alluvium, located roughly between Brannan Street and Interstate 80 (I-80) has the potential to contain previously undiscovered fossil specimens, including the remains of Pleistocene megafauna.[53]

4.3.3 Regulatory Framework

Numerous laws, regulations, and statutes, on both the federal and state levels, seek to protect and target the management of cultural resources. The term cultural resources refers generally to resources as defined above. Historical resources, for the purposes of CEQA, or historic properties, for the purposes of NEPA or Section 106 level projects, refer to those cultural resources that have been evaluated as eligible for listing on the CRHR and the NRHP, respectively.

Both NEPA and CEQA specifically or implicitly also require consideration of paleontological resources, which government agencies include among nonrenewable scientific resources. Such resources are protected by federal and state legislation and even by some local ordinances.

---

[52] University of California Museum of Paleontology Available online at http://www.ucmp.berkeley.edu/. Accessed on January 27, 2015.

[53] United States Department of Agriculture, Natural Resources Conservation Service (formerly the United States Geological Survey). 2006. Geologic Map of the San Francisco Bay Region. W. Graymer, B. C. Moring, G. J. Saucedo, C. M. Wentworth, E. E. Brabb, and K. L. Knudsen. Available online at: http://pubs.usgs.gov/sim/2006/2918/sim2918_geolposter-hires.pdf, 2006. Accessed on: October 20, 2014

The SVP has developed guidelines and professional standards for assessing the impact of projects on paleontological resources and for mitigating potentially adverse impacts.[54]

FEDERAL

National Historic Preservation Act

Cultural resources are protected through the National Historic Preservation Act (NHPA) of 1966, as amended (16 United States Code, Section 470f), and its implementing regulations. Before a federal agency can engage in an undertaking that would, for example, require federal funding or a federal permit, Section 106 of the NHPA requires the agency to consider the effects of the undertaking on historic properties (i.e., properties listed on or eligible for listing on the NRHP). Section 106 also affords the Advisory Council on Historic Preservation a reasonable opportunity to comment on any undertaking that would adversely affect historic properties. Under the NHPA, a property is considered significant if it meets the National Register listing criteria at 36 CFR, Part 60.4, as stated below:

The quality of significance in American history, architecture, archeology, engineering, and culture is present in districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association and that

a) Are associated with events that have made a significant contribution to the broad patterns of our history;

b) Are associated with the lives of persons significant in our past;

c) Embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or that represent a significant and distinguishable entity whose components may lack individual distinction, or

d) Have yielded, or may be likely to yield, information important in prehistory or history.

Federal review of undertakings is referred to as the Section 106 process. This process is the responsibility of the federal lead agency. The Section 106 review typically involves a four-step procedure, which is described in detail in the implementing regulations (36 CFR, Part 800), as follows:

---

[54] SVP (Society of Vertebrate Paleontology). 2010. “Standard Procedures for the Assessment and Mitigation of Adverse Impacts to Paleontological Resources.” *Society of Vertebrate Paleontology*. This document are available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103, as part of Case No. 2007.0347E.

- Identify historic properties in consultation with the State Historic Preservation Officer (SHPO) and interested parties;
- Assess the effects of the undertaking on historic properties;
- Consult with the SHPO, other agencies, and interested parties to develop an agreement that addresses the treatment of historic properties and notify the Advisory Council on Historic Preservation; and
- Proceed with the project according to the conditions of the agreement.

STATE

California Environmental Quality Act

CEQA, as codified in California Public Resources Code (PRC) Section 21000 et seq., is the principal statute governing the environmental review of projects in the state. CEQA requires lead agencies to determine if a proposed project would have a significant effect on historical resources, unique archeological resources, and paleontological resources. The CEQA Guidelines define a historical resource as follows:

- A resource listed on the CRHR;
- A resource included in a local register of historical resources, as defined in PRC Section 5020.1(k), or identified as significant in a historical resource survey and meeting the requirements of PRC Section 5024.1(g); and
- Any object, building, structure, site, area, place, record, or manuscript that a lead agency determines to be historically significant or significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California, provided the lead agency's determination is supported by substantial evidence in light of the whole record.

If a lead agency determines that an archeological site is a historical resource, the provisions of PRC Section 21084.1 and CEQA Guidelines Section 15064.5 would apply. If an archeological site does not meet the CEQA Guidelines criteria for a historical resource, then the site may meet the threshold of PRC Section 21083 regarding unique archeological resources. A unique archeological resource is an archeological artifact, object, or site about which it can be clearly demonstrated that, without merely adding to the current body of knowledge, there is a high probability that it meets any of the following criteria:

- Contains information needed to answer important scientific research questions and that there is a demonstrable public interest in that information;

- Has a special and particular quality, such as being the oldest of its type or the best available example of its type; and

- Is directly associated with a scientifically recognized, important, prehistoric, or historic event or person (PRC Section 21083.2 [g]).

The CEQA Guidelines note that if a resource is neither a unique archeological resource nor a historical resource, the effects of the project on that resource shall not be considered a significant effect on the environment (CEQA Guidelines Section 15064[c][4]).

Under PRC 21000 et seq., CEQA also requires that public agencies and private interests identify the significance of the impacts of their proposed projects on any object or site of significance to the scientific annals of California (CEQA Section 15064.5 [a][3]). Administrative regulations for the implementation of CEQA are set forth in the CEQA Guidelines, which define the procedures, types of activities, persons, and public agencies required to comply with CEQA. Appendix G of the guidelines contains an environmental checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts. Section (V) (c) of the guidelines asks if the project will directly or indirectly destroy a unique paleontological resource, site, or geological feature.

California Register of Historical Resources

The CRHR is "an authoritative listing and guide to be used by state and local agencies, private groups, and citizens in identifying the existing historical resources of the state and to indicate which resources deserve to be protected, to the extent prudent and feasible, from substantial adverse change" (PRC Section 5024.1[a]). The criteria for eligibility for listing on the CRHR are based on NRHP criteria (PRC Section 5024.1[b]). Certain resources are determined by the statute to be automatically included in the CRHR, including California properties formally determined to be eligible for or listed on the NRHP (PRC Section 5024.1[d]).

To be eligible for the CRHR as a historical resource, a prehistoric- or historic-period resource must be significant at the local or state level under one or more of the following criteria:

1. Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;

2. Is associated with the lives of persons important in our past;

3. Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or

4. Has yielded, or may be likely to yield, information important in prehistory or history (CEQA Guidelines Section 15064.5 [a][3]).

For a resource to be eligible for the CRHR, it must also retain enough integrity to be recognizable as a historical resource and to convey its significance. A resource that does not meet the NRHP criteria may still be eligible for listing on the CRHR.

California Public Resources Code

As part of the determination made pursuant to PRC Section 21080.1, the lead agency must determine whether the project would have a significant effect on archeological and paleontological resources.

Several sections of the PRC protect cultural and paleontological resources. Under Section 5097.5, no person shall knowingly and willfully excavate upon, or remove, destroy, injure, or deface, any historic or prehistoric ruins, burial grounds, archeological or vertebrate paleontological site (including fossilized footprints), inscriptions made by human agency, rock art, or any other archeological, paleontological, or historical feature situated on public lands, except with the express permission of the public agency that has jurisdiction over the lands. Violation of this section is a misdemeanor.

Section 5097.98 states that if Native American remains are identified in a project area, the landowner must "discuss and confer" with the appropriate Native American, as identified by the California State Native American Heritage Commission (NAHC), regarding the treatment or disposition of, with appropriate dignity, the human remains and any items associated with Native American burials. These procedures are also addressed in Section 15046.5 of the CEQA Guidelines. California Health and Safety Code Section 7050.5 prohibits disinterring, disturbing, or removing human remains from a location other than a dedicated cemetery. Section 30244 of the PRC requires reasonable mitigation for impacts on paleontological and archeological resources that occur as a result of development on public lands.

In addition, several sections of the PRC that are relevant for the project area protect paleontological resources. Section 5097.5 prohibits "knowing and willful" excavation, removal, destruction, injury, and defacement of any paleontological feature on public lands (i.e., lands under state, county, city, district, or public authority jurisdiction or the jurisdiction of a public corporation), except where the agency with jurisdiction has granted express permission. Section 30244 requires reasonable mitigation for impacts on paleontological resources that occur as a result of development on public lands.

LOCAL

San Francisco Historic Preservation Commission and Planning Code, Articles 10 and 11

The San Francisco Historic Preservation Commission (HPC) is a seven-member body that makes recommendations on the designation of landmark buildings, historic districts, and significant buildings. The HPC replaced the Landmarks Preservation Advisory Board but retains most of the responsibilities of the previous body. The Landmarks Board was a nine-member body appointed by the mayor that served as an advisory board to the San Francisco Planning Commission and San Francisco Planning Department. It was established in 1967 with the adoption of Article 10 of the Planning Code. The work of the Landmarks Board, San Francisco Planning Department, and San Francisco Planning Commission has increased public awareness about the need to protect San Francisco's architectural, historical, and cultural heritage.

The HPC makes recommendations to the Board of Supervisors on landmark designations, historic district designations, and individual resource designations within historic districts. It may also review and comment on projects affecting historical resources that are subject to environmental review under CEQA or projects subject to review under Section 106 of the NHPA. The HPC also approves certificates of appropriateness for landmarks and properties within Article 10 historic districts.

The State Office of Historic Preservation has included San Francisco on its list of Certified Local Governments. This means that San Francisco has an approved historic preservation ordinance, HPC, and other formal processes related to historic preservation and cultural resources management. San Francisco, through the HPC and Planning Department Historic Preservation Staff, reviews the historical resources designated under Articles 10 and 11 of the San Francisco Planning Code when it evaluates project impacts on historical resources. Article 10 describes procedures regarding the preservation of sites and areas of special character or special historical, architectural, or aesthetic interest or value, such as officially designated City landmarks and buildings included within locally designated historic districts. Article 11 of the Planning Code designated six downtown conservation districts.

4.3.4 Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

The significance criteria used in this analysis are consistent with the environmental checklist in Appendix G of the CEQA Guidelines, which have been adopted and modified by the San Francisco Planning Department. Implementing the proposed project or its variant would have a significant effect on cultural resources if it were to result in any of the following:

- Cause a substantial adverse change in the significance of a historical resource, as defined in CEQA Guidelines, Section 15064.5, including those resources listed in Article 10 or Article 11 of the San Francisco Planning Code;

- Cause a substantial adverse change in the significance of a historical or unique archeological resource, pursuant to Section 15064.5;

- Directly or indirectly destroy a unique paleontological resource or site or unique geological feature; or

- Disturb any human remains, including those interred outside of formal cemeteries, pursuant to California Health and Safety Code, Section 7050.5.

APPROACH TO ANALYSIS

The California Code of Regulations, beginning with 15064.5(b), defines significant impacts for archeological and historic architectural resources as follows:

Substantial adverse change in the significance of a historical resource means physical demolition, destruction, relocation, or alteration of the resource or its immediate surroundings such that the significance of a historical resource would be materially impaired; and the significance of a historical resource is materially impaired when a project does the following:

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its inclusion on or eligibility for inclusion on the CRHR;

- Demolishes or materially alters in an adverse manner those physical characteristics that account for its inclusion on a local register of historical resources, pursuant to Section 5020.1(k) of the PRC, or its identification in a historical resources survey meeting the requirements of Section 5024.1(g) of the PRC, unless the public agency reviewing the effects of the project establishes by a preponderance of evidence that the resource is not historically or culturally significant; or

- Demolishes or materially alters in an adverse manner those physical characteristics of a historical resource that convey its historical significance and that justify its eligibility for inclusion on the CRHR as determined by a lead agency for purposes of CEQA.

The impacts analysis below describes the cultural resource impacts from the proposed project. In addition, the analysis accounts for the impacts of the project variant. As described in Chapter 2, Project Description, the project variant includes the same physical changes to Second Street as the proposed project, except at one intersection. The project variant would result in slightly different operations at the intersection of Second and Brannan streets than the proposed project. Specifically, the project variant would allow southbound left turns and would not have signal phase separations between the east side pedestrian and bicycle movements and turning vehicles.

IMPACT EVALUATION

Impact CP-1: The proposed project or the project variant would have no impact on historic architectural resources. *(No Impact)*

There are numerous individually significant historic structures along Second Street and countless more close to the corridor; however, none extend into the C-APE defined for the project, which is confined to the Second Street ROW. Although these historic resources are next to the Second Street corridor, the proposed project or its variant would neither demolish or modify these structures nor introduce intrusive elements or other features to the physical setting. As such, the proposed project or its variant does not represent an adverse effect on these neighboring historic properties.

There are also no historic features of the streetscape, such as historic streetlights or ornamental vegetation, in the C-APE. However, the project corridor does bisect three historic districts between Market and King streets. With one exception, these historical resource designations extend only to the public ROW and do not include features of the streetscape. The exception is historic paving materials on Federal and De Boom streets in the South End Historic District, which are not within the C-APE defined for the Second Street Project.

Therefore, implementing the proposed project or its variant would not result in a substantial adverse change to any structure that could be defined as a historical resource (i.e., CRHR-listed or eligible to be listed). The proposed project or its variant would have no impact on historic architectural resources (***no impact***).

Impact CP-2: The proposed project or the project variant could have a substantial adverse change to CRHR-Listed, Eligible to be Listed, or Significant Archeological Resources,[55] including those containing human remains. *(Less than Significant with Mitigation)*

As detailed in the section presented above, there is the potential that previously undiscovered archeological resources, both prehistoric and historic, occur within the Second Street corridor.

[55] Significant archeological resources cover resources defined by PRC Section 21083, detailed above under Section 4.3.3 Regulatory Framework.

There is a long history of ground-disturbing activities in the corridor, in particular the section where there was massive grading for the Second Street Cut (approximately from Folsom Street to Bryant Street) and the installation of numerous underground utilities. Given this, the likelihood of discovering undisturbed archeological materials during construction is diminished. Although diminished, intact archeological materials could still be found within the project corridor. These include maritime-related materials toward the foot of Second Street (south of Bryant Street), portions of Second Street north of the Second Street Cut, and those archeological materials deposited in the closing decades of the nineteenth century, after the Second Street Cut.

It is also possible that disturbed or secondarily deposited prehistoric materials, which, because they were dislodged, could occur anywhere within the Second Street corridor. As such, the project's ground-disturbing activities have the potential to adversely affect CRHR-listed, eligible to be listed, or significant archeological resources, including those containing human remains.

As outlined above, substantial adverse change to a historical resource (i.e., CRHR-listed or eligible to be listed) or a significant archeological resource, or the disturbance of human remains would be considered a significant impact under CEQA.

Implementation of **Mitigation Measure M-CP-2: Archeological Monitoring** would require archeological monitoring. This would be guided by an archeological monitoring plan. This plan would identify when and where construction monitoring would be required. The construction archeological monitoring program would reduce the potential impacts on historical or significant archeological resources. Therefore, potential impacts on significant archeological resources, including those containing human remains, would be ***less than significant with mitigation***.

Mitigation Measure CP-2: Archeological Monitoring

Based on the reasonable potential that archeological resources may be present within the project site, the following measures shall be undertaken to avoid any potentially significant adverse effect from the proposed project or its variant on buried or submerged historical resources. The project sponsor shall retain the services of an archeological consultant from the rotational Department Qualified Archeological Consultants List (QACL) maintained by the Planning Department archeologist.

The project sponsor shall contact the Department archeologist to obtain the names and contact information for the next three archeological consultants on the QACL. The archeological consultant shall undertake an archeological monitoring program. All plans and reports prepared by the consultant as specified herein shall be submitted first and directly to the Environmental Review Officer (ERO) for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO. Archeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of 4 weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce to a less-than-significant level potential effects on a significant archeological resource as defined in CEQA Guidelines Section 15064.5 (a)(c).

Archeological monitoring program (AMP). The archeological monitoring program shall minimally include the following provisions:

- The archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soil disturbing activities commencing. The ERO in consultation with the project archeologist shall determine what project activities shall be archeologically monitored. In most cases, any soils disturbing activities, such as demolition, foundation removal, excavation, grading, utilities installation, foundation work, driving of piles (foundation, shoring, etc.), site remediation, etc., shall require archeological monitoring because of the potential risk these activities pose to archeological resources and to their depositional context.

- The archeological consultant shall advise all project contractors to be on the alert for evidence of the presence of the expected resource(s), of how to identify the evidence of the expected resource(s), and of the appropriate protocol in the event of apparent discovery of an archeological resource.

- The archeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archeological consultant and the ERO until the ERO has, in consultation with the archeological consultant, determined that project construction activities could have no effects on significant archeological deposits.

- The archeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis.

- If an intact archeological deposit is encountered, all soils disturbing activities in the vicinity of the deposit shall cease. The archeological monitor shall be empowered to temporarily redirect demolition/excavation/pile driving/ construction crews and heavy equipment until the deposit is evaluated. If in the case of pile driving activity (foundation, shoring, etc.), the archeological monitor has cause to believe that the pile driving activity may affect an archeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archeological consultant shall immediately notify the ERO of the encountered archeological deposit. The archeological consultant shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archeological deposit, present the findings of this assessment to the ERO.

Consultation with Descendant Communities: On discovery of an archeological site[56] associated with descendant Native Americans or the Overseas Chinese an appropriate representative[57] of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archeological field investigations of the site and to consult with ERO regarding appropriate archeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archeological site. A copy of the Final Archeological Resources Report shall be provided to the representative of the descendant group.

If the ERO in consultation with the archeological consultant determines that a significant archeological resource is present and that the resource could be adversely affected by the proposed project or its variant, at the discretion of the project sponsor either:

A. The proposed project or its variant shall be re-designed so as to avoid any adverse effect on the significant archeological resource or

B. An archeological data recovery program shall be implemented, unless the ERO determines that the archeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.

If an archeological data recovery program is required by the ERO, the archeological data recovery program shall be conducted in accord with an archeological data recovery plan (ADRP). The project archeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP. The archeological consultant shall prepare a draft ADRP that shall be submitted to the ERO for review and

[56] The term is intended here to minimally include any archeological deposit, feature, burial, or evidence of burial.

[57] Defined to mean, in the case of Native Americans, any individual listed in the current Native American Contact List for San Francisco, maintained by the California Native American Heritage Commission, and in the case of the Overseas Chinese, the Chinese Historical Society of America.

approval. The ADRP shall identify how the proposed data recovery program will preserve the significant information the archeological resource is expected to contain; that is, the ADRP will identify what scientific/historical research questions are applicable to the expected resource, what data classes the resource is expected to possess, and how the expected data classes would address the applicable research questions. Data recovery, in general, should be limited to the portions of the historical property that could be adversely affected by the proposed project or its variant. Destructive data recovery methods shall not be applied to portions of the archeological resources if nondestructive methods are practical.

The scope of the ADRP shall include the following elements:

- Field Methods and Procedures—Descriptions of proposed field strategies, procedures, and operations;
- Cataloguing and Laboratory Analysis—Description of selected cataloguing system and artifact analysis procedures;
- Discard and Deaccession Policy—Description of and rationale for field and post-field discard and deaccession policies;
- Interpretive Program—Consideration of an on-site/off-site public interpretive program during the course of the archeological data recovery program;
- Security Measures—Recommended security measures to protect the archeological resource from vandalism, looting, and non-intentionally damaging activities;
- Final Report—Description of proposed report format and distribution of results; and
- Curation—Description of the procedures and recommendations for the curation of any recovered data having potential research value, identification of appropriate curation facilities, and a summary of the accession policies of the curation facilities.

Human Remains, Associated or Unassociated Funerary Objects. The treatment of human remains and of associated or unassociated funerary objects discovered during any soils disturbing activity shall comply with applicable state and federal laws, including immediate notification of the Coroner of the City and County of San Francisco and In the event of the Coroner's determination that the human remains are Native American remains, notification of the California State NAHC who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Section 5097.98). The archeological consultant, project sponsor, ERO, and MLD shall make all reasonable efforts to develop an agreement for the treatment of, with appropriate dignity, human remains and associated or unassociated funerary objects (CEQA Guidelines Section 15064.5[d]). The agreement should take into consideration the appropriate excavation, removal, recordation, analysis, curation, possession, and final disposition of the human remains and associated or unassociated funerary objects.

Final Archeological Resources Report. The archeological consultant shall submit a Draft Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archeological resource and describes the archeological and historical research methods employed in the archeological testing/ monitoring/data recovery program(s) undertaken. Information that may put at risk any archeological resource shall be provided in a separate removable insert within the draft final report.

Copies of the draft FARR shall be sent to the ERO for review and approval. Once approved by the ERO, copies of the FARR shall be distributed as follows: California Archeological Site Survey Northwest Information Center (NWIC) shall receive one copy and the ERO shall receive a copy of the transmittal of the FARR to the NWIC. The Environmental Planning Division of the Planning Department shall receive one bound, one unbound, and one unlocked searchable PDF copy on CD of the FARR, along with copies of any formal site recordation forms (CA DPR 523 series) and documentation for nomination to the National Register of Historic Places/California Register of Historical Resources. In instances of high public interest or interpretive value, the ERO may require a different final report content, format, and distribution than that presented above.

Impact CP-3: The excavation associated with the proposed project or the project variant could have a substantial impact on unique paleontological resources or sites or unique geologic features. *(Less than Significant with Mitigation)*

As detailed under Paleontology Existing Resources, there is the potential that previously undiscovered paleontological resources, including the remains of Pleistocene megafauna, to occur within the project corridor.

Given the extent of past disturbance within the Second Street corridor (for example, the Second Street Cut and excavation for underground utilities), the likelihood of encountering undisturbed paleontological remains is diminished. Although diminished, the potential of inadvertently uncovering paleontological remains or unique geologic features is not completely eliminated. As such, ground-disturbing activities associated with the construction of the proposed project or its variant have the potential to directly or indirectly destroy a unique paleontological resource, site, or unique geological feature. The destruction of a unique paleontological resource, site, or unique geological feature would be considered a significant impact.

Implementing **Mitigation Measure M-CP-3: Paleontological Resources: Accidental Discovery** would require that workers on-site be made aware of the potential for accidental discovery of paleontological resources and the steps required should any such resources be encountered. These measures would reduce the potential impacts on paleontological resources by establishing procedures to address accidental discovery of resources, and analysis and curation of fossil specimens and data. Therefore, potential impacts on paleontological resources would be ***less than significant with mitigation***.

Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery

The Project Sponsor shall distribute a paleontological resource “ALERT” sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, pile driving, etc. firms); or utilities firm involved in soils disturbing activities within the areas of project site identified as being sensitive for paleontological resources. Prior to any soils disturbing activities being undertaken each contractor is responsible for ensuring that the “ALERT” sheet is circulated to all field personnel including, machine operators, field crew, pile drivers, supervisory personnel, etc. The Project Sponsor shall provide the Environmental Review Officer (ERO) with a signed affidavit from the responsible parties (prime contractor, subcontractor(s), and utilities firm) to the ERO confirming that all field personnel have received copies of the Alert Sheet. Should any feature of apparent potential to be a paleontological resource (fossilized invertebrate, vertebrate, plant, or micro-fossil) be encountered during soils disturbing activities associated with the project, the project sponsor would require that the following steps be taken: the soils disturbing activity within 25 feet of the feature must be stopped, the ERO must be notified, and a qualified paleontologist in accordance with the Society of Vertebrate Paleontology standards (SVP 1996) must also be retained to identify and evaluate the significance of the potential resource. In addition the paleontologist would document the findings in an advisory memorandum to the ERO. If it is determined that avoidance of effect to a significant paleontological resource is not feasible, the paleontologist shall prepare an excavation plan that may include curation of the paleontological resource in a permanent retrieval paleontological research collections facility such as the University of California (Berkeley) Museum of Paleontology or California Academy of Sciences. The Environmental Planning Division of the Planning Department shall receive two copies of a final paleontological excavation and recovery report. The requirements of this measure could suspend construction of the proposed project or its variant for as short a duration as reasonably possible and in no event for more than a maximum of 4 weeks. At the direction of the ERO, the suspension of construction can be extended beyond 4 weeks only if such a suspension is the only feasible means to reduce potential effects on a significant paleontological resource as previously defined to a less-than-significant level.

Cumulative Impacts

Impact C-CP-1: Construction of the proposed project or the project variant could result in a cumulatively considerable contribution to cumulative impacts on cultural resources. *(Less than Significant with Mitigation)*

The geographic scope for cumulative impacts on cultural resources is the Second Street ROW, as defined above. Because the proposed project or its variant would have no impacts on historic architectural resources, it would not contribute to cumulative impacts on such resources. However, the proposed project or its variant could contribute to cumulative impacts on archeological and paleontological resources. This would be the case if the proposed project or its variant and other projects listed in Section 4.1, Approach to Cumulative Analysis, were to adversely affect cultural resources in the project vicinity.

There is a potential for ground-disturbing activities under the proposed project or its variant and other cumulative projects to encounter previously unidentified archeological and paleontological resources; disturbance of these resources could result in significant cumulative impacts. The proposed project's or project variant's contribution to this impact would be cumulatively considerable. However, implementing **Mitigation Measure M-CP-2: Archeological Monitoring**, which would require archeological monitoring program, and **Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery**, which would specify the necessary steps should any paleontological resources be encountered, would allow for the project's impacts on these resources to be avoided. Therefore, by implementing the project mitigation measures identified above, the proposed project or its variant would not have a cumulatively considerable contribution to archeological or paleontological impacts, and impacts would be ***less than significant with mitigation***.

This page intentionally left blank.

4.4 TRANSPORTATION AND CIRCULATION

4.4.1 Overview and Organization

This section supplements the project-level analysis of potential impacts on transportation and circulation provided in the Bicycle Plan FEIR on pages V.A.1-1 to V.A.1-16, V.A.3-1 to V.A.3-19, V.A.3-34 to V.A.3-35, V.A.3-211 to V.A.3-234, and V.A.6-1 to V.A.6-7 for Near-Term Improvement Project 2-1 Options 1, 2, and Modified Option 1. The FEIR identified significant unavoidable impacts related to transportation and circulation as a result of the Bicycle Plan Project, and in particular, for traffic and loading for near-term improvement Project 2-1 for the Second Street corridor.

The project for the Second Street corridor has been refined based on an additional planning and community outreach process conducted by Public Works and SFMTA. The refinement was also based on a change in City policy to pursue Complete Streets when implementing projects within the street right-of-way[1],[2] (described on p. 2-1 in this document). This supplemental analysis addresses potential transportation and circulation impacts associated with the refined project, in particular the additional streetscape features, the sewer repair and replacement, and the undergrounding of overhead utilities on Second Street between Stillman and Townsend streets.

This section provides an overview of existing transportation conditions within the project area, a description of applicable transportation regulations and policies, methods and assumptions used in the impact analysis, and impact assessment and mitigation measures for transportation and circulation. Information in this section is based on a Transportation Impact Study (TIS)[3]

---

1 The San Francisco Public Works Code, Article 2.4 Excavation in the public right of way, Section 2.4.13, Transit, Pedestrian, Bicycle, Stormwater, and Communications infrastructure improvements as part of planning, construction, reconstruction, and repaving projects states that whenever Public Works or any other municipal excavator undertakes a project involving the planning, construction, reconstruction, or repaving of a public right-of-way, such project shall include, to the maximum extent practicable and feasible, transit, pedestrian, bicycle, stormwater, and communications infrastructure improvements. In combination, these improvements constitute a complete street project.

2 The San Francisco Administrative Code, Chapter 98, Section 98.1, the Better Streets Policy, requires City Departments to design City streets in keeping with the Urban Design Element of the City's General Plan; the City's Transit-First Policy; best practices in environmental planning and pedestrian-oriented; multi-modal street design, including the design guidelines set forth in the National Association of City Transportation Officials (NACTO) Urban Street Design Guide (2013) and the NACTO Urban Bikeway Design Guide (2014), and any subsequent editions of these Guides; and incorporation of sustainable water management techniques to ensure continued quality of life, economic well-being, and environmental health in San Francisco.

3 CHS Consulting Group, 2014, Second Street Improvement Project Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

prepared by the transportation consultant for the proposed project and the project variant (see Appendix B of this SEIR). This section addresses transportation-related construction impacts and analyzes the following: traffic, transit, pedestrians, bicycles, emergency vehicle access, loading, parking, and game day conditions.[4] This section also provides an analysis of cumulative transportation and circulation impacts.

4.4.2 Environmental Setting

As shown in Figure 4.4-1, the project study area for transportation analysis is bounded by Market Street on the north, First Street on the east, King Street on the south, and Third Street on the west. Portions of Fifth and Bryant streets, near the Interstate 80 (I-80) ramps, are also included in the study area.

ROADWAY NETWORK

This section presents a discussion of existing roadway systems in the vicinity of the project site, including roadway designation, number of lanes, and traffic flow directions. The functional designation of these roadways was obtained from the San Francisco General Plan.[5] Detailed definitions of the General Plan's roadway classification schemes are included in the TIS appendices.

Regional Access

This study area is served by three freeways: Interstate 80 (I-80), Interstate 280 (I-280), and US Highway 101 (US 101). I-80 provides the primary regional access to the project area. It is an elevated freeway that crosses Second Street between Harrison and Bryant streets. The San Francisco-Oakland Bay Bridge is part of I-80, connecting San Francisco to the East Bay. I-280 provides regional access to and from the South Bay. US 101 provides regional access to both the north and south of San Francisco.

Local Access

Second Street is a two-way street between Market and King streets, generally with two travel lanes in the northbound and southbound directions; there is one northbound lane from Mission Street to Market Street, where traffic must turn right. Parking is generally provided along both sides of the street. In the San Francisco General Plan, Second Street is identified as a Neighborhood Commercial Pedestrian Street and a Transit Preferential (transit important) Street.

---

[4] Refers to transportation conditions that occur on days when there is a home baseball game at AT&T Park.

[5] San Francisco General Plan, Transportation Element, July 1995. Available online: http://www.sf-planning.org/ftp/General_Plan/I4_Transportation.htm. Accessed April 14, 2014.

STUDY INTERSECTIONS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 4.4-1

Source: CHS Consulting Group, 2014

The Second Street Corridor is bounded by Market Street on the north and King Street on the south. Market Street is a major east-west downtown roadway that connects The Embarcadero with the Twin Peaks area, where it becomes Portola Drive. The roadway operates two ways, with generally two travel lanes in each direction. The San Francisco General Plan identifies Market Street as a Transit Conflict Street[6] in the CMP Network and as a Major Arterial elsewhere. Market Street is also classified as an MTS Street, a Transit Preferential Street, and a Citywide Pedestrian Street and as Citywide Bicycle Route 50 (Class II).[7]

King Street runs between The Embarcadero and the intersection of Division and De Haro streets. West of Fourth Street, King Street connects with the I-280 freeway ramps. King Street has two travel lanes in each direction. In the General Plan, King Street is identified as a Major Arterial in the CMP Network, an MTS Street, a Transit Preferential Street, and a Neighborhood Network Connection Street. The roadway is also a Freight Traffic Network Street.

Major roads that intersect the Second Street corridor are Mission, Howard, Folsom, Harrison, Bryant, Brannan, and Townsend streets (Figure 4.4-2). Mission, Howard, and Brannan streets are two-way arterials with two travel lanes in each direction. Folsom and Bryant streets are one-way eastbound arterials with four travel lanes. Harrison Street is a one-way arterial, with five lanes in the westbound direction. Townsend Street is a two-way street and generally has one travel lane in each direction.

The San Francisco General Plan designates Mission Street as a Neighborhood Pedestrian Street, a Transit Preferential Street, and a Transit Conflict Street in the CMP Network and as part of the Citywide Pedestrian Network. The San Francisco General Plan identifies Howard, Folsom, Harrison, Bryant, and Brannan streets as Major Arterials in the CMP Network. Howard, Folsom, and Brannan streets are designated MTS streets. Both Howard and Folsom streets are identified as Citywide Bicycle Routes in the General Plan. Harrison and Bryant streets are identified in the General Plan as Transit Important Streets.

Major streets near the project area are The Embarcadero, First, Third, Fourth, and Fifth streets. All these are identified as Major Arterials in the CMP Network, designated MTS Streets, Transit Preferential (Secondary Transit) Streets from Market to Mission streets,

[6] Transit Conflict Streets are streets with a primary transit function which are not classified as major arterials but experience significant conflicts with automobile traffic.

[7] On-street bicycle facilities are grouped into three categories: Class I bikeways are paths with an exclusive right-of-way for use by bicyclists and in many cases pedestrians; Class II bikeways are lanes striped within the paved areas of roadways and established for the preferential use of bicyclists; and Class III bikeways are signed routes where bicyclists share travel lanes with motor vehicles.

Neighborhood Pedestrian (Neighborhood Network) Streets from Market to Folsom streets, and Freight Traffic Network Streets between Market and Harrison streets.

Alleyways that intersect the Second Street corridor Stevenson, Jessie, Minna, Natoma, Tehama, Clementina, Stillman, Federal, South Park, and De Boom streets and Dow and Taber places. Other streets near the project area are Hawthorne, Sterling, and Essex streets.

Intersection Levels of Service

For CEQA purposes, vehicular traffic impacts of the proposed project or its variant are assessed in terms of intersection level of service (LOS). LOS is used to describe how efficiently an intersection operates for automobile and truck traffic. The method used for signalized intersections generally defines LOS in terms of “control delay per vehicle,” which refers to the average time drivers spend decelerating, stopping, and accelerating at traffic signals.

Signalized intersection LOS is affected by traffic volumes, conflicting pedestrian volumes, intersection lane configuration, and signal timing and coordination in a corridor. Unsignalized intersection LOS is defined in terms of average delay experienced per driver along the stop controlled approaches at the intersection. According to the Highway Capacity Manual 2000, intersection LOS designations range from A, which indicates negligible delays with free flow speed (less than 10 seconds per vehicle for both signalized and unsignalized intersections) to F, which indicates delays with queuing that may block upstream intersections (greater than 80 seconds per vehicle for signalized intersections and greater than 50 seconds for unsignalized intersections).

Existing traffic conditions were evaluated for the peak hour within the weekday evening (p.m.) peak period (4:00 p.m. to 6:00 p.m.). Within the p.m. peak period, the peak hour varies for each study intersection. Intersection LOS for each intersection was analyzed for a duration of sixty minutes, when the highest traffic volume was recorded during the p.m. peak period (the p.m. peak hour). For example, the highest traffic volume for a sixty-minute period for the First and Mission streets intersection was between 4:15 p.m. and 5:15 p.m.; the intersection LOS for the intersection of Second and South Park streets was analyzed between 5:00 p.m. and 6:00 p.m. (the period with the highest observed traffic volume recorded for that intersection). Traffic counts for 24 of the 29 study intersections were provided in the draft Central SoMa Plan Transportation Impact Study (conducted in August

2013).[8] Turning movement counts for the remaining five study intersections were collected by CHS on Tuesday, September 10 and Wednesday, September 11, 2013, during the p.m. peak period. The intersection turning movement counts are included in the TIS appendices.

The study intersections were evaluated using the 2000 Highway Capacity Manual operations method. This method determines the capacity for each lane group approaching the intersection and estimated the intersection LOS.

Table 4.4-1 presents the LOS and delay data for the study intersections under existing conditions. As shown, most study intersections currently operate satisfactorily at LOS D or better; however, 10 study intersections currently operate at unacceptable conditions of LOS E or F. Intersection LOS calculation output sheets are provided in the TIS appendices.

Traffic Conditions along Second Street

During the weekday evening peak period, traffic conditions along Second Street are generally dictated by those along I-80 and the freeway access ramps. For example, when the Bay Bridge (I-80) is congested, vehicles back up onto the First, Essex, and Sterling Street on-ramps because of the limited capacity to access the Bay Bridge. These residual effects cause traffic queues along Folsom, Harrison, Bryant, and Second streets. As such, traffic congestion and queuing generally occur along Second Street, as far north as Howard Street or as far south as Townsend streets. The backup varies daily but generally occurs during the p.m. peak period for 2 to 3 hours, depending on traffic congestion levels on the Bay Bridge.

[8] Turning movement counts for intersections analyzed in the Central SoMa Transportation Impact Study were provided from counts conducted in August 2013 by Fehr & Peers Transportation Consultants and from recent transportation studies for the Event Center and Mixed-Use Development at Piers 30-32 and Seawall Lot 330, 5M project (925-927 Mission Street), and Transit Center District Plan. Because most of intersections studied for this analysis overlap with intersections in the central SoMa study, counts at intersections in the central SoMa study were deemed relevant (and current). The intersection traffic data provided by the Central SoMa study were deemed adequate for this analysis, and traffic information presented herein would continue to reflect existing traffic conditions in the proposed project study area.

Table 4.4-1: Intersection Level of Service – Existing Weekday P.M. Peak Hour

Intersection		Type[1]	Existing (2013)	
			Delay[2]	LOS (v/c)[3]
1	New Montgomery and Market streets	Signal	51.0	D
2	New Montgomery and Mission streets	Signal	**61.3**	**E (1.04)**
3	New Montgomery and Howard streets	Signal	39.5	D
4	Hawthorne and Howard streets	Signal	19.6	B
5	Hawthorne and Folsom streets	Signal	**74.5**	**E (1.08)**
6	Hawthorne and Harrison streets	Signal	43.4	D
7	Third and Bryant streets	Signal	41.1	D
8	Third and Brannan streets	Signal	32.0	C
9	Third and Townsend streets	Signal	31.1	C
10	Third and King streets	Signal	**> 80**	**F (0.97)**
11	Second and Market streets	Signal	10.8	B
12	Second and Mission streets	Signal	15.0	B
13	Second and Minna streets	TWSC	16.5	C (WB)
14	Second and Howard streets	Signal	16.8	B
15	Second and Folsom streets	Signal	**64.6**	**E (1.30)**
16	Second and Harrison streets	Signal	42.3	D
17	Second and Bryant streets	Signal	**> 80**	**F**
18	Second and South Park streets	TWSC	**> 80**	**F (n/a EB)**
19	Second and Brannan streets	Signal	14.4	B
20	Second and Townsend streets	Signal	14.5	B
21	Second and King streets	Signal	42.9	D
22	Essex and Folsom streets	Signal	30.3	C
23	Essex and Harrison streets	Signal	**> 80**	**F (2.23)**
24	First and Market streets	Signal	14.9	B
25	First and Mission streets	Signal	23.0	C
26	First and Howard streets	Signal	18.3	B
27	First and Folsom streets	Signal	**> 80**	**F (1.26)**
28	First and Harrison streets	Signal	**> 80**	**F (1.44)**
29	Fifth/Bryant/I-80 EB on-ramps	Signal	**> 80**	**F (1.34)**

Notes: **Bold** indicates an unacceptable intersection level of service condition (LOS E or F).
[1]Signal indicates signalized intersection; TWSC indicates a two-way stop-controlled intersection.
[2]LOS and delay for signalized intersections represent conditions for the overall intersection; LOS and delay for TWSC intersections represent average conditions for the side-street stop-controlled approach, eastbound (EB); westbound (WB).
[3]Volume-to-capacity ratio (v/c) is presented only for intersections operating at unacceptable LOS E or F, pursuant to San Francisco Transportation Impact Assessment Guidelines, 2002.
Source: CHS Consulting Group, 2014.

In addition to the traffic queue for the Bay Bridge, traffic congestion along Second Street is also caused by the following two factors:

- Left-turning vehicles on Second Street at Folsom and Harrison streets in the southbound direction. There is a limited opportunity for left-turning vehicles at these intersections. This is due to Folsom and Harrison streets experiencing congestion, which reduces the streets' capacity to accommodate traffic; consequently vehicle queuing occurs along Second Street.
- Vehicle conflicts with pedestrians at intersections. Second Street is a major pedestrian street along both east and west sidewalks. Consequently, right-turning and left-turning vehicles conflict with pedestrian movements at intersections crossings and this becomes an additional source of congestion.

TRANSIT NETWORK

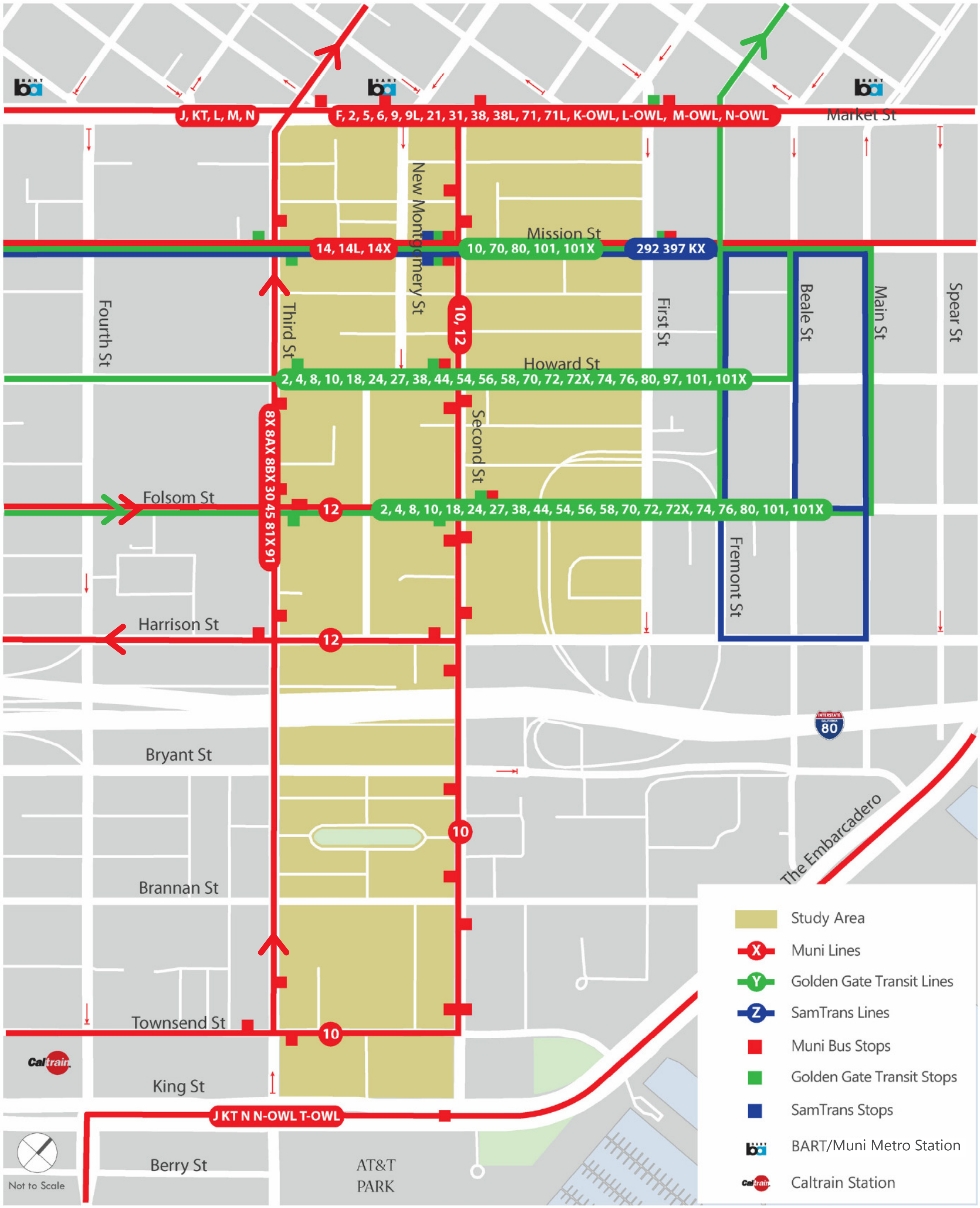
The transit study area generally covers two blocks in each direction from the project site (The Embarcadero and Main Street on the east, Market Street on the north, Third Street on the west, and King Street on the south). The area is served by both regional and local transit. Regional transit service is provided by Bay Area Rapid Transit (BART), AC Transit, Golden Gate Transit (GGT), San Mateo County Transit District (SamTrans), and Caltrain; local transit service is provided by the San Francisco Municipal Railway. There are 28 Muni transit lines in the immediate vicinity of the project area. Figure 4.4-2 presents the transit lines in the study area and the stops within the study boundary.

Regional Transit System

While the local transit service to and from the project area is provided by Muni bus routes, Muni bus services can be used to access regional transit operators including SamTrans, Golden Gate Transit (GGT), Bay Area Rapid Transit (BART), and Caltrain. These regional transit providers are described below.

BART—BART operates regional rail transit service between the East Bay (from Pittsburg/ Bay Point, Richmond, Dublin/Pleasanton, and Fremont) and between San Mateo County (Daly City, San Francisco International Airport, and Millbrae) and San Francisco. During the p.m. peak period, headways are generally 5 to 15 minutes for each line.

The nearest BART station to Second Street is the Montgomery Street Station on Market Street. It is served by Muni routes 5 Fulton, 6 Parnassus, 9/9L San Bruno/Limited, 21 Hayes, 31 Balboa, 38/38L Geary/Limited, and six light rail lines (F, J, L, M, N, and KT, including “owl” [late night] services).



EXISTING TRANSIT SERVICE

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 4.4-2

Source: CHS Consulting Group, 2014

agnes_katonics Jul 28, 2014 – 10:19am T:\SFDPW 2nd Street Improvement\Figures_EIR\FIGURE 4.4-2.dwg 01/21/15 hk T:\SFDPW 2nd Street Improvement\Graphics\Figs_4.4s.indd
XREFS: Figures TB 8.5x11 PORTR.dwg

AC Transit—The Alameda-Contra Costa Transit District (AC Transit) provides transbay bus service between the East Bay and San Francisco. Currently all transbay routes terminate at the temporary Transbay Terminal, on the block bounded by Folsom, Howard, Beale, and Main streets. The new Transbay Transit Center will be located on Mission Street between First and Fremont streets, one block east of Second Street and will begin operation in fall 2017. Muni lines 5 Fulton, 38 Geary, and 71 Haight-Noriega that run within the study area connect to the temporary Transbay Terminal. Most AC Transit Transbay services are operated during the peak hour and in the peak direction (to San Francisco during the a.m. peak period and from San Francisco during the p.m. peak period), with headways of 15 to 30 minutes on each route.

Golden Gate Transit—GGT, operated by the Golden Gate Bridge, Highway, and Transportation District (GGBHTD), provides both bus and ferry service between cities in the North Bay (Marin and Sonoma counties) and San Francisco. GGT operates 19 commuter bus routes and three basic routes. Most routes serve either the Civic Center (via Van Ness Avenue and Mission Street) or the Financial District (via Battery and Sansome streets). Basic bus routes operate at 15- to 90-minute intervals, depending on the time and day of the week. Commuter and ferry feeder bus routes operate at more frequent intervals in the mornings and evenings. GGT does not provide local service within San Francisco. Buses running from the North Bay to San Francisco allow alighting only at stops within San Francisco beyond the Golden Gate Bridge toll booth and on Richardson Avenue at Francisco Street. Conversely, buses running from San Francisco to the North Bay allow boarding only at stops within San Francisco. Although there are no GGT bus stops on Second Street, there are GGT bus stops along Mission, Howard, and Folsom streets, near the intersections with Second Street. These stops serve approximately 20 GGT bus routes.

GGBHTD ferries operate between Larkspur and Sausalito and San Francisco. The San Francisco terminal is at the Ferry Building, on The Embarcadero at Market Street. The average weekday ridership was 6,033 riders to Larkspur and 2,644 riders to Sausalito in 2012.[9] The Ferry Building can generally be accessed from the project site via Muni route 14 Mission, at Mission and Steuart streets, two blocks from the Ferry Building.

Water Emergency Transportation Authority—The San Francisco Bay Area Water Emergency Transportation Authority operates the San Francisco Bay Ferry and provides weekday and weekend ferry service from and to the cities of Alameda, Oakland, Harbor Bay, Sausalito, Larkspur, Tiburon, and Vallejo to the Ferry Building and Pier 41 terminals in San Francisco.

---

[9] GGBHTD. 2012. Golden Gate Ferry Statistics. Available online: http://goldengateferry.org/researchlibrary/statistics.php; accessed August 30, 2013

Caltrain—Caltrain's Peninsula Commute Service provides passenger rail service on the Peninsula between Gilroy and San Francisco. The Peninsula Corridor Joint Powers Board, a joint powers agency consisting of San Francisco, San Mateo, and Santa Clara counties, operates the service. The downtown Caltrain station at Fourth and Townsend streets connects to the project site via Muni line 10 Townsend on Second Street. Caltrain operates 92 trains each weekday (46 trains northbound and 46 southbound) stopping at this station. The Baby Bullet Express trains operate approximately hourly in the a.m. and p.m. peak periods. Headways during the weekday p.m. peak period are approximately 10 to 30 minutes. As recorded between February 2012 and February 2013, the average daily ridership has increased approximately 11 percent to 47,100 riders per day.[10]

SamTrans—SamTrans provides bus service between San Mateo County and San Francisco. SamTrans operates four diesel bus lines that serve San Francisco, all into downtown. One of these routes operates as a peak-only commuter route, one operates as an all-day express route, one provides service throughout the day, and one provides night-owl service between approximately 1:00 a.m. and 5:00 a.m. The total average weekday ridership to and from downtown San Francisco is approximately 11,300 per day. Headways during the p.m. peak period are approximately 20 to 60 minutes per line. There are no SamTrans bus stops along Second Street; however, there is a bus stop along the north side of Mission Street, immediately west of its intersection with Second Street. This stop services SamTrans bus routes 292, 397, and KX.

Regional Screenlines

Three screenlines (East Bay, North Bay, and South Bay) have been established to evaluate regional transit operations into and out of San Francisco. The East Bay screenline includes BART, AC Transit, and ferries (i.e., Alameda/Oakland ferry, Harbor Bay ferry, Vallejo Baylink); the North Bay screenline includes Golden Gate Transit buses and ferries (i.e., Golden Gate ferry, Tiburon ferry); and the South Bay screenline includes BART, Caltrain, and SamTrans. The location of each regional screenline is presented within the TIS appendices. The resulting regional weekday p.m. peak hour screenline operations are summarized in Table 4.4-2.

[10] Caltrain, 2012. February 2012 Caltrain Annual Passenger Counts Key Findings Report. Available online: http://www.caltrain.com/about/statsandreports/Ridership.html. Accessed August 30, 2013.

Table 4.4-2: Regional Screenline Capacity Utilization – Existing Weekday P.M. Peak-Hours

Screenline (Transit Operator)	P.M. Peak Hour (Outbound)		
	Ridership	Capacity	Utilization
East Bay			
BART	19,716	22,050	89%
AC Transit	2,256	3,926	57%
Ferries	805	1,615	50%
Screenline Total	*22,777*	*27,591*	*83%*
North Bay			
Golden Gate Transit Bus	1,384	2,817	49%
Ferries	968	1,959	49%
Screenline Total	*2,352*	*4,776*	*49%*
South Bay			
BART	10,682	14,910	72%
Caltrain	2,377	3,100	77%
SamTrans	141	320	44%
Ferries	—	—	—
Screenline Total	*13,200*	*18,330*	*72%*
Regional screenlines total	**38,329**	**50,697**	**76%**

Source: San Francisco Planning Department, Transit Data for Transportation Impact Studies Memorandum, June 2013.

San Francisco Municipal Railway

Muni operates buses, cable cars, streetcars, and light rail vehicles within the City and County of San Francisco as part of the SFMTA. There are 20 Muni bus routes that traverse the project study area and eight light rail lines, located along Market Street and The Embarcadero.

The two Muni bus routes that operate along Second Street are the 10 Townsend and 12 Folsom/Pacific. Both routes operate inbound and outbound along Second Street, with inbound trips in the northbound direction and outbound trips in the southbound direction. For both directions, the 10 Townsend bus route operates at 12-minute headways (frequency) during a typical weekday and the 12 Folsom/Pacific bus route currently operates at 20-minute headways during a typical weekday.

Other transit routes that operate on the streets near the Second Street corridor are as follows:[11]

- 8X Bayshore Express, which operates along Third Street between Bryant and Market streets;
- 30 Stockton, 45 Union/Stockton, and 81X Caltrain Express, which operate along Third Street between Townsend and Market streets;
- 14 Mission, 14L Mission Limited, and 14X Mission Express, which operate along Mission Street; and
- 82X Levi Plaza Express, which operates along westbound Brannan Street.

Weekday headway information for all Muni bus routes that traverse or intersect with Second Street are listed in the TIS appendices.

Muni Screenlines

Transit riders typically have multiple transit options to reach the project site and will choose a route based on several factors, including reliability, headways, travel time, type of transit, comfort, and convenience. Based on this understanding, four screenlines—northeast, northwest, southeast, and southwest—have been established to evaluate Muni operations into and out of the greater downtown area, roughly corresponding to Superdistricts 1, 2, 3, and 4, respectively. The concept of screenlines is used to describe the magnitude of travel from or to the downtown area and its vicinity and to compare estimated transit volumes to available capacities for each transit operator. These four established screenlines are hypothetical lines that would be crossed by persons traveling between downtown and its vicinity and other parts of San Francisco and the region. They have been established to analyze potential impacts of projects on Muni service along each screenline and subcorridors within each screenline.

The location of each downtown screenline is presented in the TIS appendices. Among the four screenlines, Muni transit lines that operate within the project study area generally traverse the southwest and southeast screenlines. The existing capacity utilization for each screenline is summarized in Table 4.4-3. All screenlines currently operate below Muni's 85 percent capacity utilization threshold during the weekday a.m. and p.m. peak hours, with the southwest screenline being the most crowded.

[11] There are numerous Muni routes that operate along Market Street. However, the project changes at the intersection of Second and Market streets would not affect their operations.

Table 4.4-3: Muni Screenline Capacity Utilization – Existing Weekday P.M. Peak Hours

Screenline	P.M. Peak Hour (Outbound)		
	Ridership	**Capacity**	**Utilization**
Northeast			
Kearny and Stockton streets	2,158	3,291	66%
All other lines	570	1,078	53%
Screenline total	*2,727*	*4,369*	*62%*
Northwest			
Geary Street	1,814	2,528	72%
California Street	1,366	1,686	81%
Sutter and Clement streets	470	630	75%
Fulton and Hayes streets	965	1,176	82%
Balboa St.	637	929	69%
Screenline total	*5,252*	*6,949*	*76%*
Southeast			
Third Street	550	714	77%
Mission Street	1,529	2,789	55%
San Bruno Street and Bayshore Boulevard	1,320	2,134	62%
All other lines	1,034	1,712	60%
Screenline total	*4,433*	*7,349*	*60%*
Southwest			
Subway lines	4,747	6,294	75%
Haight and Noriega streets	1,105	1,651	67%
All other lines	276	700	39%
Screenline total	*6,128*	*8,645*	*71%*
Muni screenlines total	**18,540**	**27,312**	**68%**

Source: San Francisco Planning Department, Transit Data for Transportation Impact Studies Memorandum, June 2013.

Transit Conditions along Second Street

Muni transit routes along Second Street are the 10 Townsend and 12 Folsom/Pacific. There are currently 13 transit stops along the Second Street corridor—seven outbound (southbound direction) and six inbound (northbound direction). In addition, there is an evening-only curbside terminal for the 9-San Bruno bus route on the west side of Second Street, between Market and Stevenson streets. Transit travel time along Second Street is often affected by the traffic conditions along the I-80 freeway and the freeway access ramps near the intersections of Second and Harrison streets. This is because the 2- to 3-hour p.m.

peak period traffic queuing at southbound left turns and northbound right turns along Second Street are mostly associated with drivers heading toward the Bay Bridge (see above). These turning vehicles could block vehicle movement in other adjacent lanes, increase transit travel times, and cause delays through these sections: southbound Second Street, between Mission and Market streets, between Folsom and Howard streets, and between Harrison Street and Dow Place; and along northbound Second Street, between Howard and Folsom streets and between Harrison and Brannan streets. Although Second Street experiences heightened congestion levels during the evening peak commute period along these turn lanes, the buses traveling in the northbound center lane and southbound curbside lane are generally unconstrained and experience near free-flow conditions and low re-entry delay.[12]

SFMTA periodically monitors the route load (number of passengers) and capacity (number of seats and standing room for passengers) for all of its buses, light rail, and streetcar vehicles within the Muni system. Muni's operating standard for all of its vehicles is 85 percent of capacity, and crowded conditions are identified when the number of passengers on a vehicle exceeds Muni's 85 percent capacity utilization threshold.

Based on current transit capacity utilization data, the 10 Townsend bus route already exceeds Muni's operating standard of 85 percent capacity utilization, with 87 percent capacity utilization in the outbound direction for this line during the morning and evening peak commute periods. The maximum load point (MLP) for the 10 Townsend during the morning peak period occurs at the inbound stop near the intersection of Second and Townsend streets and at the outbound stop near the intersection of Pacific and Taylor streets. The MLP for the 10 Townsend during the evening peak period occurs at the inbound stop near the intersection of Pacific and Powell streets and at the outbound stop near the intersection of Second and Howard streets.[13] Therefore, the data findings indicate that during the evening peak commute period the 10 Townsend along Second Street is generally crowded, with limited available capacity for additional passengers traveling in the outbound direction.

The 12 Folsom/Pacific bus route currently operates below Muni's 85 percent capacity utilization threshold and has available capacity to accommodate additional passengers.[14] During the morning peak period, the MLP for the 12 Folsom/Pacific bus route occurs at the inbound stop near the intersection of Folsom and Seventh streets and at the outbound stop

[12] Re-entry delay is the time required for a suitable gap in traffic to allow the bus to re-enter the traffic stream and accelerate.

[13] The MLP is the location where the route has its highest number of passengers relative to capacity.

[14] The 12 Folsom/Pacific bus route currently operates at 65 percent capacity inbound, 76 percent capacity outbound during the a.m. peak period. During the p.m. peak period it operates at 71 percent capacity inbound and 67 percent outbound.

near the intersection of Pacific and Mason streets. In the evening peak period, the MLP for the 12 Folsom/Pacific bus route occurs at the inbound stop near the intersection of Pacific and Powell streets and at the outbound stop near the intersection of Sansome and California streets.

PEDESTRIAN CONDITIONS

The pedestrian network along Second Street and adjacent (intersecting) roadways includes continuous sidewalks, striped crosswalks, curb ramps, and pedestrian signals and countdown timers at each intersection. Crosswalks are provided at the corridor's signalized intersections but not at the unsignalized alleyway intersections. There is a midblock pedestrian crossing on Second Street at South Park Street. Other pedestrian amenities, including street trees and street furniture primarily consisting of tables and chairs outside restaurants and cafés, are on the sidewalks (mostly along both sides of Second Street, between Howard and Market streets). Sidewalks are approximately 15 feet wide along Second Street between Market and Harrison streets and approximately 10 feet wide between Harrison and Townsend streets. From Townsend to King streets, sidewalks are about 19 feet wide on both sides of the street.

Field observations of pedestrian activity on an average weekday were conducted on September 17, 2013, along Second Street during the evening peak hour (5:00 p.m. to 6:00 p.m.). Pedestrian traffic along Second Street was generally moderate to heavy along most of the roadway, with most pedestrians traveling north. Other areas of Second Street, particularly between Brannan and King streets, were relatively light. Overall, pedestrians were unimpeded, with generally normal walking speeds and the freedom to bypass other pedestrians (although requiring interaction with other pedestrians). There were no instances of overcrowding along sidewalks, although temporary crowding occurred at bus stops (e.g., along the west side of Second Street, north of Jessie Street), and at intersections as pedestrians waited to cross the street. In general, sidewalks along Second Street are adequate in width to accommodate existing pedestrian circulation during an average weekday p.m. peak hour; however, field observations were not conducted during a baseball game at AT&T Park.

As stated in earlier sections, during typical peak evening commute periods, vehicle queues along Second Street are prevalent. This is mostly due to the heightened traffic volumes traveling to the Bay Bridge and subsequent blockages at several intersections from southbound left-turning vehicles and northbound right-turning vehicles, turning from Second Street. Field observers noted several instances of vehicles blocking crosswalks and impeding pedestrian flow along Second Street at Folsom, Harrison, and Bryant streets. This often resulted in pedestrians interweaving between vehicles in order to cross the street and increasing the risk of conflicts between pedestrians and vehicles.

BICYCLE CONDITIONS

On-street bicycle facilities include city-designated routes that are part of the San Francisco Bicycle Route Network. These facilities are grouped into the following three categories:

- Class I bikeways are bike paths with exclusive rights-of-way for bicyclists and in many cases pedestrians.

- Class II bikeways are bike lanes striped within the paved areas of roadways and are for the preferential use of bicycles.

- Class III bikeways are signed bike routes where bicyclists share travel lanes with motor vehicles. In some instances along Class III bikeways, the City has painted shared lane markings (called sharrows) in the travel lane.

Figure 4.4-3 shows the bicycle route map within the project study area. The entire length of Second Street is designated as Bicycle Route 11 with a Class III facility (sharrows). Bicycle Route 11 connects to other routes, including Class III Bicycle Route 50 at Market Street, Class II Bicycle Route 30 at Howard and Folsom streets, Class II Bicycle Route 36 at Townsend Street, and Class II (bicycle lanes) Bicycle Route 5 at King Street. These bicycle facilities are described below.

Route 5 connects Visitacion Valley and North Beach, primarily as a Class III facility along Bayshore Boulevard, Third Street, and Illinois Street and as a Class II facility along The Embarcadero and San Bruno Avenue. The Class II facility connects to Second Street (Bicycle Route 11) and continues along The Embarcadero, with bicycle lanes along both sides.

Route 11 is a Class III facility that runs the extent of Second Street (from Market Street to the north and King Street to the south). The bicycle route allows for bicycles and motor vehicles to share the same general travel lane. It runs north to south along both sides and the length of Second Street.

Route 30 connects downtown San Francisco with Golden Gate Park. It runs the length of Golden Gate Park and the Panhandle, Hayes Valley, the Duboce Triangle area, and Folsom Street and Howard Street couplet to The Embarcadero. There is a Class II bike lane on the north side of Howard Street between Fremont and Eleventh streets. On Folsom Street, Route 30 has a dedicated bike lane on the south side of the street.

EXISTING BICYCLE MAP

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 4.4-3

Source: CHS Consulting Group, 2014

Route 36 connects South Beach with the Mission District. It runs the length of Townsend Street, from The Embarcadero to Division Street, and continues to points west along Division Street to Folsom Street. The bicycle facility is a Class III bicycle route from The Embarcadero to Second Street and then intermittently a Class II facility from Second Street to Eighth and Division streets. The route becomes a Class III facility along Division Street and continues northwest along 11th Street. It then runs south along Harrison Street and terminates at Harrison and 14th streets. It connects to other routes, including routes 25 and 30.

Route 50 connects downtown San Francisco with the Castro neighborhood. It runs along Market Street from The Embarcadero to 17th Street. The route is a Class III facility from The Embarcadero to Eighth Street and then becomes a Class II facility, with bicycle lanes along both sides of Market Street to 17th Street.

CHS conducted field observations of bicycle activity along Second Street during the evening peak hour (5:00 p.m. to 6:00 p.m.) during a weekday.[15] Although bicycle volumes were observed to be generally low along Second Street, in areas of heavy traffic congestion and vehicle queuing (e.g., at Folsom and Bryant streets), field observers indicated that bicyclists were required to slow down or stop to maneuver (or detour) around these queued vehicles in order to continue along Second Street. These congested areas result in an unsafe environment for bicyclists traveling along the roadway and create a greater potential for conflicts between motor vehicles and bicycles.

EMERGENCY VEHICLE ACCESS

The current roadway configuration on the Second Street corridor includes two travel lanes each in both the northbound and southbound directions, parallel parking on both sides of the street, and traffic/pedestrian signals at each corridor intersection. The roadway is designed to accommodate all vehicle types, including fire trucks, ambulances, and police vehicles. In an emergency, drivers are required to comply with standard driving laws and yield the right-of-way to any emergency vehicle using a siren or flashing red lights. Drivers are required to maneuver to the right edge of the road and stop until emergency vehicles have passed. The current roadway capacity and lane configuration along Second Street allow for safe maneuvering of vehicles and the passage of emergency vehicles.

The San Francisco Fire Department Station No. 35 is at The Embarcadero and Harrison Street (Pier 22½), about 0.50 mile east of Second Street. Emergency vehicles from Fire

---

[15] CHS Consulting Group, 2014, Second Street Improvement Project Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.)

Station No. 35 are able to access Second Street directly via Harrison Street. Fire Department Station No. 1 is also in proximity to Second Street, at Folsom Street, east of Fifth Street, about 0.60 mile west of Second Street. Access to Second Street from Fire Station No. 1 is via Folsom Street.

LOADING CONDITIONS

There are several businesses along Second Street, ranging from general commercial and office use to retail stores, including small grocery stores, and sit-down restaurants, cafes, and related eateries. Commercial and passenger loading zones are designated along the entire Second Street corridor (Market Street to King Street). Commercial loading spaces are typically metered and designated with a yellow-painted curb. Adjacent commercial loading stalls or spaces form commercial loading zones in which larger trucks may use more than one stall. Passenger loading zones are designated with a white-painted curb and are typically described by their length in feet. Long-term parking is prohibited in white and yellow zones during the hours specified and only freight vehicles and similar commercial trucks can use the commercial loading zones.

As shown in Table 4.4-4, there are 41 metered commercial loading stalls along Second Street, which comprise 16 commercial loading zones. Typically, metered commercial loading stalls are at least 22 feet long. Most of the metered commercial yellow loading stalls on Second Street are on the two blocks between Market and Howard streets (31 commercial loading stalls). Yellow commercial loading stalls on these blocks are occupied for approximately 60 percent of the time during hours of operation.[16] Commercial parking meters between Howard and Bryant streets have an occupancy level of less than 45 percent. Additionally, Second Street has 15 white passenger loading zones between Market and King streets, adjacent to the curb.

[16] SFMTA, 2012. Occupancy for Yellow and Red (reserved for trucks) Meters between 7 a.m. and 6 p.m. Weekdays, from January 2nd to September 15th, 2012. From SFPark occupancy data collected September 2012. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

Table 4.4-4: Existing and Proposed Loading Supply along Second Street

Project Area (segment)	Loading Supply by Type			
	Commercial Zones (metered stalls)[1]		Passenger Zones (approximate length in feet)[2]	
	Existing	Proposed	Existing	Proposed
Second Street				
Market to Mission streets				
East side	2 (4 stalls)		3 (172 ft)	1 (40 ft)
West side	4 (11 stalls)[3]	3 (9 stalls)[3]	1 (22 ft)	1 (20 ft)
Mission to Howard streets				
East side	2 (10 stalls)		1 (42 ft)	
West side	3 (6 stalls)	1 (2 stalls)	1 (21 ft)	
Howard to Folsom streets				
East side	1 (2 stalls)	1 (2 stalls)	2 (112 ft)	2 (110 ft)
West side			2 (45 ft)	
Folsom to Harrison streets				
East side	1 (3 stalls)	1 (3 stalls)	1 (44 ft)	1 (44 ft)
West side	1 (2 stalls)			
Harrison to Bryant streets				
East side	2 (3 stalls)	1 (2 stalls)	1 (40 ft)	1 (40 ft)
West side				
Bryant to Brannan streets				
East side		1 (2 stalls)	1 (20 ft)	1 (20 ft)
West side				
Brannan to Townsend streets				
East side				
West side			1 (164)	1 (164 ft)
Townsend to King streets				
East side				
West side			1 (105)	1 (85 ft)
Second Street Subtotal	**16 (41 stalls)**	**8 (20 stalls)**	**15 (787 ft)**	**9 (523 ft)**
Side Streets[4]				
Harrison Street (Hawthorne Street to Second Street)				
North side			**1** (44 ft)	**1** (44 ft)
South side	**1** (1 stall)	**1** (1 stall)	**1** (44 ft)	**1** (44 ft)
Side Street Subtotal	**1 (1 stall)**	**1 (1 stall)**	**2 (88 ft)**	**2 (88 ft)**
Total supply	**17 (42 stalls)**	**9 (21 stalls)**	**17 (875 ft)**	**11 (611 ft)**

[1] Most commercial zones comprise multiple adjacent commercial (yellow or red capped) metered stalls.
[2] Passenger loading zones include taxi and tour bus zones (white zones).
[3] The 147-foot unmetered commercial truck loading zone between Market and Stevenson streets that would be located in the part-time bus terminal would provide 5 metered stalls based on 26 feet per stall.
[4] There are no commercial or passenger loading zones in the 200 block of Brannan Street.
Source: SFMTA parking meter records, collected March 2012. Records are on file at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

PARKING CONDITIONS

The following presents the street parking inventory (parking spaces by type and designated use), supply (number of parking spaces), and current weekday midday occupancy (demand or accumulation of parked vehicles) along Second Street.

Parking Inventory and Supply

There are approximately 168 on-street vehicle parking spaces (including both general metered parking and blue ADA-accessible parking spaces) and 56 motorcycle parking spaces on both sides of Second Street, between King and Market streets. Table 4.4-5 presents the current parking inventory and supply along Second Street. There are approximately 21 general metered parking spaces on Brannan Street between Second and Colin P. Kelly Jr. Streets, 10 parking spaces on the north side and 11 on the south side. Parking conditions on Harrison Street between Second and Hawthorne streets include 19 general metered parking spaces (9 spaces on the north side and 10 spaces on the south side).

Parking Occupancy—Weekday Midday Conditions

Parking occupancy is a ratio of parking demand to parking supply for a given period. Occupancy during peak periods is the primary measure of parking usage and can identify the potential need for additional parking. A parking occupancy rate of 85 percent for street parking facilities is typically defined as effective capacity; this means that it has reached a balance between supply and demand, where there are sufficient empty spaces to ensure parking availability. As occupancy rates climb toward 100 percent, drivers will resort to cruising for parking or may be tempted to park illegally. Such activities may result in adverse traffic and circulation effects.[17]

Parking occupancy surveys were conducted between May 2011 and April of 2012[18] during the weekday midday period (12:00 p.m. to 3:00 p.m.). Overall, the midday parking occupancy rate along Second Street is approximately 75 percent, as shown in Table 4.4-6. Based on these findings, parking demand along Second Street has remained consistent and below practical capacity. On average, there are approximately 40 parking spaces available during the midday period. As such, street parking along Second Street is generally available and unconstrained.

---

[17] Shoup, Donald, 2005. *The High Cost of Free Parking*; APA Planners Press; Chapter 11: Cruising, p. 290.

[18] SFMTA, 2012. Occupancy for Yellow and Red (reserved for trucks) Meters between 7 a.m. and 6 p.m. Weekdays, from January 2nd to September 15th, 2012. From SFPark occupancy data collected September 2012. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

Table 4.4-5: Existing and Proposed Parking Supply along Second Street

Project Area (segment)	Parking Inventory and Supply by Type					
	General Metered		Blue (Handicap)		Motorcycle[1]	
	Existing	Proposed	Existing	Proposed	Existing	Proposed
Second Street						
Market to Mission streets						
East side			1		32	32
West side	3					
Mission to Howard streets						
East side	7		1			
West side	11		1			
Howard to Folsom streets						
East side	7	5				
West side	10				12	
Folsom to Harrison streets						
East side	13	5				5
West side	13				4	
Harrison to Bryant streets						
East side	11	2				
West side	11		1			
Bryant – Brannan streets						
East side	18	2				
West side	16				8	
Brannan to Townsend streets						
East side	20	3				
West side	10		1			
Townsend to King streets						
East side	13	13				
West side				1		
Second Street Subtotal	**163**	**30**	**5**	**1**	**56**	**37**
Side Streets						
Brannan Street (Second Street to Colin P. Kelly Jr. streets)						
North side	10	11		**1**		
South side	11	15				
Harrison Street (Hawthorne Street to Second Street)						
North side	9	10		1		
South side	10	10				
Side Street Subtotal	**40**	**46**	**0**	**2**		
Total supply	**203**	**76**	**5**	**3**	**56**	**37**

[1]In general, 5 motorcycle spaces is the equivalent of one car parking stall (one vehicle parking space).
Source: SFMTA, SFPark, September 2012; presented in Appendix K of the Second Street Improvement Project Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

Table 4.4-6: Average Parking Occupancy along Second Street – Weekday Midday Period

Second Street (segment)	Parking Occupancies (%) by Survey Date[1]					
	May 2011	**August 2011**	**November 2011**	**January 2012**	**April 2012**	**Average**
Howard to Folsom streets	91%	83%	78%	80%	82%	83%
Folsom to Harrison streets	85%	81%	78%	75%	88%	81%
Harrison to Bryant streets	50%	60%	61%	58%	74%	61%
Bryant to Brannan streets	77%	68%	71%	61%	76%	71%
Brannan to Townsend streets	73%	73%	73%	76%	70%	73%
Townsend to King streets	79%	80%	67%	68%	80%	75%
Average	**76%**	**74%**	**71%**	**70%**	**78%**	**75%**

[1]Parking occupancies represent number of observed parked vehicles relative to existing supply.

Source: SFMTA, 2012. Occupancy for yellow and red (reserved for trucks) meters between 7 a.m. and 6 p.m. weekdays, from January 2 to September 15, 2012. From SFPark occupancy data collected September 2012. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

GAME DAY CONDITIONS

The following includes a discussion of circulation conditions (i.e., vehicular traffic, transit, pedestrian, and bicycle) along Second Street before, during, and after baseball games at AT&T Park, which is on King Street, west of Second Street. As noted above, field observations of traffic, transit, bicycle, and pedestrian conditions described these conditions for a typical weekday evening peak (commute) hour.

The following is a detailed description of circulation conditions along Second Street and nearby streets on dates when the San Francisco Giants are playing a home game at AT&T Park, and how such conditions differ from typical weekday circulation conditions, as previously described above.

The Giants play between 80 and 85 regular season and exhibition games a year at AT&T Park. About half of these are weekday evening games, which begin at 7:15 p.m., and about 15 percent are weekday afternoon games, which begin at 12:45 p.m. or 1:35 p.m. and end at approximately 3:45 p.m. and 4:35 p.m. The rest are weekend games.

The San Francisco Giants Ballpark at China Basin EIR identified mitigation measures to address the special nature of transportation conditions associated with facilities such as

AT&T Park; these measures were applied to the ballpark project.[19] In particular, a mitigation measure specified that the Giants and the City would be responsible for developing a Transportation Management Plan (TMP) to address the congestion and delay following a ballgame. The preparers of the Ballpark EIR noted that the TMP should be based on accepted planning practices, with an emphasis on incentives for transit, pedestrian, and bicycle modes and disincentives for automobile use. As required under the mitigation measure, the City established a committee to develop the TMP, known as the Ballpark/ Mission Bay Transportation Coordinating Committee (TCC). This TCC prepared a TMP dated April 1999.[20] The TCC continues to meet and refine the TMP, based on changing circulation conditions in the ballpark vicinity to manage circulation to and from AT&T Park so that traffic flows have as little impact as possible on the affected community.

Eastbound King Street adjacent to AT&T Park (between Third and Second streets) and southbound Second Street (between Townsend and King streets) are closed to vehicular traffic beginning at the seventh inning until approximately 1 hour post-game. This is done in order to safely accommodate the surge in outbound pedestrian volume at the conclusion of each game.

As part of the TMP implementation, SFMTA issues a press release at the beginning of the baseball season with information regarding how to access the ballpark via alternate modes, such as by transit, special Muni ballpark shuttle, taxis, bicycle, or on foot. In addition, the notice directs baseball fans to maps on the Giants' website at http://sanfrancisco.giants.mlb.com/sf/downloads/y2012/postgame_map.pdf. It provides information on routes to access and leave the ballpark area. The SFMTA also deploys parking control officers to key locations around the ballpark to facilitate travel by pedestrians, transit riders, and other traffic.

Automobile Traffic

Weekday afternoon games generally have the most intense effect on local circulation as the post-game traffic period overlaps with the early evening commute period. Hence, transportation conditions were observed during the evening peak period post-afternoon game at AT&T Park on September 11, 2013; the screenshots of these observations are presented in the TIS appendices. Evening games tend to extend the period of late afternoon peak traffic volumes into the evening. On both afternoon and evening weekday game days,

---

[19] San Francisco Planning Department and San Francisco Redevelopment Agency. 1997. San Francisco Giants Ballpark at China Basin Final Environmental Impacts Report. (This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.).

[20] San Francisco Ballpark/Mission Bay Transportation Coordinating Committee. 1999. Transportation Management Plan. (This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.).

afternoon peak congestion along the Second Street corridor due to additional vehicle trips is compounded by higher pedestrian volumes; together these increase delays for turning vehicles.

Vehicular traffic on on-ramps to I-80 east typically exceeds roadway capacity following weekday home games, causing queues to extend onto local streets. Drivers trying to access the Bay Bridge from the Ballpark Parking Lot A (the largest dedicated parking lot, located to the east of Third Street adjacent to Pier 48) travel on northbound Third Street to either the eastbound Harrison and Essex Street on-ramp or to the eastbound Brannan and the Sterling Street high-occupancy vehicle on-ramp. However, as backups frequently occur on these routes during the post-game period due to freeway congestion, some drivers divert to northbound Second Street to access these ramps.

Transit

The 10 Townsend Muni route serves AT&T Park via Second Street, with the closest stop at Second and Townsend streets. With approval of the SFMTA Muni Forward proposals, the 12 Folsom/Pacific route will be eliminated and will be replaced with service on a new route, the 11 Downtown Connector.[21] The 11 Downtown Connector will travel on the same alignment as the existing 12 Folsom Pacific along Second Street. Most ballpark-bound passengers board along Second Street at Stevenson Street and alight at Townsend Street. Based on field observation, the 10 and 12 Muni routes experience variable travel time along the Second Street corridor. They have not been shown to experience a consistent increase in travel time or delays on game days. These conditions would be similar for the new 11 Downtown Connector once the Muni Forward changes are implemented. On game days, the SFMTA provides extra light rail service via the S-Shuttle trains, but there is no specialized transit service along Second Street.

Taxi

Three taxi stands are provided near the ballpark on game days to facilitate passenger loading, as part of the TMP described above. A stand on northbound Third Street operates before, during, and after afternoon and evening games (10 a.m. to 6 p.m. for afternoon games and 4 p.m. to midnight for evening games). On southbound Second Street, a stand between Townsend and King streets operates until the start of the seventh inning, and a stand between Brannan and Townsend streets operates from 1 p.m. to 6 p.m. for afternoon games and 8 p.m. to midnight for evening games. Under existing conditions these taxi stands are not operating at capacity.

[21] SFMTA. 2014. Muni Forward. Available online: http://muniforward.com/. Accessed December 22, 2014.

Pedestrians

Second Street is one of the primary streets used by pedestrians walking to and from the ballpark, many of whom walk to the ballpark from the Montgomery Street BART Station or the Market Street Muni lines. After, and to a lesser extent, before the game, sidewalks on Second Street are congested, compared to typical sidewalk conditions along this corridor on days when there is no ball game.

Bicycling

Second Street, The Embarcadero, and Townsend and King streets are the primary bicycle routes to and from AT&T Park. In the vicinity of the park, bicycle lanes exist along The Embarcadero, on King Street between The Embarcadero to midway between Second and Third streets, on Townsend Street, and from the south on Terry A. Francois Boulevard.

4.4.3 Regulatory Framework

FEDERAL

There are no federal regulations that address transportation impacts from the proposed project or its variant.

STATE

The California Department of Transportation (Caltrans) manages interregional transportation, including management and construction of the California highway system. In addition, it is responsible for permitting and regulating the use of California roadways. On November 7, 2014, Caltrans adopted the California Manual on Uniform Traffic Control Devices (California MUTCD), 2014 edition. The California MUTCD provides for uniform standards and specifications for all official traffic control devices in California. It includes the basic principles that govern the design and use of traffic control devices for all streets, highways, and bikeways. The proposed traffic control, pedestrian, and bicycle facility improvements would be consistent with the California MUTCD.

LOCAL

San Francisco General Plan

The Transportation Element of the General Plan is composed of objectives and policies that relate to the eight aspects of the citywide transportation system: general regional transportation, congestion management, vehicle circulation, transit, pedestrians, bicycles, citywide parking, and goods management. The Transportation Element references San Francisco's Transit First Policy in its introduction and contains objectives and policies that are directly pertinent to the proposed project and its variant. It refers to objectives related to locating development near transit investments, encouraging transit use, and traffic signal timing to emphasize transit, pedestrian, and bicycle traffic as part of a balanced multimodal transportation system. The General Plan also emphasizes alternative transportation by positioning building entrances, making improvements to the pedestrian environment, and providing safe bicycle parking facilities. Second Street is designated Secondary Transit Street in the Transit Preferential Program of the General Plan. Therefore, transit facilities, such as transit boarding islands, would be in compliance with the General Plan.

San Francisco Bicycle Plan

The Bicycle Plan describes a City program to provide the safe and attractive environment needed to promote bicycling as a transportation mode. The Bicycle Plan identifies the citywide bicycle route network. The 2009 update to the Bicycle Plan also identifies near-term and long-term improvements to add segments to the bicycle route network to address gaps. The plan also identifies a set of minor improvements to be implemented as needed to improve conditions for bicycling, such as signage and pavement marking changes.

Transit First Policy

San Francisco's Transit-First Policy (San Francisco City Charter Section 16.102), initially adopted in 1973, and voted into the City Charter in 1999, states that the City should prioritize street improvements that enhance travel by public transit, by bicycle and on foot as an attractive alternative to travel by private automobile.[22] These principles are embodied in the policies and objectives of the Transportation Element of the San Francisco General Plan. All City boards, commissions, and departments are required, by law, to implement Transit First principles in conducting City affairs.

Better Streets Plan

The Better Streets Plan focuses on creating a positive pedestrian environment through such measures as careful streetscape design and traffic calming to increase pedestrian safety. The plan includes guidelines for the pedestrian environment, which it defines as the areas of the street where people walk, shop, sit, play, or interact. Generally speaking, the guidelines are for design of sidewalks and crosswalks; however, in some cases, the Better Streets Plan includes guidelines for certain areas of the roadway, particularly at intersections.

[22] San Francisco Better Streets. 2014. San Francisco's Guiding Policies. Available online at: http://www.sfbetterstreets.org/why-better-streets/san-franciscos-guiding-policies/. Accessed on November 19, 2014.

Green Connections

The Green Connections project aims to make the City more healthy, sustainable, and livable through features such as pedestrian and bicycle infrastructure, street trees and other landscaping, stormwater management, and opportunities for beautification, public art, and community stewardship.

4.4.4 Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

The Second Street Improvement Project would have a significant effect on transportation and circulation if it were to result in any of the following:

- Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit, nonmotorized travel, and relevant components of the circulation system (including intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit);
- Conflict with an applicable congestion management program, including LOS standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways;
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment);
- Provide inadequate emergency access; or
- Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities or otherwise decrease the performance or safety of such facilities.

A list of significance criteria used by the San Francisco Planning Department to assess whether a proposed project would result in significant transportation impacts is provided below. These criteria are organized by mode of travel to facilitate analysis; however, the transportation significance thresholds are essentially the same as those in the CEQA Guidelines, as listed above.

Construction

The project’s construction-related transportation impacts generally would not be considered significant due to their temporary and limited duration.

Operations

Intersections—The operational impact on signalized intersections is considered significant when project-related traffic would cause the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F or to deteriorate from LOS E to LOS F. There would also be significant adverse traffic impacts at those intersections that continue to operate at LOS E or LOS F under both baseline and with project conditions. This would be the case where the project's traffic contribution to failing critical movements[23] at that intersection is equal to or greater than 5 percent of the total movement traffic. The operational impacts on unsignalized intersections are considered potentially significant if project-related traffic would cause the LOS at the worst approach to deteriorate from LOS D or better to LOS E or LOS F, and Caltrans traffic signal warrants[24] would be met or would cause Caltrans signal warrants to be met when the worst approach is already at LOS E or LOS F. Also, the project-related traffic would have a significant impact if it were to considerably increase cumulative traffic, which would cause the levels of service to deteriorate to an unacceptable level under cumulative conditions.

Additionally, for streetscape projects, such as the proposed project or its variant, if an intersection along a street with streetscape improvements, such as Second Street, continues to perform at the same LOS E or F under both the existing and existing plus project scenarios, then there would be a significant traffic impact if the volume to capacity ratio (v/c) increases by 10 percent or more. The v/c ratio compares the roadway demand (the number of vehicles) to its traffic carrying capacity. A v/c ratio of less than 0.85 generally indicates that adequate capacity is available and motorists are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delays and queuing may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow becomes unstable and excessive delay and queuing is expected. Under these conditions, more than one signal cycle may be required for motorists to pass through the intersection. The same threshold of an increase in v/c of 10 percent or more is also applicable for cumulative plus proposed project or project variant conditions.

Transit—The proposed project or its variant would have a significant impact on the environment if it were to substantially increase transit demand that could not be accommodated by adjacent transit capacity, resulting in unacceptable levels of transit service. It would also result in a significant transit impact if the proposed project or its variant

[23] Critical movements are those made by vehicles at intersections with LOS E or LOS F that would most greatly contribute to the degradation of LOS at those intersections.

[24] Traffic signal warrants are a series of eight tests to establish minimum conditions under which further consideration of a traffic signal is appropriate. The traffic signal warrants are contained in the California Manual on Uniform Traffic Control Devices (MUTCD), 2012.

were to substantially increase delays or operating costs such that significant adverse impacts in transit service levels could result. The proposed project or its variant would have a significant impact on transit if one of the following is true:

- For transit lines where the headway is greater than 6 minutes, the sum of the increase in delay in both directions is equal to or greater than 6 minutes.
- For transit lines where the headway is equal to or less than 6 minutes, the impact is significant if the sum of the increase in delay in both directions is equal to or greater than the headway of the affected transit line.

Pedestrians—The proposed project or its variant would have a significant impact on the environment if it were to result in substantial overcrowding on public sidewalks, create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

Bicycles—The proposed project or its variant would have a significant impact on the environment if it were to create potentially hazardous conditions for bicyclists or otherwise substantially interfere with bicycle accessibility to the site and adjoining areas.

Emergency Access—The proposed project or its variant would have a significant impact on the environment if it were to result in inadequate emergency access.

Loading—The proposed project or its variant would have a significant impact on the environment if it were to result in the following:

- A loading demand during the peak hour of loading activities that could not be accommodated within proposed on-site loading facilities or within convenient on-street loading zones; or
- Potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians.

Parking—The proposed project or its variant would have a significant impact on the environment if it were to result in the following:

- A substantial parking shortfall, creating hazardous conditions or significant delays affecting traffic, transit, bicycles, or pedestrians or
- Particular characteristics of the proposed project or project variant or its site demonstrably render use of other modes infeasible.

APPROACH TO ANALYSIS

Twenty-nine intersections were analyzed for this EIR. Intersections were analyzed during the weekday evening (p.m.) peak hour, which is the sixty-minute period with the greatest traffic volume between 4:00 p.m. and 6:00 p.m.[25]

1. New Montgomery and Market streets
2. New Montgomery and Mission streets
3. New Montgomery and Howard streets
4. Hawthorne and Howard streets
5. Hawthorne and Folsom streets
6. Hawthorne and Harrison streets
7. Third and Bryant streets
8. Third and Brannan streets
9. Third and Townsend streets
10. Third and King streets
11. Second and Market streets
12. Second and Mission streets
13. Second and Minna streets*
14. Second and Howard streets
15. Second and Folsom streets
16. Second and Harrison streets
17. Second and Bryant streets
18. Second and South Park streets*
19. Second and Brannan streets
20. Second and Townsend streets
21. Second and King streets
22. Essex and Folsom streets
23. Essex and Harrison streets
24. First and Market streets*
25. First and Mission streets*
26. First and Howard streets*
27. First and Folsom streets
28. First and Harrison streets
29. Fifth/Bryant/I-80 eastbound on-ramps

The proposed project or its variant would involve the construction and installation of two, one-way cycle tracks along the east and west sides of Second Street; the rehabilitation or replacement of portions of the sewer infrastructure underneath Second Street; and the relocation of overhead utilities underground along Second Street, between Stillman Street (near the I-80 overpass) south to Townsend Street (approximately 0.27 mile). As an infrastructure project, the proposed project or its variant would not generate any new vehicle trips throughout the transportation network. However, because the proposed project or its variant would result in physical changes to the roadway geometries and to intersection lane configurations along Second Street, some vehicles would be diverted from Second Street to other nearby streets, primarily due to the prohibition of left-turn movements along Second Street and the reduction in this corridor's roadway capacity.[26]

[25] Existing weekday p.m. peak period intersection turning movement counts for 24 of the 29 study intersections were obtained from the draft Central SoMa Plan's Transportation Impact Study, available for review at the Planning Department as part of Case 2011.1356E. The turning movement counts for the remaining five intersections (marked by an asterisk in the list above) were collected during the p.m. peak period on Tuesday, September 10, 2013.

[26] Second Street Cycle Track Traffic Diversion Methodology Memorandum, CHS Consulting Group. November 6, 2013. A copy of this memorandum is available in Appendix I of the TIS.

Pedestrian and bicycle conditions in the project study area and impacts are described qualitatively. Transit conditions are described in terms of routes and stops in the study area, and impacts on existing and future transit service with implementation of the proposed project or its variant are discussed. On- and off-street parking inventory and occupancy data were collected for the study area to determine current parking conditions. Future parking conditions are qualitatively discussed in this section. Emergency access and operations of current loading facilities are also analyzed.

EVALUATION OF SCENARIOS

This report analyzes transportation impacts for the following scenarios:

- Existing;
- Existing plus proposed project or project variant conditions;
- Future cumulative baseline conditions (2040); and
- Future cumulative plus proposed project or project variant conditions.

The impact analysis below describes the transportation impacts from the proposed project. In addition, the analysis accounts for the impacts of the project variant. As described in Chapter 2, the project variant would be the same as the proposed project except that it would include a permitted left-turn movement from the southbound shared left through lane on Second Street to Brannan Street; also, the northbound right-turn movement from Second Street onto Brannan Street would be allowed on a permitted signal phase. Thus, the crosswalk and cycle track on the east side of the intersection would not be separated from left- or right-turning vehicles through signal phasing under the project variant as they would be under the proposed project. Therefore, most of the impacts of the project variant would be similar to those identified for the proposed project.

A separate discussion is provided when the project variant would have a different impact than the proposed project. Furthermore, when the impact of the project variant is different from that of the proposed project, a separate impact statement is provided for each of the proposed project variant and proposed project.

TRAFFIC DIVERSION

The overall approach to developing the traffic diversion methodology, as detailed in the Traffic Diversion Memorandum[27] prepared for the proposed project and its variant, was to understand existing travel patterns along Second Street and to determine what percentage (or proportion) of northbound left- and right-turning and southbound left-turning traffic along Second Street would be diverted to other nearby streets. The traffic diversion assumptions were based on the following:

- Existing vehicle turning movements at each intersection along Second Street;
- Observed queue lengths;
- Intersection and vehicle delays along the roadway; and
- Proportion of traffic volumes from adjacent intersections.

The proposed project or its variant would reconfigure the right-of-way (ROW) along the entire length of Second Street, between Market and King streets. Specifically, the Traffic Diversion Memorandum details how specific changes to the street reconfiguration as a result of the proposed reduction of roadway capacity, prohibition of left-turn movements at most intersections, and reconfiguration of lane geometries would alter travel patterns in and around Second Street.

Based on the analysis included in the TIS, the proposed project/project variant's reduction in the number of travel lanes in each direction would divert Bay Bridge-bound traffic to several streets adjacent to Second Street, as follows: First, New Montgomery, Hawthorne, Third, Harrison, Mission, Howard, Folsom, Bryant, Brannan, Townsend, and King streets. The number of vehicles diverted off Second Street would be approximately 950 vehicles during the p.m. peak hour. These vehicles would be diverted to parallel routes within one to two blocks, based on the proportion of existing upstream traffic movements. Detailed vehicle traffic diversion tables (detailing the number of diverted, redistributed, and reassigned vehicle turning movements) by specific roadway segments and/or turning movements at specific intersections along Second Street are provided in Appendix I of the TIS.

Under the project variant, left turns from Second Street would be permitted at one additional location compared to the proposed project: along southbound Second Street at the intersection with Brannan Street. This diversion pattern under the project variant would

[27] CHS Consulting Group. 2013. Memorandum: Second Street Cycle Track Traffic Diversion Methodology. November 6, 2013. (This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.).

change traffic volumes at 12 intersections, compared to 13 intersections under the proposed project. Detailed descriptions of the proposed traffic diversion along Second Street as a result of the proposed project (without and with variant) and the vehicle traffic diversion table are provided in the TIS Appendix I.

Transit Delay Analysis

Since the proposed project or its variant is a bikeway and infrastructure improvement project, as opposed to a land use project, it would not generate transit trips; therefore, a transit capacity utilization analysis has not been prepared. However, the roadway reconfiguration associated with the proposed project or its variant could result in added delay in transit travel time.

The transit delay method presented here was originally developed in the San Francisco Bicycle Plan EIR (pages V.A.3-15 to V.A.3-17) and the same method has been used to analyze transit impacts for the proposed project or its variant. The total transit vehicle delay is composed of the following three elements:

- **Bus Travel Delay—**The transit travel delay represents the additional time of a transit vehicle between stops across one or more intersections along the corridor. This is attributed to congestion caused by other vehicles impeding bus movement.

- **Transit Reentry Delay—**The transit reentry delay represents the waiting time for a sufficient gap in traffic flow to allow a bus pulled over in a bus stop to pull back into the travel lane. The proposed project or its variant would reconfigure the roadway with transit boarding islands between the roadway and the proposed cycle track, wherein buses would stop in the travel lane; this would eliminate transit reentry delay.

- **Boarding Delay—**The passenger boarding delay represents the time needed for additional passengers to board. Since the proposed project or its variant is a street improvement project (as opposed to a land use project), it would not generate any additional transit ridership. Therefore, the proposed project or its variant would not result in any boarding delay. It is assumed that the proposed project or its variant would not cause changes in Muni ridership. Therefore, boarding delay would remain constant for the proposed project or its variant.

Because the proposed project or the project variant would not affect the transit reentry or transit boarding, this analysis only addresses bus travel delay.

The three components of the total transit delay mentioned above, along with the method to quantify them, are further discussed in the TIS document on pages 62 to 64.[28]

CUMULATIVE CONDITIONS

Future 2040 cumulative p.m. peak-hour traffic volumes were developed using outputs from the San Francisco County Transportation Authority (SFCTA) countywide travel demand forecasting model and travel demand analysis.[29] As discussed in the TIS, the 2040 baseline scenario for travel demand forecasting includes such planned transportation network changes proposed in relevant plan documents, detailed descriptions of these plans and related projects, and applicability for purposes of this analysis, as follows:

- Draft Central SoMa Plan;[30]
- Central Subway project;[31]
- Muni Forward Project (formerly the Transit Effectiveness Project); and
- Transit Center District Plan.[32]

As a result of the above-mentioned plans that are part of the proposed project/project variant's cumulative conditions and related projects, lane configuration changes would occur in the future at the following 17 of the 29 study intersections:

2. Mission and New Montgomery streets
3. Howard and New Montgomery streets
4. Howard and Hawthorne streets
5. Folsom and Hawthorne streets
6. Harrison and Hawthorne streets
7. Bryant and Third streets
8. Brannan and Third streets
9. Townsend and Third streets
13. Minna and Second streets
14. Howard and Second streets
15. Folsom and Second streets
16. Second and Harrison streets
19. Brannan and Second streets
22. Folsom and Essex streets
26. First and Howard streets
27. Folsom and First streets
29. Fifth Street/Bryant Street to I-80 eastbound on-ramp

---

[28] CHS Consulting Group. 2014. Second Street Improvement Project Transportation Impact Study. (This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.)

[29] SFCTA travel demand forecasting model received July 2013.

[30] San Francisco Planning Department. April 2013. Draft Central SoMa Plan. Available online: http://www.sf-planning.org/index.aspx?page=2557. Accessed on January 12, 2014.

[31] SFMTA. October 2012. Central Subway project. Available online: http://centralsubwaysf.com/. Accessed on January 12, 2014.

[32] Transit Center District Plan, November 2009. Available online: http://www.sf-planning.org/ftp/CDG/CDG_transit_center.htm#draft_plan. Accessed on January 28, 2014.

Cumulative (2040) background conditions for all 29 of the study intersections are based on a background growth rate calculated from the travel demand associated with the countywide travel demand forecasting model. The future 2040 model run was based on ABAG's Sustainable Community Strategy 2013 Jobs Housing Connection.[33] The geographic context for the analysis of cumulative transportation impacts is the local roadway in the vicinity of the proposed project or its variant and surrounding environs. During the preparation of cumulative traffic analysis consideration[34] was also given to signal timing changes that are expected to be made by the City's Traffic Engineer, in order to facilitate signal optimization for coordinated traffic flow within the South of Market area. Specific transportation network changes within the project area are further discussed in the TIS on pages 82-83.

IMPACT EVALUATION

Construction

Impact TR-1: The proposed project or project variant would not result in significant transportation-related construction impacts. *(Less than Significant)*

Detailed plans for construction have not yet been finalized, but construction for the proposed project or its variant is anticipated to begin in fall 2016 and last 10 to 12 months. Public Works anticipates that construction activities would occur sequentially, so operations would be focused on one block at a time for about 6 weeks per block.

Construction activities would typically occur Monday through Friday, between 9:00 a.m. and 3:00 p.m. Construction is not anticipated to occur on Saturdays, Sundays, or major legal holidays but could occur during those times on an as-needed basis. Public Works would stipulate the hours of construction, and the contractor would be required to comply with the San Francisco Noise Ordinance, including avoiding traffic peak-hour construction on adjacent streets. Work may be allowed on weekends or holidays or between 10 p.m. and 7 a.m. if a night noise permit is obtained.

Holiday restrictions apply to the section of Second Street from Market to Folsom streets, as well as other areas with 50 percent or more commercial frontage. No work would be allowed during the holiday moratorium, from the day after Thanksgiving to January 1, inclusive of these days. All openings in the street and in the sidewalk would be closed by backfilling and paving or by plating over, to provide safe and adequate passage for bicyclists, motorists, and pedestrians.

---

[33] One Bay Area, Jobs-Housing Connection Strategy, May 2012. Available online: http://www.onebayarea.org/pdf/JHCS/May_2012_Jobs_Housing_Connection_Strategy_Main_Report.pdf. Accessed on January 12, 2014.

[34] Olea, Ricardo (SFMTA, Traffic Engineer). 2015. Personal communication with Debra Dwyer, Planning Department. January 26.

Construction staging for this proposed project or its variant would be within the on-street parking area along Second Street or on-street parking areas along adjacent roadways. Construction would be done sequentially for each block, and temporary staging areas would be along the block under construction while parking would be maintained along the other blocks of the Second Street corridor.

For sidewalks along these temporary staging areas, pedestrian protection would be erected as required. The project sponsor would follow the *Regulations of Working in San Francisco Streets* (The Blue Book)[35] during construction and access would be maintained to the buildings along Second Street at all times during construction.

The construction of the proposed project or its variant may require temporary roadway closures and traffic or transit reroutes, which would result in a temporary traffic impact. Additionally, an average of about 10 construction trucks would travel one way to the project site daily during the peak periods of construction, such as during excavation activities, repair and replacement of the sewer system, and undergrounding of overhead utilities. The increase in construction truck traffic would temporarily reduce the capacities of roadways due to the slower movement and larger turning radii of trucks; this would affect traffic, transit, pedestrian, and bicycle movement during the project construction phase. The construction contractor would meet with the SFMTA and with Muni's Street Operations and Special Events Office and be required to conduct construction in accordance with the City's Blue Book to minimize construction impacts on vehicular, transit, bicycles, and pedestrian traffic.

Some construction activities along a corridor's block, such as sewer repair or replacement, may require a portion of the adjacent sidewalk to be temporarily closed; however, pedestrian access would be maintained via temporary detours and appropriate signs would be provided. Also, since Second Street is designated Bicycle Route 11, appropriate measures, such as posting signs, would be provided to ensure the safety of bicyclists during construction.

During construction, an average of about 10 construction workers per day (with up to 20 during peak periods of construction) are anticipated to work at the project site. In San Francisco, some construction workers use transit or carpool to the site, particularly when the project is located downtown. However, the addition of the worker-related vehicle- or transit-trips would be temporary and would not substantially affect project area transportation conditions. Construction workers who drive to the site would temporarily increase parking demand. Because the nearby on-street parking facilities are available during the day, construction worker parking demand could be accommodated without substantially affecting

---

[35] San Francisco Municipal Transportation Agency. January 2012. Regulations for Working in San Francisco Streets. 8th edition. (This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.)

area-wide parking conditions. Furthermore, ADA-compliant pedestrian and vehicle access, and emergency vehicle access, to all properties would be maintained at all times along and across Second Street during construction.

Construction-related transportation impacts of the proposed project or its variant would be ***less than significant***. This is based on the findings presented above and is due to the following:

- Construction would be temporary and would be limited in duration to approximately 10 to 12 months.
- These activities would be conducted in accordance with City, state, and federal requirements and would comply with the safety conditions.
- Pedestrian and vehicle access would be maintained to all project area properties at all times.
- ADA-compliant pedestrian access would be maintained along and across Second Street during construction at all times.

Operations

Traffic Impacts

This section presents the intersection LOS with the proposed changes to Second Street (as described in Chapter 2, Project Description) and the anticipated diversion of existing vehicle trips along the Second Street corridor to neighboring roadways (as described above).

As noted above, operational traffic impacts are measured in terms of level of service and v/c ratio, as described below.

- **Intersection level of service.** LOS is used to describe how efficiently an intersection operates for automobile and truck traffic. The method used for signalized intersections generally defines LOS in terms of "control delay per vehicle," which refers to the average time drivers spend decelerating, stopping, and accelerating at traffic signals.

Signalized intersection LOS is affected by traffic volumes, pedestrian volumes, intersection lane configuration, and signal timing and coordination in a corridor. LOS at unsignalized intersections is defined in terms of average delay experienced per driver along the stop controlled approaches at the intersection. According to the Highway Capacity Manual 2000, intersection LOS designations range from A, which indicates negligible delays with free flow speed (less than 10 seconds per vehicle for both signalized and unsignalized intersections) to F, which indicates delays with queuing that may block upstream intersections (greater than 80 seconds per vehicle for signalized intersections and greater than 50 seconds for unsignalized intersections).

- **Volume-to-capacity ratio.** The v/c ratio compares the roadway demand (the number of vehicles on a section of the roadway) to its traffic carrying capacity. A v/c ratio of less than 0.85 generally indicates that adequate capacity is available and motorists are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow may become unstable, and delay and queuing may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow becomes unstable and excessive delay and queuing is expected. Under these conditions, more than one signal cycle may be required for motorists to pass through the intersection.

The operational impact on signalized intersections is considered significant when project-related traffic would cause the intersection LOS to deteriorate from D or better to E or F or from LOS E to LOS F.

Some intersections operate at LOS E or LOS F under existing conditions and would continue to operate at the same LOS under existing plus proposed project or project variant conditions. For these intersections this analysis examines if the proposed project or its variant has a substantial contribution to the poor operation, as described below.

- If the intersection is along Second Street, the level of contribution to the traffic impact is based on the v/c estimates. The proposed project or its variant is considered to have a substantial contribution to the intersection’s poor operation if its overall v/c is 10 percent higher under the existing plus proposed project or project variant conditions than under the existing conditions. The same threshold of 10 percent increase applies for cumulative plus proposed project or project variant conditions.

- If the intersection is located in the surrounding area (not along Second Street), the traffic impact would be considered significant if the level of contribution of the proposed project or its variant to the intersection critical movement traffic volumes were greater than or equal to 5 percent. The analysis is examining the critical movement traffic volumes at the intersections in the surrounding area because the proposed project or its variant would not add traffic trips but would divert traffic to the streets near the Second Street corridor.

The operational impacts on unsignalized intersections are considered potentially significant under the following circumstances:

- Project-related traffic would cause the level of service at the worst approach to deteriorate from LOS D or better to LOS E or LOS F.
- Caltrans traffic signal warrants would be met or the impacts would cause Caltrans signal warrants to be met when the worst approach is already at LOS E or LOS F.

For the cumulative analysis and pursuant to the TIA Guidelines, if the existing plus proposed project or project variant conditions result in a significant impact, then it is assumed that the significant impact would continue under cumulative plus alternative conditions.

Table 4.4-7 presents the LOS for the study intersections under the Existing and Existing plus proposed project or project variant conditions before mitigation. Intersection LOS calculations are provided in Appendix F of the TIS. Under Existing plus proposed project or project variant conditions, 16 of the 29 study intersections would continue to operate at acceptable LOS D or better. In particular, the intersection of Folsom and Second streets would improve from unacceptable LOS E to acceptable LOS C with the proposed project or project variant. Signalization of the intersection of South Park and Second streets with implementation of the proposed project or its variant would substantially improve the intersection operations from LOS F to LOS A. Therefore, under Existing plus proposed project or project variant conditions, 16 of the 29 intersections would operate satisfactorily, and the impacts of the proposed project or its variant on these intersections would be less than significant.

Under Existing plus proposed project or project variant conditions, 13 of the 29 study intersections would operate at unacceptable LOS E or F. Eight of these affected intersections already operate at unacceptable level of service under existing conditions. At the remaining five of the 13 intersections, the intersection operation would degrade to unacceptable levels as a result of the changes to traffic patterns due to the proposed project or its variant. For two of these five intersections, mitigation measures have been identified that would reduce the significant traffic impacts due to the proposed project or its variant to less-than-significant levels.

The remaining eight of the 13 intersections operating unacceptably were reviewed to determine if the proposed project/project variant's contribution to the poor operation of the intersection would result in a significant impact. At two of the eight intersections, the proposed project or its variant would not contribute considerably to the poor intersection operation, and therefore the traffic impact would be less than significant. At one of these eight intersections, a mitigation measure has been identified that would reduce the project's or project variant's traffic impact to a less-than-significant level. At the remaining five of the eight intersections, the proposed project or project variant's traffic diversion effects would

Table 4.4-7: Overall Intersection Summary – LOS Before Mitigation

#	Intersection	Existing P.M. Peak[1]		Existing + Proposed Project P.M. Peak[1]		Existing + Project Variant[1]		2040 Cumulative[1]		Cumulative + Proposed Project[1]		Cumulative + Project Variant[1]	
		LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
1	Market and New Montgomery streets	D		**E**	**1.01**	**E**	**1.01**	**F**	**1.02**	**F**	**1.13**	**F**	**1.13**
2	Mission and New Montgomery streets	**E**	**1.04**	**F**	**1.13**	**F**	**1.13**	**F**	**1.36**	**F**	**1.47**	**F**	**1.47**
3	Howard and New Montgomery streets	D		**E**	**0.95**	**E**	**0.95**	B		**E**	**1.05**	**E**	**1.05**
4	Howard and Hawthorne streets	B		**E**	**1.10**	**E**	**1.10**	B		D[2]		D[2]	
5	Folsom and Hawthorne streets	**E**	**1.08**	**F**	**1.24**	**F**	**1.24**	**F**	**1.98**	**F**	**2.05**	**F**	**2.05**
6	Harrison and Hawthorne streets	D		**E**	**1.24**	**E**	**1.24**	C		**F**	**1.38**	**F**	**1.38**
7	Bryant and Third streets	D		C		C		**F**	**2.88**	**F**	**2.91**	**F**	**2.91**
8	Brannan and Third streets	C		D		D		**F**	**1.30**	**F**	**1.51**	**F**	**1.49**
9	Townsend and Third streets	C		D		D		**F**	**1.69**	**F**	**2.40**	**F**	**2.40**
10	King streets and Third streets	**F**	**0.97**	**F**	**1.00**	**F**	**1.00**	**F**	**1.34**	**F**	**1.39**	**F**	**1.39**
11	Market and Second streets	B		A		A		B		B		B	
12	Mission and Second streets	B		C		C		C		D		D	
13	Minna and Second streets	C (WB)		A		A		A		A		A	
14	Howard and Second streets	B		C		C		**F**	**1.20**	**F**	**1.03**	**F**	**1.04**
15	Folsom and Second streets	**E**	**0.94**	C		C		**F**	**1.62**	**F**	**1.72**	**F**	**1.74**
16	Harrison and Second streets	D		**F**	**2.00**	**F**	**2.00**	**F**	**2.58**	**F**	**3.39**	**F**	**3.39**
17	Bryant and Second streets	**F**	**1.30**	**F**	**1.53**	**F**	**1.53**	**F**	**2.26**	**F**	**2.56**	**F**	**2.56**
18	South Park and Second streets	**F (EB)**		A		A		**F**		B		B	

Table 4.4-7: Overall Intersection Summary – LOS Before Mitigation *(continued)*

#	Intersection	Existing P.M. Peak[1]		Existing + Proposed Project P.M. Peak[1]		Existing + Project Variant[1]		2040 Cumulative[1]		Cumulative + Proposed Project[1]		Cumulative + Project Variant[1]	
		LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c	LOS	v/c
19	Brannan and Second streets	B		D		C		C		C		D	
20	Townsend and Second streets	B		B		B		**E**	**1.20**	**F**	**1.34**	**E**	**1.29**
21	King and Second streets	D		D		D		**F**	**1.03**	**F**	**0.90**	**F**	**0.90**
22	Folsom and Essex streets	C		B		B		**F**	**6.50**	**F**	**2.84**	**F**	**2.84**
23	Harrison and Essex streets	**F**	**2.23**	**F**	**1.92**	**F**	**1.92**	**F**	**3.73**	**F**	**3.30**	**F**	**3.30**
24	Market and First streets	B		B		B		B		B		B	
25	Mission and First streets	C		C		C		C		C		C	
26	Howard and First streets	B		B		B		**F**	**1.21**	**F**	**1.24**	**F**	**1.24**
27	Folsom and First streets	**F**	**1.26**	**F**	**1.42**	**F**	**1.42**	**F**	**2.48**	**F**	**2.59**	**F**	**2.59**
28	Harrison and First streets	**F**	**1.44**	**F**	**1.60**	**F**	**1.60**	**F**	**1.55**	**F**	**1.74**	**F**	**1.74**
29	Fifth St/Bryant St/I-80 eastbound on-ramp	**F**	**1.34**	**F**	**1.37**	**F**	**1.37**	**F**	**3.37**	**F**	**3.32**	**F**	**3.32**

Bold indicates an unacceptable intersection LOS or E or F.

Shaded values indicate a Significant Project-Specific Traffic Impact.

[1]LOS and delay for signalized intersections represent conditions for the overall intersection; LOS and delay for unsignalized (e.g., TWSC) intersections represent conditions for the side-street stop-controlled approach, eastbound (EB); westbound (WB). Volume-to-Capacity (V/C) ratios are only presented for intersections that operate at unacceptable LOS conditions (LOS E or F), per City standards.

[2]Intersection #4 Howard and Hawthorne streets was identified as resulting in a significant impact under existing plus proposed project or project variant conditions; therefore, it is identified as having a significant impact in the cumulative conditions. Also, this intersection would operate at unacceptable LOS F under cumulative plus proposed project or project variant conditions if the draft Central SoMa Plan, and its associated reduction in traffic volumes on Howard Street, were not adopted.

Source: Second Street Improvement Project Traffic Impact Study, July 2014.

contribute 5 percent or more of the traffic volume to failing critical movements at the intersection, or the v/c ratio would increase by 10 percent or more as a result of the project-related changes to traffic patterns due to the proposed project or its variant, resulting in significant impacts with no feasible mitigation.

In summary, as described in more detail below, the proposed project or its variant would result in less-than-significant traffic impacts at 18 of 29 study intersections. Significant traffic impacts were identified at 11 of the 29 study intersections in the project vicinity as a result of the proposed project or its variant. However, mitigation measures have been identified for three of these 11 intersections that reduce the project's or project variant's significant traffic impacts to less than significant levels. No feasible mitigation measures were identified for the significant traffic impacts identified at the remaining eight intersections.

Impact TR-2: The proposed project or project variant would cause the level of service at the intersection of Market and New Montgomery streets (Intersection #1) to deteriorate from LOS D to LOS E during the p.m. peak hour. ***(Significant and Unavoidable)***

The Market and New Montgomery streets intersection currently operates satisfactorily at LOS D. Implementing the proposed project or its variant would degrade traffic conditions to LOS E (unacceptable conditions). The project also would increase traffic volumes to the southbound through movement at New Montgomery Street. Therefore, based on these findings, the proposed project's or project variant's traffic impact on this intersection would be significant.

At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking lanes with commercial loading spaces can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Market and New Montgomery streets intersection is considered ***significant and unavoidable***.

Impact TR-3: The proposed project or project variant would cause the level of service at the intersection of Mission and New Montgomery streets (Intersection #2) to deteriorate from LOS E to LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The Mission and New Montgomery streets intersection operates unsatisfactorily at LOS E under existing conditions. Implementing the proposed project or its variant would increase traffic volumes to the southbound left-through lanes and eastbound right-turning movements at this study intersection. It would further degrade intersection operating conditions from LOS E to LOS F. Therefore, the proposed project's or project variant's impact on this intersection would be considered significant.

At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes (also known as tow-away lanes) can sometimes be converted to travel lanes during peak periods; however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Mission and New Montgomery streets intersection is considered ***significant and unavoidable***.

Impact TR-4: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS D to LOS E during the p.m. peak hour. *(Significant and Unavoidable)*

The Harrison and Hawthorne streets intersection operates satisfactorily at LOS D under existing conditions. Implementing the proposed project or its variant would increase traffic volumes to the southbound left-turning movement along Hawthorne Street, would increase traffic volumes along eastbound and westbound Harrison Street at this study intersection, and would degrade conditions from LOS D to LOS E (unacceptable conditions). Therefore, the traffic impact at this intersection is considered significant. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes (also known as tow-away lanes) can sometimes be converted to travel lanes during peak periods; however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Harrison and Hawthorne streets intersection is considered ***significant and unavoidable***.

Impact TR-5: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10) and the intersection would continue to perform at LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The King and Third streets intersection would operate at unacceptable LOS F with or without the proposed project or its variant. Due to traffic diversion off of Second Street, the proposed project or its variant would add 91 vehicles to the eastbound left-turning critical movement along King Street. This represents 9 percent of the p.m. peak hour volume of 963 vehicles in the eastbound left-turning movement. The 9 percent increase in traffic would be greater than the 5 percent threshold specified by the significance criteria stated above; thus, the proposed project's or project variant's traffic impact at this intersection is considered significant. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes (also known as tow-away lanes) can sometimes be converted to travel lanes during peak periods; however, providing on-street loading in downtown San Francisco is critical, and the street network has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the King and Third streets intersection is considered ***significant and unavoidable***.

Impact TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Second streets (Intersection #16) to deteriorate from LOS D to LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The Harrison and Second streets intersection operates satisfactorily at LOS D under existing conditions. Implementing the proposed project or its variant would increase the vehicle volume of the eastbound movement on Harrison Street at this study intersection and would degrade LOS from LOS D to LOS F (unacceptable conditions). Therefore, the proposed project's or project variant's impact on this intersection is considered significant. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Harrison and Second streets intersection is considered ***significant and unavoidable***.

Impact TR-7: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17) and the intersection would continue to perform at LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The Bryant and Second streets intersection would operate at unacceptable LOS F with and without the proposed project or its variant. The proposed project or its variant would reduce lane capacity, given the loss of the northbound and southbound through lanes at this intersection. In spite of signal timing changes and optimization proposed by the project or its variant, the v/c ratio would increase from 1.3 to 1.5, resulting in growth in the overall intersection v/c of 18 percent. Since this would exceed the significance threshold of 10 percent, as discussed under the Significance Criteria, the traffic impact as a result of the proposed project or its variant at this intersection would be considered significant. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Bryant and Second streets intersection is considered ***significant and unavoidable***.

Impact TR-8: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28) and the intersection would continue to perform at LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The Harrison and First streets intersection would operate at unacceptable LOS F with and without the proposed project or its variant. Due to traffic diversion from Second Street, the proposed project or its variant would result in an increase of 185 vehicles to the southbound right-turning critical movement along First Street at this intersection. This represents 14 percent of the p.m. peak hour volume of 1,356 vehicles at this movement. This 14 percent contribution is greater than the 5 percent threshold; thus, the traffic impact at this intersection would be considered significant.

At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Harrison and First streets intersection is considered ***significant and unavoidable***.

Impact TR-9: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Fifth Street/Bryant Street/I-80 Eastbound On-Ramp (Intersection #29) and the intersection would continue to perform at LOS F during the p.m. peak hour. *(Significant and Unavoidable)*

The Fifth Street/Bryant Street/I-80 eastbound on-ramp intersection would continue to operate at LOS F with and without the proposed project or its variant. Due to traffic diversion from Second Street, the proposed project or its variant would result in an increase of 26 vehicles to the northbound right-turning critical movement along Fifth Street, which is 8 percent of the p.m. peak hour volume of 332 vehicles at this movement. This 8 percent contribution would be greater than the 5 percent threshold; thus, the traffic impact at this intersection is considered significant. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the impact at the Fifth Street/Bryant Street/I-80 eastbound on-ramp intersection is considered ***significant and unavoidable***.

Impact TR-10: The proposed project or project variant would cause the level of service at the intersection of Howard and New Montgomery streets (Intersection #3) to deteriorate from LOS D to LOS E during the p.m. peak hour. *(Less than Significant with Mitigation)*

The Howard and New Montgomery streets intersection operates satisfactorily at LOS D under existing conditions. Implementing the proposed project or its variant would increase traffic volumes to the westbound through and southbound right-turning movements as a result of traffic diversion off of Second Street and would degrade LOS to LOS E (unacceptable conditions). Therefore, the impact on the Howard and New Montgomery streets intersection is considered significant. Implementing **Mitigation Measure M-TR-10**, described below, would improve the intersection operation from LOS E to LOS D under the existing plus proposed project or project variant conditions. This mitigation measure would be feasible to implement and would reduce the significant impact at this intersection to a less-than-significant level. Therefore, the proposed project or project variant impact at this intersection would be ***less than significant with mitigation***.

Mitigation Measure M-TR-10: Increase Signal Cycle Length (Howard and New Montgomery streets)

The Howard and New Montgomery streets traffic signal operates on a 60-second cycle under the existing plus proposed project or project variant conditions. As a mitigation measure, increasing the signal cycle length to 90 seconds would improve the intersection operation from LOS E to D, thus reducing the proposed project/project variant's impact to a ***less-than-significant*** level with mitigation.

Impact TR-11: The proposed project or project variant would cause the level of service at the intersection of Howard and Hawthorne streets (Intersection #4) to deteriorate from LOS B to LOS E during the p.m. peak hour. *(Less than Significant with Mitigation)*

The Howard and Hawthorne streets intersection operates satisfactorily at LOS B under existing conditions. Implementing the proposed project or its variant would increase traffic volumes to the westbound left-through critical lane group as a result of traffic diversion off of Second Street and would degrade LOS conditions to LOS E (unacceptable conditions). Therefore, the impact on this intersection is considered significant. Implementing **Mitigation Measure M-TR-11**, described below, would improve the intersection operation from LOS E to LOS D under the existing plus proposed project or project variant condition. This mitigation measure would be feasible to implement and would reduce the significant impact to a less-than-significant level. Therefore, the proposed project/project variant's impact at the Howard and Hawthorne streets intersection would be ***less than significant with mitigation***.

Mitigation Measure M-TR-11: Increase Signal Cycle Length (Howard Street and Hawthorne streets)

The Howard and Hawthorne streets traffic signal operates on a 60-second cycle under the existing plus proposed project or project variant conditions. As a mitigation measure, increasing the signal cycle to 90 seconds would improve the intersection operation from LOS E to LOS B, thus reducing the impact of the proposed project or its variant to a ***less-than-significant*** level with mitigation.

Impact TR-12: The proposed project or project variant would cause the level of service at the intersection of Folsom and Hawthorne streets (Intersection #5) to deteriorate from LOS E to LOS F during the p.m. peak hour. ***(Less than Significant with Mitigation)***

The Folsom and Hawthorne streets intersection operates unsatisfactorily at LOS E under existing conditions. Implementing the proposed project or its variant would increase traffic volumes to the southbound through and southbound left-turning movements and would further degrade LOS conditions to LOS F. Therefore, the impact on this intersection would be considered significant. Implementing **Mitigation Measure M-TR-12** would improve the intersection operation and would reduce this significant impact to a less-than-significant level. This mitigation measure would be feasible to implement. Therefore, the project's impact at the Folsom and Hawthorne streets intersection would be ***less than significant with mitigation***.

Mitigation Measure M-TR-12: Add a left-turn lane (Folsom and Hawthorne streets)

At the Folsom and Hawthorne streets intersection, there currently is a single southbound lane, serving both the southbound through and southbound left-turning movements. As a mitigation measure, the addition of a southbound left-turn lane during the p.m. peak demand period would return the intersection operation to the existing LOS E condition. This mitigation measure would result in the removal of two commercial loading stalls on the east side of Hawthorne Street north of Folsom Street during the p.m. peak demand period; during the remainder of the day, the loading stalls would remain available for commercial loading activities.

With implementation of the above mitigation measure, the intersection would remain at LOS E under the proposed project or its variant. In order to determine if implementation of the proposed project or its variant with mitigation would result in a significant traffic impact, the critical eastbound through movement was examined. The proposed project would reduce the volume of traffic by approximately 26 vehicles from the critical eastbound-through movement along Folsom Street during the afternoon peak hour, due to diversions off Second Street to Third Street. This would be a negative contribution to the critical movement and therefore does not constitute a considerable contribution, and impacts of the proposed project would be ***less than significant with mitigation***.

Impact TR-13: The proposed project or project variant would not contribute considerable traffic to the unsatisfactory operation at the intersections of Harrison and Essex streets (Intersection #23) and Folsom and First streets (Intersection #27) even though these intersections would continue to perform at LOS E or F during the p.m. peak hour. ***(Less than Significant)***

The Harrison and Essex streets intersection would operate at unacceptable LOS F with and without the proposed project or its variant. Due to traffic diversion off of Second Street, the proposed project or its variant would result in a reduction of 138 vehicles from the southbound through-right lane group movement along Essex Street. Also, the proposed project or its variant would result in a reduction of 49 vehicles from the eastbound right-turning critical movement along Harrison Street due to traffic diversion off Second Street. Therefore, the proposed project or its variant would not add traffic to the poor intersection operations, and the project's impact at the Harrison and Essex streets intersection would be ***less than significant***.

The Folsom and First streets intersection would operate at unacceptable LOS F with and without the proposed project or its variant. However, because the proposed project or its variant would not add any vehicles to the eastbound right-turning critical movement along Folsom Street, even considering diversion of traffic off Second Street, the project's impact on the Folsom and First streets intersection is considered ***less than significant***.

Impact TR-14: The proposed project or project variant would not cause the levels of service at 16 out of the 29 intersections to deteriorate to LOS E or F and the intersections would perform at acceptable LOS conditions of LOS D or better under existing plus proposed project or project variant conditions. ***(Less than Significant)***

The following 16 of the 29 intersections would continue to operate at an acceptable level under the proposed project or its variant:

7. Bryant and Third streets
8. Brannan and Third streets
9. Townsend and Third streets
11. Second and Market streets
12. Second and Mission streets
13. Second and Minna streets
14. Second and Howard streets
15. Second and Folsom streets
18. Second and South Park streets
19. Second and Brannan streets
20. Second and Townsend streets
21. Second and King streets
22. Essex and Folsom streets
24. First and Market streets
25. First and Mission streets
26. First and Howard streets

As shown in Table 4.4-7, under existing plus proposed project or project variant conditions, 14 of the 29 study intersections would continue to operate at acceptable LOS D or better. In addition, the LOS would improve at two intersections that operated unsatisfactorily under existing conditions. The intersection operations at Folsom and Second streets (Intersection #15) would improve from LOS E to LOS C, and the signalization of Second and South Park streets (Intersection #18), with implementation of the proposed project or its variant, would substantially improve operations from LOS F to LOS A.

Therefore, under existing plus proposed project or project variant conditions, 16 of the 29 intersections would operate satisfactorily at LOS D or better. As such, project-related impacts at these locations would be ***less than significant*.**

Impact TR-15: The unsatisfactory intersection conditions experienced at 11 of the 29 study intersections during the weekday baseball games at AT&T Ball Park could deteriorate further under proposed project or project variant and game day conditions. (*Significant and Unavoidable*)

The traffic conditions during weekday games at AT&T Park are much more congested than under regular conditions. With the implementation of the proposed project or its variant, reducing right-turn capacity from northbound Second Street to Harrison Street and Bryant Street would cause vehicles trying to access the Bay Bridge to stay on Third Street and access the freeway or divert to the Fifth Street on-ramp.

This change in traffic pattern would further exacerbate the significant impacts experienced under proposed project or project variant conditions during the p.m. peak hour at the following 11 study intersections:

1. Market and New Montgomery streets
2. Mission and New Montgomery streets
3. Howard and New Montgomery streets
4. Howard and Hawthorne streets
5. Folsom and Hawthorne streets
6. Harrison and Hawthorne streets
10. King and Third streets
16. Harrison and Second streets
17. Bryant and Second streets
28. Harrison and First streets
29. Fifth Street/Bryant Street/I-80 eastbound on-ramp

The significant impacts at Howard and New Montgomery streets, Howard and Hawthorne streets, and Folsom and Hawthorne streets would be reduced to less-than-significant levels by implementing Mitigation Measures **M-TR-10**, **M-TR-11**, and **M-TR-12**, as discussed above on pages 4.4-49 through 4.4-50. However, for the remaining eight intersections, which would operate at LOS E or LOS F under the proposed project or its variant, no feasible mitigation measures have been identified, so the identified traffic impacts at these eight intersections would remain ***significant and unavoidable***.

Transit

Impact TR-16: The proposed project or the project variant would not result in significant impacts on local or regional transit. (*Less than Significant*)

Proposed Project. The proposed project would not generate transit trips and would maintain Muni routes 10 and 12 service along Second Street. By implementing the proposed project elements such as removing left-turns along the Second Street intersections and installing bus boarding islands, the Muni Route 10 delay would decrease by 1 minute and 2 seconds in the inbound (northbound) direction and would increase by 2 minutes and 29 seconds in the outbound (southbound) direction. The sum of the delay for Muni Route 10 in both directions would increase by 1 minute and 27 seconds. This would be lower than the 6-minute threshold described in Section 4.4.4 above; therefore, the impact of the proposed project on Muni Route 10 would be less than significant.

The proposed project elements such as removing left-turns along the Second Street intersections and installing bus boarding islands would reduce Muni Route 12 travel times by approximately 4 minutes and 7 seconds in the inbound direction, while increasing the delay by approximately 3 minutes and 57 seconds in the outbound direction. The sum of the delay for Muni Route 12 in both directions would thus amount to a reduction of 10 seconds. The proposed project would improve Muni Route 12 transit travel time; thus, the impact of the proposed project on Muni Route 12 would be ***less than significant***.

Transit travel time for other transit routes along adjacent streets may also be affected due to autos being diverted to these streets under the proposed project conditions. Specifically, this phenomenon could occur on First, Third, Mission, Howard, and Folsom streets. Transit travel time effects on each of these streets as a result of the proposed project are as follows:

- **First Street—**Currently there are no transit routes on First Street, except for Golden Gate Transit inbound commuter bus routes during the morning peak period. These buses travel for two blocks along southbound First Street in the right lane and turn right onto westbound Howard Street. The proposed project would divert some vehicles off southbound Second Street and onto southbound First Street. This would be due to the left-turn restrictions and reduction in capacity that is proposed for southbound Second Street.

  The delay to Golden Gate Transit vehicles on First Street due to the proposed project would be negligible for three reasons:

  - The buses operate only during the morning period, when traffic volumes on First Street are substantially lower than during the afternoon period, and congestion has not been observed on First Street during the morning period.

- o The buses operate for only two blocks along First Street, between Market and Howard streets.

- o The proposed project would divert only a negligible volume of vehicles onto the southbound right-turn movement at First and Howard streets (where they could conflict with the buses making the same maneuver). This is because the southbound right-turn movement at Second and Howard streets would be maintained.

With the future completion of the Transbay Transit Center, several Muni bus routes will be relocated onto First Street between Market and Mission streets. However, these bus routes will operate in a fully dedicated transit-only lane and so would be protected from congestion. Therefore, the delay added to Muni vehicles on First Street as a result of the proposed project would be negligible.

- **Third Street—**Muni route 8X Bayshore Express operates along Third Street between Bryant and Market streets, and routes 30 Stockton, 45 Union/Stockton, and 81X Caltrain Express operate along Third Street between Townsend and Market streets. The proposed project would divert some vehicles off northbound Second Street and onto northbound Third Street, due to the left-turn restrictions and the reduction in capacity that is proposed for northbound Second Street.

  All of these bus routes operate in the existing transit-only lane on the east side of Third Street (right side) between Townsend and Market streets, which protects transit vehicles from congestion. Private vehicles are permitted to weave across the transit-only lane on Third Street in order to execute right-turn movements, which can delay transit vehicles. However, the proposed project would divert only a negligible volume of vehicles onto the northbound right-turn movements along Third Street. This is because the northbound right-turn movements along Second Street would be maintained.

  Therefore, the increase in delay to transit vehicles along Third Street as a result of the proposed project would be negligible.

- **Mission Street—**Muni routes 14 Mission, 14L Mission Limited, 14X Mission Express, Golden Gate Transit routes 70/80, and SamTrans routes 292, 397, and KX operate along Mission Street in the vicinity of Second Street. The proposed project would result in a minor increase in traffic volumes along Mission Street. This would be due to the northbound and southbound left-turn prohibitions proposed with the project at Second and Mission streets. Specifically, vehicles previously executing these left-turn movements would instead execute three right-turn movements around the block. This would result in one additional block of travel along eastbound or westbound Mission Street. During the p.m. peak hour, 40 vehicles currently execute the northbound-left movement, and 48 vehicles currently execute the southbound-left movement; these vehicles would be diverted around the block.

All of these bus routes operate within existing transit-only lanes on Mission Street in the vicinity of Second Street, which protects transit vehicles from congestion. Drivers of private vehicles are permitted to weave across the transit-only lane on Mission Street in order to execute right-turn movements, which can delay transit vehicles. However, the proposed project would not add any additional right-turn movements off Mission Street that could delay transit. Furthermore, the project would result in these diverted vehicles traveling only one additional block along Mission Street, which (assuming that the existing transit lane was not in operation) would cause only a negligible increase in delay for transit vehicles along Mission Street.

Therefore, the increase in delay to transit vehicles along Mission Street as a result of the proposed project would be negligible.

- **Howard Street—**There are no transit routes on First Street, except for Golden Gate Transit inbound commuter bus routes during the morning peak period. These buses travel for three blocks along westbound Howard Street and turn left onto southbound Fourth Street. The proposed project would result in a minor increase in traffic volumes along westbound Howard Street. This would be due to the northbound left-turn prohibition proposed with the project at Second and Howard streets. Specifically, vehicles previously executing this left-turn movement would instead execute three right-turn movements around the block. This would result in one additional block of travel along westbound Howard Street (between First and Second streets). During the p.m. peak hour, 84 vehicles currently execute this northbound left-turn maneuver.

  The increased delay to Golden Gate Transit vehicles on Howard Street due to the proposed project would be negligible for two reasons:

  - The buses operate only during the morning period. This is when traffic volumes on Howard Street are substantially lower than during the afternoon period, and congestion has not been observed on Howard Street during the morning period;

  - The project would result in these diverted vehicles traveling only one additional block along westbound Howard Street, which would cause only a negligible increase in delay for transit vehicles along Howard Street.

- **Folsom Street—** Muni route 12 Folsom operates along eastbound Folsom Street west of Second Street, and then executes an eastbound left turn from Folsom Street onto northbound Second Street. Also, Golden Gate Transit outbound commuter buses operate along Folsom Street between Third and Fremont streets during the p.m. peak period. The proposed project would increase traffic volumes along eastbound Folsom Street between Hawthorne and Second streets. This is due to the Bay Bridge-bound traffic detour associated with the southbound left-turn prohibition proposed at Second and Folsom streets. During the p.m. peak hour, 240 vehicles currently execute this southbound left-turn maneuver, 145 of which would be rerouted onto Hawthorne Street, with the remainder rerouted onto southbound First Street and the First Street on-ramp.

  These additional vehicles on Folsom Street between Hawthorne and Second streets could delay both Muni and Golden Gate Transit vehicles. However, this segment of Folsom Street has four eastbound travel lanes. Bay Bridge-bound traffic is confined to the middle two lanes, which feed onto the Essex Street on-ramp; the left (northernmost) lane does not feed the on-ramp. While the middle two lanes routinely become congested during the p.m. peak period, the left lane does not. Both the Muni vehicles (which turn left onto northbound Second Street) and the Golden Gate Transit vehicles (which access a boarding island east of Second Street) travel in this left lane and would avoid this congestion, similar to existing conditions.

  The Hawthorne Street detour is primarily intended for Bay Bridge-bound traffic, which means that drivers of these detoured vehicles would use the middle lanes of Folsom Street between Hawthorne and Second streets; they would not use the left lane, which serves the transit routes. Therefore, the proposed project would result in a negligible increase in delay to transit vehicles along Folsom Street.

- **Harrison Street—**Muni route 12 Folsom operates along westbound Harrison Street west of Second Street. Westbound Harrison Street would not experience any diverted traffic volumes as a result of the proposed project (the Hawthorne diversion would add traffic only onto eastbound Harrison Street); therefore, the increase in delay to transit vehicles along Harrison Street would be negligible.

- **Brannan Street—**Muni route 82X Levi Plaza Express operates along westbound Brannan Street in the vicinity of Second Street. Westbound Brannan Street would not experience any diverted traffic volumes as a result of the proposed project. Although the northbound-left turn at Second/Brannan would be prohibited, there is no ability to execute three right turns around the block, because Delancey Street does not connect with Bryant Street. Therefore, this traffic would use northbound Third Street, and the increase in delay to transit vehicles along Brannan Street would be negligible.

- **Townsend Street—**Muni route 10 Townsend operates along Townsend Street west of Second Street. Townsend Street would not experience any diverted traffic volumes as a result of the proposed project because northbound and southbound left-turn movements would be maintained at Second and Townsend streets. Therefore, the increase in delay to transit vehicles along Townsend Street would be negligible.

In summary, as described above, the proposed project would result in only negligible increases in transit travel time along transit routes in the vicinity of Second Street. Therefore, the impact of the proposed project on transit would be ***less than significant***.

Project variant. The project variant would have an impact on Muni Route 10 delay similar to the proposed project. Under the existing plus project variant scenario, the delay to Muni Route 10 would decrease by approximately 55 seconds in the inbound direction and would increase by 2 minutes and 45 seconds in the outbound direction. The sum of the delay for Muni Route 10 in both directions would increase by 1 minute and 51 seconds. This would be lower than the 6-minute threshold described in Section 4.4.4 above; therefore, the transit impact of the project variant on Muni Route 10 would be ***less than significant***.

The project variant would have an impact on Muni Route 12 transit delay similar to the proposed project. The project variant would reduce Muni Route 12 travel times by approximately 3 minutes and 58 seconds in the inbound direction, while increasing the delay by approximately 3 minutes and 55 seconds in the outbound direction. The sum of the delay for Muni Route 12 in both directions would be a reduction of 3 seconds. The project variant would improve Muni Route 12 transit travel time; thus, the impact of the project variant on Muni Route 12 would be ***less than significant***.

Transit travel time for other transit routes along adjacent streets may also be affected due to autos being diverted to these streets under the project variant conditions. Specifically, this could occur on First, Third, Mission, Howard, and Folsom streets. The project variant would have an impact on other transit routes similar to those described above for the proposed project. Since the change in transit travel time in both directions due to the proposed project and the project variant would be less than the threshold of 6 minutes for both Muni Routes 10 and 12 along Second Street, and the increase in transit travel time on adjacent roadways would be negligible, the impact of the project variant on transit would be ***less-than-significant***.

Impact TR-17: The proposed project or the project variant would not result in significant impacts on local or regional transit during game day conditions. (*Less than Significant*)

Muni Route 10 Townsend serves AT&T Park via Second Street and experiences variable travel time along the Second Street corridor under existing conditions. However, based on field observations, it has not been shown to experience a consistent increase in transit travel time on game days. The transit demand on game days under existing plus proposed project or project variant conditions is expected to be similar to that under existing game day conditions. This is because the proposed project or its variant would not increase transit demand. No other local or regional transit would be impacted during game day conditions. Therefore, the transit impact of the proposed project or its variant during game day conditions would be ***less than significant***.

Pedestrians

Impact TR-18: The proposed project or project variant would not result in substantial overcrowding on public sidewalks, nor create potentially hazardous conditions for pedestrians, or otherwise interfere with pedestrian circulation and safety in the project vicinity during regular or game day conditions. (*Less than Significant*)

The proposed project or its variant would include sidewalk widening from 10 feet to 15 feet between Harrison Street and Townsend Street on both sides of Second Street. This would provide additional circulation space on the sidewalks for pedestrians traveling along Second Street as well as provide consistent sidewalk widths between Market Street and Townsend Street. The sidewalk widening would also shorten crossing distances and thus shorten required crossing times for all east-west crossings of Second Street between Harrison and Townsend streets.

The intersections of Harrison and Second streets and South Park and Second streets would be modified by the proposed project or its variant to shorten crossing distances and to allow pedestrians to be more visible to approaching drivers. These modifications include eliminating the two uncontrolled northbound right-turn lanes at the intersection of Harrison and Second streets and installing a new signal at the intersection of South Park and Second streets to facilitate pedestrian crossing and traffic movements from eastbound South Park Street.

The proposed project or its variant would also include various improvements to enhance pedestrian safety along Second Street. Pedestrian conflicts with turning vehicles at north-south crosswalks along Second Street would be reduced by restricting left turns at signalized intersections north of Townsend Street (or north of Brannan Street for the project variant) and by providing exclusive right-turn phases after the pedestrian crossing time has been completed. Through traffic along Second Street, which would not conflict with north-south pedestrian crossings, would be allowed during both the pedestrian crossing time and the following right-turn phase. Right-turn on red would be prohibited. Thus, the separate signal phases would reduce conflicts between vehicles turning right off Second Street and pedestrians walking in the crosswalk along Second Street. The control of turns from cross-streets onto Second Street would not be changed.

Since the bicycle and pedestrian movements along Second Street would always be concurrent, the increase in bicycle traffic along Second Street under the proposed project or its variant may also increase the conflicts between bicyclists turning right and pedestrians using the crosswalk to the right of the cycle tracks. However, bicyclists turning right off Second Street would be required to yield to pedestrians, as is the current condition. For boarding islands at the intersections, pedestrians would be expected to access bus boarding islands from crosswalks. However, for bus boarding islands that are not at intersections, bicyclist and pedestrian conflicts could also occur at the marked accessible path across the cycle tracks between the sidewalk and the bus boarding island. Pedestrian crossing signs would be provided at these locations to minimize these conflicts and bicyclists would be expected to yield to pedestrians in these marked paths. New raised crosswalks at alleys, high-visibility continental-style markings at all other crosswalks,[36] and Americans with Disabilities Act (ADA)-compliant curb ramps would be installed at all intersections. The proposed project or its variant would also include streetscape improvements, such as street trees, street furniture, and pedestrian-scale lighting, to improve pedestrian experience and safety. These facilities would be placed in a manner that meets City standards and ADA requirements for maintaining unobstructed and wide (5 feet or more) paths of travel for both pedestrians and wheelchair users.

Transit boarding islands installed at nine locations under either the proposed project or project variant would provide dedicated space for pedestrians to access buses along Second Street. These 8-foot-wide islands would be separated from the sidewalk by the cycle track and would provide a dedicated space for pedestrians to queue, board, and off-board buses. At least one marked accessible path would be provided across the cycle track for pedestrians to cross between the sidewalk and each boarding island.

Widening the sidewalks from 10 feet to 15 feet between Harrison Street and Townsend Street on both sides of Second Street would also relieve congestion on sidewalks along Second Street during pre- and post-game periods. This is when fans walk along Second Street between the ballpark and the Montgomery Street BART and Muni Metro Station or Muni bus lines on Market Street.

As discussed above, the proposed project or its variant would result in more pedestrian space for circulation, would improve the visibility of crossing pedestrians, and would reduce vehicle-pedestrian conflicts in general and also during post-game periods of high pedestrian volumes. Therefore, the proposed project or its variant would benefit pedestrian circulation

[36] Continental-style markings are sets of white longitudinal lines separated by gaps of 2-to-6 feet, parallel to the intersecting travel lanes.

and safety, and impacts on pedestrian facilities users at all periods, including game days, would be ***less than significant***.

Bicycles

Impact TR-19: The proposed project or project variant would not create potentially hazardous conditions for bicyclists, or otherwise substantially interfere with bicycle accessibility to the project site and adjoining areas. (*Less than Significant*)

Proposed project. The proposed project includes the installation of raised and separated curbside bikeways, or cycle tracks, in the northbound and southbound directions along Second Street, between Stevenson and Townsend streets. Implementation of a dedicated bicycle facility would enhance bicycle operations and safety. Relocating parking spaces, loading zones, taxi stands, and bus stops from curbside to the left of the cycle tracks would reduce the number of midblock motorist-bicyclist conflicts along Second Street as a result of the separation from vehicular traffic that these features would provide.

The proposed project or project variant includes various elements to limit conflicts between bicyclists traveling along Second Street and turning vehicles. Between Mission and Brannan streets, bicyclist movements along Second Street would be controlled by new bicycle/pedestrian signal heads, which would show green concurrently with north-south pedestrian and north-south through vehicle phases. Right-turning vehicles would be held in the right-turn only lane by a red arrow during the bicycle and pedestrian crossing phase, after which they would receive a green arrow. This new phasing would limit conflicts between bicyclists traveling along Second Street and right-turning motorists. As discussed under Impact TR-18 above, concurrent bicycle and pedestrian movements along Second Street may increase the conflicts between bicyclists turning right and pedestrians using the crosswalk to the right of the cycle tracks. However, bicyclists turning right off Second Street would be required to yield to pedestrians, as is the current condition.

Additionally, as described above, for bus boarding islands that are not located at an intersection, bicyclist and pedestrian conflicts could also occur at the marked accessible path across the cycle tracks between the sidewalk and the bus boarding island. Pedestrian crossing signs would be provided at these locations to minimize these conflicts, and bicyclists would be expected to yield to pedestrians in these marked paths.

Where left turns from Second Street are restricted, bicyclists wishing to turn left would be expected to make a two-stage or “box turn”, which allows bicyclists to cross with the bicycle signal to the far side of the intersection, then wait in a specially-marked area (two-stage bicycle left-turn queue box) in front of waiting traffic for the cross-street green phase to proceed straight through the intersection. Bicyclists would only queue in the left-turn queue box while cross traffic is stopped at red lights. This feature is intended to reduce vehicle/bicycle conflicts, increase bicyclists visibility, and provide bicyclists with a head start when the light turns green.

The proposed project includes up to 42 new sidewalk bicycle racks, distributed along the length of Second Street. Installing these bicycle racks would comply with SFMTA's Bicycle Rack Placement Criteria, which ensure that rack placement maintain an appropriate effective width of the sidewalk and comply with ADA requirements.[37]

Additional short-term bicycle parking may be added before, during, or after the proposed project construction by public request through the SFMTA bicycle parking program.

The proposed project would provide dedicated bicycle facilities that include raised cycle tracks and bicycle lanes, which would benefit bicyclists along the Second Street corridor. The proposed bicycle infrastructure as well as turn restrictions would reduce the number of conflicts between vehicles, including buses, and bicyclists. Therefore, the proposed project or project variant impacts related to bicycle facilities would be ***less than significant***.

Game Day Conditions. Second Street, The Embarcadero, and King Street are the primary bicycle routes for access to and from AT&T Park. The proposed project would provide a continuous dedicated bicycle facility from Market Street to King Street and would increase the availability of bicycle parking facilities along Second Street. The new bikeways and bike-specific signal phases would increase the capacity and safety for bicyclists along Second Street, who currently share the travel lanes with automobiles. In addition, bike-specific signal phases would reduce bicycle/vehicle conflicts from right-turning vehicles. Therefore, the proposed project would improve conditions for bicyclists along the Second Street corridor during regular days and under game day conditions. Therefore, impacts on bicycle facilities and users therein would be ***less than significant*** under game day conditions.

Project variant. Under the project variant conditions, the bicycle conditions would be the same as discussed above for both regular days and game day conditions, except at the Second Street and Brannan Street intersection, where the project variant would include permitted southbound left-turn and northbound right-turn movements on a permitted phase on Second Street. Thus, northbound cyclists would not have the advantage of separate signal phases at this intersection and the northbound right- and southbound left-turning vehicles on Second Street would be expected to yield to bicycles, like at a typical intersection. While this would increase conflicts between bicycles and motorists at the

---

[37] San Francisco Bicycle Plan Update Transportation Impact Study, Wilbur Smith Associates, October 28, 2008, Appendix F, Bicycle Rack Placement Criteria. This document is on file and available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, California, 94103, as part of Case File No. 2007.0347E.

intersection, when compared to the proposed project with turn restrictions, the project variant would still be an improvement for cyclists compared to the existing conditions, and impacts would be ***less than significant*** during regular days and game day conditions.

Emergency Vehicle Access

Impact TR-20: The proposed project or project variant would not adversely affect emergency vehicle access along the Second Street corridor or in the project vicinity. *(Less than Significant)*

The proposed project or its variant would result in physical changes to the roadway and lane configurations along Second Street. Also, the dimension of existing roadway space (right-of-way) would be reduced to accommodate the proposed transit boarding islands, cycle tracks in both directions, and sidewalk widening. However, the northbound and southbound travel lanes together would provide a minimum width of up to 24 feet; therefore, it would comply with the Fire Code requirement of minimum street width of 20 feet for fire apparatus access. Additionally, in the event of an emergency, vehicle operators traveling along Second Street would be able to pull over onto the ramped concrete painted buffer or the cycle track itself to allow emergency vehicles to pass.

Furthermore, implementing the proposed project or its variant would not generate vehicle trips or implement physical design features along Second Street that would impede or hinder the movement of emergency vehicles. Nor would it substantially increase response time of emergency vehicles, for example from the neighboring Fire Station No. 1 (located at Folsom Street, approximately 0.60 mile west of Second Street) and Fire Station No. 35 (located at Pier 22½ about 0.50 mile east of Second Street).

The proposed project or its variant would not introduce any design features that would reduce or eliminate vertical clearance and sight distances, which would adversely affect the access of emergency vehicles or other users of the roadway.

There would be two “pinch point” locations along Second Street, one between Stevenson and Jessie streets and another between Federal and South Park streets. At these locations, there would be northbound and southbound transit boarding islands next to each other. This means that drivers in both the northbound and southbound lanes would not be able to pull right, out of the travel lane. However, the curb-to-curb width between the two boarding islands would be 24 feet, which means that if northbound and southbound vehicles were to pull right within the lane, a space of about 10 feet would be created for the emergency vehicle to pass. Furthermore, both of these pinch points would be less than 80 feet long, and drivers would be able to pull forward of the island and then pull right, out of the travel lane, in order to create additional room for emergency vehicles to pass.

Because the proposed project or its variant would continue to provide adequate street widths, clearance, and capacity for emergency vehicle access, emergency vehicle access impacts are considered to be ***less than significant***.

During game day conditions, as described on pp. 4.4-24 through 4.4-28 of this EIR, a mitigation measure in the San Francisco Giants Ballpark at China Basin EIR specifies that the Giants and the City are responsible for developing a Transportation Management Plan (TMP) to address the congestion and delay following a ballgame. The TMP is updated regularly based on changing circulation conditions in the ballpark vicinity to manage circulation to and from AT&T Park so that traffic flows have as little impact as possible on the affected community. Under the proposed project or project variant and game day conditions, the same conditions for emergency vehicle access would be maintained as described above. Therefore, impacts of the proposed project or its variant associated with emergency vehicle access on game days would be ***less than significant***.

Loading

Impact TR-21: The proposed project or project variant would not result in a passenger loading demand during the peak hour of loading activities that could not be accommodated within on-street passenger loading zones, and would therefore not create potentially hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians. *(Less than Significant)*

There are commercial, office, and residential establishments on both sides of Second Street, with 15 adjacent passenger loading zones serving them on both sides of the street. The transportation improvements discussed above and in Chapter 2, Project Description, would remove six passenger loading zones along Second Street. Two passenger loading zones (with total length of 132 feet) on the east side of Second Street between Stevenson and Mission streets and serving two large office buildings would be removed. These zones serve two large office buildings, both of which have publicly accessible parking garages. For curbside loading near the office buildings, the existing 40-foot passenger loading zone north of Stevenson Street could be used. Two passenger loading zones would remain on Second Street between Stevenson and Mission streets, one on the east and one on the west side of Second Street. Two passenger loading zones (with total length of 63 feet) between Mission and Howard streets would be removed – one on the east side and one on the west side. On the west side of the street, the passenger loading zone serves a restaurant. One the east side of the street, the passenger loading zone serves and office building with a publicly accessible garage. Two passenger loading zones (with total length of 45 feet) on the west side of Second Street between Tehama and Folsom streets, mainly serving a large residential building, would also be removed. This residential building has a parking garage that could be used for passenger loading. Additionally the residential building is directly across the street from the Marriot Hotel, whose tour bus and taxi loading zone would also be available for the residential building patrons under the proposed project or its variant.

The proposed project or its variant would maintain the full length of two of the three taxi loading zones on Second Street, one on the east side north of Folsom Street and the other on the west side between Brannan and Townsend streets These would be operational during AT&T Park post-game hours only. The pre-game period taxi stand on the west side of Second Street between Townsend and King streets would be shortened from 105 feet to 85 feet to accommodate a new handicap parking zone. This change would reduce the capacity of the stand by reducing the available queuing length by approximately one taxi. According to field observations, game day taxi stands operate below capacity and the available queuing length is usually not full.[38] Therefore, the minor reduction in width would not substantially affect the operation of the taxi stand because most of the taxi stand would remain.

Overall, the proposed project or its variant would not result in a substantial loss of passenger loading zones. Passenger loading zones are white zones for which the permit from SFMTA must be renewed every 2 years.[39] Further, the proposed project or its variant would not result in a passenger loading demand during the peak hour of loading activities that could not be accommodated within on-street passenger loading zones. Therefore, it would not create potentially hazardous conditions or significant delays affecting traffic, transit, bicyclists, or pedestrians. The proposed project or project variant's impact on passenger loading would be ***less than significant***.

Impact TR-22: The proposed project or project variant would remove on-street commercial loading spaces along Second Street that could not be located nearby and would thereby result in potential conflict between trucks and other traffic. *(Significant and Unavoidable with mitigation)*

Second Street has 41 metered commercial loading stalls. Typically, commercial loading stalls are at least 22 feet long. Adjacent commercial loading stalls or spaces form commercial loading zones in which larger trucks may use more than one stall at one time. Under the proposed project or its variant, there would be a substantial reduction in the supply of on-street commercial metered stalls (net loss of 19 to 21 metered stalls) along Second Street. Up to 20 of the existing 31 commercial metered stalls between Market and Howard streets would be removed under the proposed project or its variant. SFMTA has sought to create additional new on-street commercial loading zones in the vicinity of the proposed

[38] SFMTA, SFPark, September 2012; presented in Appendix K of the Second Street Improvement Project Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco as part of Case No. 2007.0347E.

[39] SFMTA. 2014. New Color Curb. Available online at: http://www.sfmta.com/services/streets-sidewalks/installation-requests/new-color-curb. Accessed on November 19, 2014.

project or its variant in order to mitigate the reduction in supply. However, all available curbside space in the vicinity of the proposed project or its variant that could be repurposed for commercial loading has already been established. Therefore, no new commercial loading stalls would be added along this section of Second Street to mitigate this reduction. However, as the proposed project is refined further through the engineering design phase, the project sponsor would continue to consider opportunities to provide commercial loading spaces in the project vicinity as described below in **Mitigation Measure M-TR-22**.

Between Folsom and Harrison streets, there are five existing metered yellow commercial loading stalls on this block. Two metered commercial loading stalls, on the west side of Second Street would be removed, and three metered stalls, on the east site would remain. The three metered commercial loading stalls on the east side of Second Street between Harrison and Bryant streets, which currently serve a commercial building and a live/work space, would be removed. Two metered commercial loading stalls would be replaced farther south on Second Street, along the frontage of the live/work space (still between Harrison and Bryant streets) and within 300 feet of the original loading zone. Further, there are no loading zones on this block of Second Street between Bryant and Brannan streets. Two new yellow commercial loading metered stalls, would be established to serve restaurants and bars on this block.

With the implementation of **Mitigation Measure M-TR-12**, the two existing yellow commercial loading stalls on the east side of Hawthorne Street north of Folsom would be removed during the p.m. peak demand period to provide a southbound left-turn pocket; they would remain available for commercial loading activities during the remainder of the day.

The proposed project or its variant would result in a net loss of 19 to 21 commercial loading stalls. As discussed above, there is high demand for these commercial loading zones from the office, restaurant, and retail establishments along Second Street. Therefore, the proposed project or its variant would result in a commercial loading demand during the peak hour of loading activities that could not be accommodated within on-street commercial loading zones. Implementation of **Mitigation Measure M-TR-22**, described below, could reduce the impacts on commercial loading. **Mitigation Measure M-TR-22** requires that, whenever feasible, commercial loading stalls proposed for removal would be relocated within 250 feet of the existing location. However, the feasibility of providing replacement commercial loading stalls cannot be assured in every situation where loading stalls may be removed. Therefore, the impact on commercial loading along the Second Street corridor would be ***significant and unavoidable with mitigation***.

Mitigation Measure M-TR-22: Provision of Replacement Commercial Loading Stalls

Mitigation Measure M-TR-22 requires that whenever feasible, commercial loading stalls proposed for removal would be relocated within 250 feet of the existing location. However, the feasibility of providing replacement commercial loading stalls cannot be assured in every situation where loading stalls may be removed. Therefore, the impact on commercial loading along the corridor would be ***significant and unavoidable with mitigation***.

Parking

Impact TR-23: Implementation of the proposed project or project variant would not result in a significant parking impact. *(Less than Significant)*

Parking conditions are not static, as parking supply and demand varies from day to day, from day to night, from month to month, etc. Hence, the availability of parking spaces (or lack thereof) is not a permanent physical condition, but changes over time as people change their modes and patterns of travel. While parking conditions change over time, a substantial deficit in parking caused by a project that creates hazardous conditions or significant delays to traffic, transit, bicycles or pedestrians could adversely affect the physical environment. Whether a deficit in parking creates such conditions will depend on the magnitude of the shortfall and the ability of drivers to change travel patterns or switch to other travel modes. If a substantial deficit in parking caused by a project creates hazardous conditions or significant delays in travel, such a condition could also result in secondary physical environmental impacts (e.g., air quality or noise impacts cause by congestion), depending on the project and its setting.

The absence of a ready supply of parking spaces, combined with available alternatives to auto travel (e.g., transit service, taxis, bicycles or travel by foot) and a relatively dense pattern of urban development, induces many drivers to seek and find alternative parking facilities, shift to other modes of travel, or change their overall travel habits. Any such resulting shifts to transit service or other modes (walking and biking), would be in keeping with the City's Transit First Policy and numerous San Francisco General Plan policies, including those in the Transportation Element. The City's Transit First Policy, established in the City's Charter Article 8A, Section 8A.115, provides that "parking policies for areas well served by public transit shall be designed to encourage travel by public transportation and alternative transportation."

The transportation analysis accounts for potential secondary effects, such as cars circling and looking for a parking space in areas of limited parking supply, by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area, and thus choose to reach their destination by other modes (i.e. walking, biking, transit, taxi). If this occurs, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the proposed project would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality, noise and pedestrian safety analyses, would reasonably address potential secondary effects.

The proposed project or its variant is an infrastructure project that would not increase parking demand. However, the proposed project or its variant would remove approximately 137 of the existing 168 standard parking spaces (including the removal of five blue accessible spaces) and 19 of the existing 56 motorcycle spaces on Second Street between Market and King streets.

Under the proposed project or its variant, approximately six on-street general metered parking spaces (including the provision of one blue accessible space) would be added to Brannan Street between Second and Colin P. Kelly Jr. streets by reconfiguring parallel parking spaces to angled parking spaces. Additionally, the proposed project or its variant would add approximately two parking spaces (including the provision of one blue accessible space) on the north side of Harrison Street (between Second and Hawthorne streets), immediately west of Second Street, by relocating the bus stop at that location. In total, the proposed project or its variant would result in a net removal of approximately 129 standard on-street parking spaces and 19 motorcycle parking spaces on and within one block of Second Street.

The proposed project or its variant would remove all of the parking on the east side of Second Street between Market and Howard streets, on the west side of Second Street between Howard and Brannan streets, and on the east side of Second Street between Brannan and Townsend streets. In general, the parking removal as a result of project features is as follows: for the installation of right-turn pockets (4 to 6 parking spaces per location) and transit boarding islands (4 parking spaces per island) and for improved sight lines at alley intersections (2 parking spaces per alley). Most of the parking spaces retained in the proposed project or its variant design would be designated for passenger and commercial loading during weekdays (previously discussed under Impacts TR-21 and TR-22 above), but the spaces would be available for standard parking at other times.

In some locations, the parking demand that would be displaced due to the loss of these parking spaces could be accommodated on nearby streets, which would increase competition for other on-street, and potentially off-street, parking. If replacement parking cannot be provided or accommodated on nearby streets (if existing parking demand is high), the reduction in parking supply could result in a parking shortfall. However, as indicated above, the proposed project or its variant is located in downtown San Francisco where there are many off-street parking options. In addition, Second Street is a transit route and a designated portion of the bicycle route network. This area is well served by transit, including access to local and regional transit options, as well as by other modes, presenting the opportunity for drivers to change travel patterns or switch to other travel modes.

The loss of 129 parking spaces in the context of downtown San Francisco, where a supply of off-street parking is readily available and where there are multiple options for alternative transportation, is not considered substantial. At some locations, drivers would have to circle in search of parking, walk further between the parking space and destination, or switch to transit or other modes. A decrease in the on-street parking supply is considered an inconvenience, but it would not create potentially hazardous conditions or significant delays to traffic, transit, pedestrians, or bicyclists, such as consistently blocking sidewalks, mixed-use lanes, transit, or bicycle lanes or forming persistent queues to off-street parking facilities. In addition, as mentioned above, any secondary environmental impacts that may result from the shortfall in parking in the vicinity of the proposed project or project variant would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated air quality, noise and pedestrian safety analyses, would reasonably address potential secondary effects. Therefore, the proposed project or project variant's impact on parking would be ***less than significant***.

CUMULATIVE IMPACTS

The Future Year 2040 model run was based on the Association of Bay Area Governments (ABAG) Sustainable Community Strategy (SCS), *2013 Jobs Housing Connection*.[40] In 2040, there would be planned transportation network changes, as proposed in the following relevant plan documents:

- Draft Central SoMa Plan;[41]
- Central Subway Project;[42]
- San Francisco Bicycle Plan;

[40] One Bay Area, Jobs-Housing Connection Strategy, May 2012. Available online at: http://www.onebayarea.org/pdf/JHCS/May_2012_Jobs_Housing_Connection_Strategy_Main_Report.pdf; accessed on January 12, 2014.

[41] San Francisco Planning Department. April 2013. Draft Central SoMa Plan. Available online at: http://www.sf-planning.org/index.aspx?page=2557. Accessed on January 12, 2014.

[42] SFMTA. October 2012. Central Subway Project. Available online at: http://centralsubwaysf.com/. Accessed on January 12, 2014.

- Muni Forward (formerly referred to as the Transit Effectiveness Project); and
- Transit Center District Plan.[43]

Planned Transportation Network Changes

Relevant planned roadway network changes are those for roadways and traffic changes, transit improvement projects, bicycle network improvement projects, and pedestrian improvement projects. These are discussed below.

Roadway/Traffic Improvements

Transit Center District Plan (TCDP)—Specific roadway and transportation-related improvements presented in the TCDP that are relative to the proposed project or its variant are as follows:

- Convert Folsom Street (east of Second Street) from one-way to two-way;
- Convert Howard Street (east of New Montgomery Street) from one-way to two-way;
- Change Minna Street from one-way westbound to one-way eastbound between First and Second streets; and
- Convert Natoma Street from Second Street east to midway between First and Second streets to pedestrian access and emergency vehicles only.

Draft Central SoMa Plan—Roadway improvements under this plan in proximity to Second Street are as follows:

- **Folsom Street** (from Second Street to Eleventh Street) would be reconfigured to allow for two eastbound general travel lanes, an eastbound transit-only lane (during peak commute periods), wider sidewalks, midblock crosswalks, on-street parking, and a two-way cycle track along the north side of the roadway.
- **Howard Street** (from Second Street to Eleventh Street) would be reconfigured to allow for two general westbound travel lanes, an additional westbound travel lane (during peak commute periods and an on-street parking lane during off-peak hours), wider

[43] Transit Center District Plan, November 2009. Available online at: http://www.sf-planning.org/ftp/CDG/CDG_transit_center.htm#draft_plan. Accessed on January 28, 2014.

sidewalks, midblock crosswalks, on-street parking, and a two-way cycle track along the south side of the roadway.[44]

- **Harrison Street** (from Second Street to Seventh Street or Eleventh Street) would be reconfigured to allow for three westbound general travel lanes and on-street parking, with a dedicated westbound transit lane and an additional westbound travel lane during peak periods, as well as widened sidewalks.

- **Bryant Street** (from Second Street to Seventh Street) would reduce the number of general travel lanes from five to three, would provide an additional travel lane during peak commute periods (and become an on-street parking lane during off-peak periods), would provide a dedicated transit lane along the south-side curb lane during the daytime hours (and become an on-street parking lane during nighttime hours), and would include wider sidewalks.

- **Brannan Street** (from Second Street to Sixth Street) would reduce the number of general travel lanes from four to two (one in each direction), would include wider sidewalks, and would provide two, one-way cycle tracks along the north and south sides of the roadway.

- **Third Street** (from King Street to Market Street) would reduce the number of general travel lanes from five to three and would include wider sidewalks, a cycle track, an enhanced transit-only lane, and on-street loading bays.

- **Fourth Street** (from Market Street to Harrison Street) would reduce the number of general travel lanes from four to three and would include wider sidewalks, a cycle track, an enhanced transit-only lane, and on-street loading bays.

Transit Improvements

Central Subway Project—This project is under construction and will extend the Muni Metro T Third Line via subway through SoMa, Union Square, and Chinatown.

Draft Central SoMa Plan—This plan recommends new dedicated transit lanes along Third, Fourth, Folsom, Howard, Harrison, and Bryant streets to enhance transit operations.

---

[44] The draft Central SoMa Plan also proposes a second option for Folsom and Howard streets. It would convert both streets to two-way operation and would also close Essex Street between Folsom and Harrison streets. However, because this “two-way option” would result in a greater number of overall general travel lanes than the “one-way option” for these streets (which is the option described above), this memorandum assumes the implementation of the “one-way option” in order to present the most conservative analysis (i.e., fewer number of travel lanes).

Muni Forward (formerly TEP)—Muni Forward proposes the following potential changes to transit lines in the study area:

10 Sansome (formerly 10 Townsend)

- Service would be rerouted at Fourth Street south of the Caltrain Station through the Mission Bay neighborhood. From Fourth Street, the route would extend through Mission Bay to new proposed street segments on Seventh Street between Mission Bay Boulevard and Irwin Street, on Irwin Street between Seventh and 16th Streets, on 16th Street between Irwin and Connecticut Streets, and on Connecticut Street between 16th and 17th Streets. The southern terminal loop would be modified by extending service on Potrero Avenue, right on Cesar Chavez Street, right on Hampshire Street, right on 24th Street.

- On the weekends and evenings, all trips would continue to terminate at Van Ness Avenue, but transit vehicles would take a slightly different route. From Jackson Street the route would continue right on Franklin Street and right on Pacific Avenue.

- Segments proposed for elimination would be on Townsend Street between Fourth and Eighth streets, on Rhode Island Street between Eighth and 17th streets, and on 17th Street between Rhode Island and Connecticut streets. The segment on Townsend Street between Fourth and Eighth streets would be served by the rerouted 47 Van Ness and the 83X Mid-Market Express between Fourth and Eighth streets during limited hours.

11 Downtown Connector

- New 11 Downtown Connector would provide SoMa with two connections to Market Street, at the Van Ness and Montgomery Street Stations, and would provide North Beach with a direct connection to the Financial District and Montgomery Street Station.

- Southbound, the new route would run on Van Ness Avenue, Bay, Polk, North Point, and Powell streets, on Columbus Avenue, on Montgomery, Clay, Sansome, Market, Second, Harrison, Eleventh, and Mission streets, to a southern terminal on South Van Ness Avenue. Northbound (inbound), the new route would run on South Van Ness Avenue, Market, Eleventh, Folsom, Second, Market, Sutter, Sansome, and Washington streets, on Columbus Avenue, Powell, North Point, and Bay streets to the northern terminal on Van Ness Avenue.

- The proposed route in SoMa would operate on an east/west couplet on Folsom and Harrison streets.

- The southern terminal would be at the southeast corner of South Van Ness Avenue and Market Street.

- The northern terminal would be on Van Ness Avenue between Bay and North Point streets.

- The 11 Downtown Connector Service Variant would evaluate two-way operation on Folsom Street, which is consistent with the proposal in the Western SoMa Community Plan.

12 Folsom-Pacific

- This route would be discontinued. Transit service on Second Street would be provided by the proposed 11 Downtown Connector between Market and the Folsom and Harrison streets intersection. In addition, the new route would provide transit service on Folsom Street and Harrison Streets from Second to Eleventh streets, the 27 Bryant (renamed the 27 Folsom) on Folsom Street from Second to Cesar Chavez streets and the terminal loop to the 24th Street BART station, and the 10 Sansome along Pacific Avenue and Second and Sansome streets.

Under Muni Forward (formerly TEP), the frequency of the 10 Sansome would be increased from a 20-minute headway to a 6-minute headway in the a.m. and p.m. peak periods. The 12 Folsom-Pacific currently operates with a 20-minute headway at all times. The new 11 Downtown Connector would operate with a 15-minute headway at all times.

In addition, the Muni Forward proposes a transit travel time reduction proposal (TTRP.14) on Mission Street to increase transit reliability and reduce transit travel time. It would consist of transit improvements for the 14 Mission and 14L Mission Limited routes along the length of the Mission Street corridor, extending from the Ferry Building to Daly City. Three alternatives are proposed: TTRP.14 Moderate Alternative Variants 1 and 2 and TTRP.14 Expanded Alternative. Only one alternative would be implemented for the TTRP.14.

The TTRP alternatives of Muni Forward would include transit stop changes, parking and turn restrictions, lane modifications, and traffic signal and stop sign changes. In the vicinity of Second Street, the TTRP.14 Moderate Alternatives would extend to full-time the existing transit-only lane hours of 7 a.m. to 6 p.m. between Fourth and Main streets in the outbound direction and between Fourth and Beale streets in the inbound direction.

The TTRP.14 Expanded Alternative would relocate the existing side-running transit-only lanes so that they become center-running transit-only lanes from First to Fifth streets outbound and from Sixth to First streets inbound. The lanes would transition to the outbound transit-only lane back to its existing curbside configuration and would rescind the inbound transit-only lane from Seventh to Sixth streets. Then a new outbound transit-only lane would be established, extending from Eleventh to Cesar Chavez streets.

Transit Center District Plan (TCDP)—Improvements under the TCDP in the vicinity of the project site include removing one travel lane along Fremont Street, extending the transit-only lane to Howard Street, and removing on-street parking along one side of the street. Similarly, the TCDP includes removing one travel lane along Beale Street, adding a transit-only lane between Market Street and the Transbay Transit Center, and removing on-street parking along one side of the street. Additional transit-only lanes are proposed along Folsom Street, from First Street to Essex Street, along Fremont Street between Howard and Mission streets, and along Mission Street from Steuart Street to Beale Street.

Bicycle Network Improvement Projects

San Francisco Bicycle Plan—Most near-term projects analyzed in the San Francisco Bicycle Plan have been implemented and are part of the existing conditions.

Draft Central SoMa Plan—The following bicycle improvements in the vicinity of the project area are proposed under this plan:

- Upgraded bicycle facilities would be located along Folsom Street, from The Embarcadero to Eleventh Street.
- Upgraded bicycle facilities would be located along Howard Street, from Third Street to Eleventh Street.
- A new one-way cycle track would be located along Third Street, on the west side of the roadway (left-hand curb lane).
- A new one-way cycle track would be located along Fourth Street, from Market Street to Harrison Street, on the east side of the roadway (left-hand curb lane).
- New one-way cycle tracks would be located on Brannan Street, from Sixth Street to Second Street.

Transit Center District Plan—The TCDP includes the addition of bicycle lanes along Fremont, Beale, and Main streets, between Market and Folsom streets.

Pedestrian Improvement Projects

Better Streets Plan—The Better Streets Plan is a programmatic document to guide development of streetscape improvements throughout the City, and no specific projects were included in the plan.

Cumulative Construction

Impact C-TR-1: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative construction impacts on transportation and circulation. (*Less than Significant*)

The construction associated with planned and proposed projects, listed in Section 4.1, particularly the construction of the Transbay Transit Center located at First and Mission streets, would affect access, traffic operations, and pedestrian movements within the project area. As discussed under Impact TR-1 above, construction of the proposed project or its variant would be temporary and limited in duration, and these activities would be conducted in accordance with City, state, and federal requirements. Construction would be coordinated with various City departments, such as SFMTA and Public Work, through the City's Transportation Advisory Staff Committee (TASC). Participants develop coordinated plans that would address construction-related vehicle routing and pedestrian/bicycle movements adjacent to the construction area for the duration of construction. Furthermore, ADA-compliant pedestrian and vehicle access to all properties would be maintained at all times along and across Second Street during construction.

The construction manager for any other projects would be required to work with the various departments of the City to develop a detailed and coordinated traffic control plan. This would address construction vehicle routing, traffic control, and pedestrian movement adjacent to the construction area for the duration of the overlap in construction activity for these projects. Therefore, transportation impacts from the proposed project or its variant would not be cumulatively considerable, and cumulative transportation impacts from the proposed project or its variant would be ***less than significant***.

Cumulative Operations

Under the cumulative scenario without the proposed project or its variant, nine of the 29 intersections would operate at LOS D or better, as seen in Table 4.4-7 on page 4.4-42. Under cumulative plus proposed project or project variant conditions, seven intersections would continue to operate acceptably at LOS D or better during the weekday p.m. peak hour. Additionally, the operation of the South Park and Second streets intersection (#18) would improve from LOS F to LOS B under the cumulative plus project scenario due to signalization of this intersection.

Under the cumulative plus proposed project conditions and cumulative plus project variant conditions, 21 of the 29 study intersections would operate at unacceptable LOS E or F. Based on the TIS, the proposed project would contribute considerably to the cumulative impacts at the 14 intersections listed below under the cumulative plus proposed project conditions. The project variant would not cause cumulative impacts at the Townsend and Second streets intersection (#20), but it would contribute considerably to the cumulative impacts at the other 13 intersections, as follows:

1. Market and New Montgomery streets
2. Mission and New Montgomery streets
3. Howard and New Montgomery streets
4. Howard and Hawthorne streets
6. Harrison and Hawthorne streets
7. Bryant and Third streets
8. Brannan and Third streets
9. Townsend and Third streets
10. King and Third streets
16. Harrison and Second streets
17. Bryant and Second streets
20. Townsend and Second streets[45]
28. Harrison and First streets
29. Fifth Street/Bryant Street/I-80 eastbound on-ramp

A brief discussion of the proposed project or its variant impacts at all of the study area intersections is provided below. The impact discussion also includes the intersection of Howard and Hawthorne streets (#4), even though the intersection performs well at LOS D under cumulative plus proposed project or project variant conditions. This intersection would result in a project-specific significant traffic impact; hence, based on the significance criteria, it also is considered to have a significant cumulative traffic impact.

As discussed above for existing plus project conditions, under the cumulative plus project with variant, the traffic volume diverted from southbound Second Street to Brannan Street is low (69 vehicles in the cumulative condition), and the diverted traffic is expected to distribute to various routes in the study area. Because of this, the traffic operations at most intersections would be similar. Thus, the impact discussion below covers both the proposed project and its variant, and any difference in impact findings is explicitly stated.

Cumulative Traffic Impacts

Impact C-TR-2: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Market and New Montgomery streets (Intersection #1) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Market and New Montgomery streets intersection would operate at LOS F with and without the proposed project or its variant under cumulative conditions. The addition of proposed project or its variant traffic would result in 122 more vehicles at the southbound

[45] The intersection of Townsend Street/Second Street (Intersection #20) has cumulative impacts only under the cumulative plus proposed project conditions and not under the cumulative plus project variant conditions.

through critical movement along Montgomery Street, which would be 10 percent of the total southbound traffic. This 10 percent increase in project traffic would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the proposed project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impact at the Market and New Montgomery streets intersection would be ***significant and unavoidable*****.**

Impact C-TR-3: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Mission and New Montgomery streets (Intersection #2) and the intersection would continue to perform at LOS F under cumulative plus project conditions. ***(Significant and Unavoidable)***

The Mission and New Montgomery streets intersection would operate at LOS F with and without the proposed project or its variant. The addition of proposed project or its variant traffic would result in 153 more vehicles at the southbound through critical movement along New Montgomery Street, which would be 14 percent of the total southbound traffic. This 14 percent increase in project traffic would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited, due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes (can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impact at the Mission and New Montgomery streets intersection would be ***significant and unavoidable***.

Impact C-TR-4: The proposed project or project variant would cause the level of service at the intersection of Howard and New Montgomery streets (Intersection #3) to deteriorate from LOS B to LOS E under cumulative plus project conditions. *(Significant and Unavoidable)*

The Howard and New Montgomery streets intersection would operate satisfactorily at LOS B under future baseline cumulative conditions; however, implementing the proposed project or its variant would increase traffic volumes to the westbound through movement and southbound right-turning movement at this study intersection as a result of traffic diversion from Second Street. This would degrade intersection operations to LOS E (unacceptable conditions). Therefore, the proposed project or its variant would result in a cumulative traffic impact at this intersection.

At the project level, the significant traffic impact would be mitigated to a less-than-significant level (LOS D) with implementation of **Mitigation Measure M-TR-10** to increase the cycle length to 90 seconds. However, under cumulative conditions the cycle length will already be 90 seconds[46], due to anticipated future signal timing changes by the City Traffic Engineer to optimize traffic operations in the SoMa area and not as a result of the proposed project or project variant. The cumulative traffic analysis accounts for this cycle length. Therefore, deterioration from LOS B under cumulative no project conditions to LOS E under the cumulative plus project conditions would result in a significant cumulative traffic impact at the Howard and New Montgomery streets intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impact at the Howard and New Montgomery streets intersection would be ***significant and unavoidable**.*

[46] Olea, Ricardo (SFMTA, Traffic Engineer). 2015. Personal communication with Debra Dwyer, Planning Department. January 26.

Impact C-TR-5: The proposed project or project variant would cause a significant project impact at the intersection of Howard and Hawthorne streets (Intersection #4) under existing plus project conditions and would continue to cause significant impacts under cumulative plus project conditions. ***(Significant and Unavoidable)***

Under the cumulative plus project scenario, the Howard and Hawthorne streets intersection would perform at LOS D due to a combination of a lengthened 90-second traffic signal cycle (as a result of anticipated future signal timing changes to optimize traffic operations by the City's Traffic Engineer in the SoMa area and not as a result of the proposed project or project variant) and a reduction in westbound traffic volumes as a result of proposed changes implemented under the approved Transit Center District Plan (TCDP). Under the Transit Center District Plan, westbound travel lanes on Howard Street would be reduced from four lanes to two lanes between Freemont and New Montgomery streets, resulting in reduced traffic volumes. Westbound traffic volumes would be further reduced due to the planned reduction in westbound travel lanes under the draft Central SoMa Plan (which would reduce westbound Howard Street from four lanes to three between New Montgomery and Eleventh streets). However, pursuant to the Planning Department Transportation Impact Assessment Guidelines, since a significant traffic impact was identified at this intersection under the existing plus project conditions, the cumulative traffic impact at this study intersection would continue to be significant. At the project level, the significant traffic would be mitigated to a less-than-significant level (LOS D) with implementation of **Mitigation Measure M-TR-11** to increase the cycle length to 90 seconds at this intersection.

The proposed project would not change signal timing for intersections that are not along Second Street. Under cumulative plus project conditions, the cycle length at this intersection will be 90 seconds as a result of anticipated future signal timing changes City's Traffic Engineer to optimize traffic operations in the SoMa area, and this is not as a result of the proposed project or project variant. The cumulative plus project analysis accounts for the implementation of the 90-second cycle length as well as the roadway changes proposed as part of TCDP and the draft Central SoMa Plan. These include the proposed changes to Howard Street described above that would result in reduced traffic volumes on Howard Street. However, the draft Central SoMa Plan has not yet been adopted and is undergoing environmental review.[47] In the event that the proposed Central SoMa Plan roadway changes are not made, then traffic volumes may not be reduced to as great an extent. Therefore, the impact would remain significant because of this uncertainty regarding traffic volumes.

[47] San Francisco Planning Department. 2014. NOP and IS for the draft Central SoMa Plan. Available online: http://www.sf-planning.org/index.aspx?page=1828 under case no 2011.1356E. Accessed June 19, 2014. These documents may be reviewed at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA as part of Case No. 2011.1356E.

Mitigation Measure M-TR-11 was identified at the project level, and, if applied, would increase the cycle length from 60 to 90 seconds to eliminate the proposed project's or its variant's significant traffic impact. However, as described above, increasing the cycle length to 90 seconds would be part of the cumulative no project conditions as well as cumulative plus proposed project or project variant conditions and would not be available as mitigation. In addition, since this intersection was identified as having a significant project-level impact, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no other feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. While curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes), in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impacts at the Howard and Hawthorne streets intersection would be ***significant and unavoidable***.

Impact C-TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS C to LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Harrison and Hawthorne streets intersection would operate satisfactorily at LOS C under cumulative conditions; however, implementing the proposed project or its variant would increase traffic volumes to the eastbound through movement by 442 vehicles at this study intersection and would degrade conditions to LOS F (unacceptable conditions). Therefore, the proposed project or its variant would result in a cumulative traffic impact. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at this intersection would be ***significant and unavoidable***.

Impact C-TR-7: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Third streets (Intersection #7) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Bryant and Third streets intersection would operate at unacceptable LOS F with and without the proposed project or its variant. The addition of project traffic would result in 336 more vehicles at the northbound critical movement along Third Street, which would be 15 percent of the total northbound traffic. This 15 percent increase in project traffic would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited, due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impacts at the Bryant and Third streets intersection would be ***significant and unavoidable***.

Impact C-TR-8: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Brannan and Third streets (Intersection #8) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Brannan and Third streets intersection would continue to operate at LOS F under cumulative conditions with and without the proposed project or its variant. The addition of proposed project or its variant traffic would result in 383 more vehicles at the critical northbound shared left-turning/right-through lane groups along Third Street, which would be 16 percent of the total northbound traffic. A 16 percent increase in project traffic in this critical movement would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Brannan and Thirds streets intersection would be ***significant and unavoidable***.

Impact C-TR-9: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of the Townsend and Third streets (Intersection #9) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Townsend and Third streets intersection would continue to operate at LOS F under cumulative conditions with and without the proposed project or its variant. The addition of proposed project or its variant traffic would result in 189 more vehicles at the eastbound left-turning movement along Townsend Street, which would be 51 percent of the total traffic eastbound. The proposed project or its variant would also result in 162 more vehicles at the northbound shared left-through/right-turning movement along Third Street, which would be 6 percent of the total traffic northbound. Both the 51 percent eastbound and 6 percent northbound increases in project traffic would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Townsend and Third streets intersection would be ***significant and unavoidable***.

Impact C-TR-10: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The King and Third streets intersection would operate at LOS F under cumulative conditions with and without the proposed project or its variant. The addition of proposed project or its variant traffic would result in 152 more vehicles to the eastbound left-turn critical movement, which would be 15 percent of the total traffic eastbound. This 15 percent increase in project traffic would be greater than the 5 percent threshold; thus, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impacts at the King and Third streets intersection would be ***significant and unavoidable***.

Impact C-TR-11: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and Second streets (Intersection #16) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Harrison and Second streets intersection would operate at LOS F under cumulative conditions with and without the proposed project or its variant. The proposed project or its variant would add 563 vehicles to the eastbound shared left-through/right-turn lane groups along Harrison Street, and the proposed project or its variant would increase the intersection v/c ratio by 31 percent. This would exceed the City threshold of 10 percent increase in intersection v/c ratio. Therefore, the proposed project or its variant would contribute considerably to cumulative traffic impacts at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited, due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Harrison and Second streets intersection would be ***significant and unavoidable***.

Impact C-TR-12: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17) and the intersection would continue to perform at LOS F under cumulative plus project conditions. ***(Significant and Unavoidable)***

The Bryant and Second streets intersection would continue to operate at LOS F under cumulative conditions with and without the proposed project or its variant. The proposed project or its variant would reduce lane capacity, given the loss of one eastbound left-turn lane and a through lane in the northbound and southbound directions. In spite of signal timing changes and optimization, the v/c ratio would increase by 13 percent, which would exceed the City threshold of 10 percent. Therefore, the proposed project or its variant would contribute considerably to cumulative traffic impacts at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Bryant and Second streets intersection would be ***significant and unavoidable***.

Impact C-TR-13: The proposed project or project variant would cause the level of service at the intersection of Townsend and Second streets (Intersection #20) to deteriorate from LOS E to LOS F under cumulative plus project conditions. ***(Significant and Unavoidable)***

The Townsend and Second streets intersection would operate unacceptably at LOS E under cumulative conditions without the proposed project or its variant. With implementation of the proposed project or its variant, the LOS conditions would degrade further to LOS F. This is because there would be a protected northbound right-turn phase at this intersection, which would take away time from other critical movements. Because the proposed project or its variant would further degrade LOS from E to F, it would result in a cumulative traffic impact at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is typically limited, due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Townsend and Second streets intersection would be ***significant and unavoidable***.

Impact C-TR-14: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Harrison and First streets intersection would operate at LOS F under cumulative conditions with and without the proposed project or its variant. The addition of proposed project or its variant traffic would result in 158 more vehicles to the southbound right-turning critical movement, which would be 11 percent of the total traffic southbound. This 11 percent increase in project traffic would be greater than the 5 percent threshold. Therefore, the proposed project or its variant would contribute considerably to cumulative traffic impacts at this intersection. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, cumulative traffic impacts at the Harrison and First streets intersection would be ***significant and unavoidable***.

Impact C-TR-15: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant Street/Fifth Street/I-80 Eastbound On-Ramp (Intersection #29) and the intersection would continue to perform at LOS F under cumulative plus project conditions. *(Significant and Unavoidable)*

The Bryant Street/Fifth Street/I-80 eastbound on-ramp intersection would continue to operate at LOS F under cumulative conditions with and without the proposed project or its variant. The proposed project or its variant would result in an impact at this intersection under existing plus project conditions. Therefore, the proposed project or its variant would contribute considerably to cumulative traffic impacts. At this intersection, no feasible mitigation measure has been identified. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way such as to provide facilities for pedestrians, transit, or bicycles as proposed by the project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); however, in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the cumulative traffic impacts at the Bryant Street/Fifth Street/I-80 Eastbound On-Ramp intersection would be ***significant and unavoidable***.

Impact C-TR-16: The proposed project, in combination with past, present, and reasonably foreseeable projects, would not contribute cumulatively considerable traffic to the unsatisfactory operation at eight intersections under cumulative plus project conditions, even though these intersections would continue to perform at LOS F under cumulative plus project conditions. *(Less than Significant)*

The proposed project would not contribute considerably to the unsatisfactory operation at the following intersections:

5. Folsom and Hawthorne streets
14. Howard and Second streets
15. Folsom and Second streets
21. King and Second streets
22. Folsom and Essex streets
23. Harrison and Essex streets
26. Howard and First streets
27. Folsom and First streets

The **Folsom and Hawthorne streets intersection (#5)** would operate at LOS F under cumulative conditions with and without the proposed project. A significant traffic impact was identified at this intersection under the existing plus project conditions. However, at the proposed project level the traffic impact would be mitigated to a less-than-significant level by introducing a southbound left-turn pocket on Hawthorne Street.

Specifically, **Mitigation Measure M-TR-12** was identified at the proposed project level to reduce the traffic impact at this intersection to LOS D, less-than-significant.

Since the Folsom and Hawthorne streets intersection (#5) would operate at LOS F under cumulative conditions with and without the proposed project, the cumulative plus project results were reviewed to understand the project contribution to the intersection’s poor operation. The proposed project would result in a decrease of 47 vehicles to the critical eastbound through movement along Folsom Street (due to diversions off Second Street to

Third Street), which would not be a cumulatively considerable contribution to the poor intersection operations under cumulative conditions.

The cumulative analysis assumes the implementation of roadway changes proposed under the draft Central SoMa Plan, which has not been adopted and is undergoing environmental review. The Folsom and Hawthorne streets intersection has one shared through-left lane group and one through-lane in the southbound direction under the cumulative conditions as part of the TCDP and the draft Central SoMa plans. Therefore, consideration was given to 2040 cumulative plus project conditions without the draft Central SoMa Plan changes. Even without the implementation of the draft Central SoMa Plan, the Folsom and Hawthorne streets intersection overall would have the same LOS as the 2040 cumulative (no project) p.m. peak (LOS F), which would include the proposed project mitigation measure of a left-turn lane. Therefore, the proposed project's contribution to the critical movement without the changes proposed under the draft Central SoMa was assessed. As stated, the proposed project would divert 47 vehicles from the southbound critical lane group volume, which would not exceed the 5 percent contribution to the critical movement. Therefore, the proposed project contribution would not be cumulatively considerable, and cumulative traffic impacts at the Folsom and Hawthorne streets intersection would be ***less than significant*** and no mitigation would be required.

The **Howard and Second streets intersection (#14)** would continue to operate at LOS F under cumulative conditions with and without the proposed project. The proposed project would result in a decrease of 54 vehicles to the critical westbound shared left-through-right turning lane group along Howard Street due to diversions off Second Street to Third Street. The v/c ratio would improve from 1.20 under 2040 cumulative conditions without the proposed project to 1.04 under 2040 cumulative plus project. The overall average delay and v/c ratio would be lower than under cumulative (no project) conditions. Therefore, the proposed project contribution would not be cumulatively considerable at the intersection of Howard and Second streets, and cumulative traffic impacts would be ***less than significant***.

The **Folsom and Second streets intersection (#15)** would operate at LOS F under cumulative conditions with and without the proposed project. The proposed project would result in an increase of 72 vehicles to the eastbound shared through-right lane groups along Folsom Street. The intersection v/c ratio would increase from 1.62 to 1.72. This would represent a growth in v/c ratio of 6 percent, which would not exceed the significance threshold of 10 percent, as discussed under significance criteria section above. Therefore, the proposed project contribution would not be cumulatively considerable at the Folsom and Second streets intersection, and cumulative impacts would be ***less than significant***.

The **King and Second streets intersection (#21)** would continue to operate at LOS F under cumulative conditions with and without the proposed project. The proposed project would result in the reduction of one vehicle to the westbound through movement along King Street. In addition, the proposed project would result in a decrease of 152 vehicles to the eastbound left-turning movement along King Street (due to a diversion off Second Street to Third Street). The v/c ratio would improve from 1.03 under 2040 cumulative conditions without the proposed project to 0.90 under 2040 cumulative condition plus the proposed project. The overall average delay and v/c ratio would be lower than under cumulative (no project) conditions. Therefore, the proposed project contribution would not be cumulatively considerable at the King and Second streets intersection, and cumulative impacts would be ***less than significant***.

The **Folsom and Essex streets intersection (#22)** would continue to operate at LOS F under cumulative conditions with and without the proposed project. The proposed project would result in a decrease of 177 vehicles to the eastbound right-turning critical movement along Folsom Street (due to traffic diversion off Second Street onto Third Street). This would not exceed the threshold of increasing the traffic volume of the critical movement by five percent or more. The overall average delay and v/c ratio would be lower than under cumulative (no project) conditions. Therefore, the proposed project contribution would not be cumulatively considerable at the Folsom and Essex streets intersection, and cumulative impacts would be ***less than significant***.

The **Harrison and Essex streets intersection (#23)** would operate at unacceptable LOS F under cumulative conditions with and without the proposed project. The proposed project would result in a reduction of 177 vehicles to the southbound through movement along Essex Street, and the proposed project would result in a reduction of 92 vehicles to the eastbound right-turning movement along Harrison Street. Due to traffic diversion from Second Street with implementation of the proposed project, the overall average delay and v/c ratio would be lower than under cumulative (no project) conditions. Therefore, the proposed project contribution would not be cumulatively considerable at the Harrison and Essex intersection, and cumulative impacts would be ***less than significant***.

The **Howard and First streets intersection (#26)** and the **Folsom and First streets Intersection (#27)** would continue to operate at LOS F under cumulative conditions with and without the proposed project. However, the proposed project would not add any vehicles to the critical movements at either of these intersections. Therefore, the project contribution would not be cumulatively considerable at either intersection, and cumulative impacts at the Howard and First streets and Folsom and First streets intersections would be ***less than significant***.

Impact C-TR-17: The project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute cumulatively considerable traffic to the unsatisfactory operation at nine intersections under cumulative plus project conditions, even though these intersections would continue to perform at LOS E or LOS F under cumulative plus project conditions. *(Less than Significant)*

The project variant would have similar less than significant cumulative traffic impacts at the eight intersections described above for the proposed project above under Impact C-TR-16. In addition, unlike the proposed project, the project variant would not contribute considerably to the significant cumulative impacts at one additional intersection – Townsend and Second streets (#20). Under the cumulative plus project variant condition, the Townsend and Second streets intersection would continue to operate at LOS E with and without the project variant. The project variant would result in a decrease of 162 vehicles to the northbound through movement along Second Street and 189 vehicles to the eastbound left movement along Townsend Street. When compared to 2040 cumulative conditions, there would be a reduction in the right-turn vehicles at Intersection #20 because the project variant would allow left-turn movements at this intersection. Although these changes cause the v/c to increase from 1.20 to 1.29, or by 8 percent, it would not exceed the City threshold of 10 percent. Therefore, the project variant contribution would not be cumulatively considerable, and the cumulative impacts as a result of the project variant at the Townsend and Second streets intersection would be ***less than significant***.

Impact C-TR-18: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not cause the levels of service at 7 out of the 29 intersections to deteriorate to LOS E or F under cumulative plus project conditions and the intersections would perform at acceptable LOS conditions of LOS D or better. *(Less than Significant)*

Table 4.4-7 shows that 7 of the 29 intersections would continue to operate acceptably under the cumulative plus project conditions, as follows:

11. Second and Market streets
12. Second and Mission streets
13. Second and Minna streets
18. South Park and Second streets
19. Second and Brannan streets
24. First and Market streets
25. First and Mission streets

Vehicle traffic added to these intersections due to the proposed project or its variant under cumulative conditions would not deteriorate cumulative plus project or project variant conditions to unacceptable levels. Therefore, the proposed project or its variant contribution would not result in a significant cumulative impact, and cumulative traffic impacts at these intersections would be ***less than significant***.

Cumulative Transit Impacts

Impact C-TR-19: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not result in cumulative transit impacts. *(Less than Significant)*

Proposed project. In 2040, the proposed project would reduce Muni Route 10 transit delay by approximately 5 minutes and 38 seconds in the inbound direction and by 44 seconds in the outbound direction. The sum of the delay in both directions for Muni Route 10 would be reduced by 6 minutes and 21 seconds. The proposed project would decrease Muni Route 12/11 travel time by approximately 1 minute and 1 second in the inbound direction, while decreasing the delay by approximately 2 minutes and 58 seconds in the outbound direction. The sum of the delay in both directions for Muni Route 12/11 would thus decrease by 4 minutes.

Project variant. The cumulative plus project variant would have similar transit impacts. The variant would reduce Muni Route 10 delays by approximately 5 minutes and 25 seconds in the inbound direction and 19 seconds in the outbound direction. The sum of the delay in both directions for Muni Route 10 would be reduced by 5 minutes and 44 seconds. The variant would decrease Muni Route 12/11 travel time by approximately 1 minute and 4 seconds inbound, while decreasing the delay by approximately 2 minutes and 37 seconds outbound. The sum of the delay in both directions for Muni Route 12/11 would thus be reduced by 3 minutes and 41 seconds.

The transit travel time for both Muni Routes 10 and 12/11 would decrease in both directions due to the proposed project or the project variant, thus improving transit service and resulting in a ***less-than-significant*** cumulative impact.

The proposed project or its variant's contribution to cumulative impacts on transit travel time for other transit routes along adjacent streets would be associated with vehicles diverted to these streets. This could occur on First, Third, Mission, Howard, and Folsom streets. However, this contribution would be negligible and, therefore, cumulative plus project or its variant impacts on transit travel time for transit routes along adjacent streets would be **less than significant**.

Cumulative Pedestrian Impacts

Impact C-TR-20: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative pedestrian impacts associated with overcrowding on public sidewalks, nor to hazardous conditions for pedestrians, or interference with pedestrian circulation and safety in the project vicinity. *(Less than Significant)*

As an infrastructure project, the proposed project or its variant would not generate pedestrian trips to the project vicinity. The proposed project or its variant would improve pedestrian circulation in and around the project site by implementing streetscape designs to create a more comfortable walking environment and by widening sidewalks between Harrison and Townsend streets. It would add high-visibility crosswalks to increase pedestrian safety along Second Street and connectivity to the surrounding pedestrian network. While there would be a general increase in vehicle traffic through 2040 cumulative conditions, the proposed project or its variant would include intersection improvements, such as signal phasing modification, one new traffic signal at South Park Street, the elimination of an uncontrolled dual right-turn lane, raised crosswalks at the alleys, new curb ramps, and bulb-outs and streetscape improvements, such as street trees, street furniture, and pedestrian-scale lighting. This would improve pedestrian conditions and would not create potentially hazardous conditions for pedestrians or otherwise interfere with pedestrian accessibility to the site and adjoining areas.

At intersections along the Second Street corridor, the bicycle and pedestrian movements would always be concurrent. Because of this, an increase in bicycle traffic along Second Street as a result of the proposed project or its variant may also increase the conflicts between bicycles turning right and pedestrians walking straight across the intersection in the crosswalk (to the right of the cycle track). However, bicyclists turning right along the intersections with Second Street would be required to yield to pedestrians, as is the current condition. Therefore, such conflicts are not expected to be frequent. Bicycle and pedestrian conflicts could also occur at the marked accessible path across the bikeway for pedestrians to cross between the sidewalk and the bus boarding island. Pedestrian crossing signs would be provided at these locations to minimize these conflicts.

Therefore, for the reasons discussed above, the proposed project or its variant, in combination with past, present, and reasonably foreseeable transportation and land use developments in San Francisco, would result in ***less-than-significant*** cumulative pedestrian impacts.

Cumulative Bicycle Impacts

Impact C-TR-21: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute to cumulative impacts associated with potential hazardous conditions for bicyclists or interference with bicycle accessibility. ***(Less than Significant)***

The proposed project or its variant includes a combination of raised cycle tracks, bicycle lanes, and sharrows, as well as modifications to signal phasing to accommodate vehicular, bicycle, and pedestrian flow along Second Street. Although the proposed project or its variant could increase the amount of bicycling activity along the Second Street corridor, the proposed project or its variant would provide cycle tracks, bicycle lanes, and dedicated bicycle facilities for most of the corridor, which would create safer conditions for cycling along Second Street. The proposed project or its variant is designed to reduce potential conflicts between moving vehicles and bicyclists along Second Street. The project would continue to provide adequate access to adjacent land uses, bicycle parking, and other bicycle routes that connect to Second Street. Additionally, the proposed project or its variant, in combination with adjacent bicycle facilities, would be able to accommodate potential increases in bicycling trips over time. Such increases would not reach a level that would create potentially hazardous conditions for bicycles.

As described above, under cumulative conditions, there would be a projected increase in vehicles at intersections along Second Street due to regional background growth and anticipated development, which may increase vehicle-bicycle conflicts at intersections in the study area. However, the proposed project or its variant would provide right-turn signal phases time-separated from crossing phases for bicyclists and pedestrians. This change would reduce bicycle-vehicle conflicts along Second Street by giving right-turning drivers an exclusive green phase separate from the bicycle and pedestrian phase. Although there would be a general increase in vehicle traffic that would be expected through the 2040 cumulative conditions, the proposed project or its variant would not create potentially hazardous conditions for bicycles. Nor would it otherwise interfere with bicycle accessibility to land uses along Second Street and adjoining areas, nor substantially affect existing or future bicycle facilities. Therefore, the proposed project or its variant contribution would not be cumulatively considerable, and cumulative bicycle impacts would be ***less than significant***.

Cumulative Emergency Vehicle Access Impacts

Impact C-TR-22: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute considerably to cumulative impacts on emergency vehicle access. *(Less than Significant)*

As discussed under Impact TR-19, the proposed roadway treatments associated with the proposed project or its variant would continue to accommodate fire trucks, ambulances, and police cars and would allow for safe maneuvering of vehicles to allow the passage of emergency vehicles along the Second Street corridor. Future streetscape proposals for other streets in the vicinity will also need to address emergency vehicle response times for those streets, as part of the environmental review and approval for those projects. This would ensure that the existing network of downtown streets that accommodate emergency vehicles would be maintained. Therefore, the proposed project or its variant, in combination with past, present, and future cumulative projects in the area would continue to support emergency response vehicles. The proposed project or its variant contribution to impacts on emergency vehicle access would not be cumulatively considerable, and cumulative impacts on emergency vehicle access would be ***less than significant***.

Cumulative Loading Impacts

Impact C-TR-23: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not contribute significantly to cumulative passenger loading impacts associated with potential hazardous conditions or significant delays affecting traffic, transit, bicycles or pedestrians. *(Less than Significant)*

The loss of passenger loading and unloading zones anywhere in the City may be an inconvenience, and passengers may need to walk farther to access their destination. However, these circumstances would not create potentially hazardous conditions or significant delays to traffic, transit vehicles, pedestrians, or bicyclists and is not considered a significant project-specific impact. The demand for passenger loading zones may increase over time, due to the land use development and increased density anticipated within the City. However, as previously discussed, the proposed project or its variant would not result in substantial loss of passenger loading zones or a significant project-specific impact. Passenger loading zones are white zones for which permits must be renewed every 2 years at the discretion of SFMTA.[48] Additionally, some of these passengers may shift to using bicycles and reduce demand. Thus, the reduction in on-street passenger loading zones would not be substantial; therefore, in combination with past, present, and reasonably

[48] SFMTA. 2014. New Color Curb. Available online at: http://www.sfmta.com/services/streets-sidewalks/installation-requests/new-color-curb. Accessed on November 19, 2014.

foreseeable developments in San Francisco, the proposed project or its variant would result in ***less-than-significant*** cumulative passenger loading impacts.

Impact C-TR-24: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would contribute considerably to cumulative impacts on commercial loading along the Second Street corridor. *(Significant and Unavoidable with mitigation)*

The proposed project or its variant would result in a project-specific significant and unavoidable impact for commercial loading under existing plus project conditions along the Second Street corridor. Therefore, the proposed project or its variant would contribute considerably to cumulative impacts on commercial loading. Implementation of **Mitigation Measure M-TR-22**, could reduce the impacts on commercial loading. **Mitigation Measure M-TR-22** requires that whenever feasible, commercial loading stalls proposed for removal would be relocated within 250 feet of the existing location. SFMTA has included replacement of commercial loading stalls along the Second Street corridor, where possible, in the project description. However, during the engineering-design phase, SFMTA would consider any additional potential possibilities to replace commercial loading stalls in situations where loading stalls may be removed. For the reasons above, cumulative impact on commercial loading along the corridor would be ***significant and unavoidable with mitigation***.

> **Mitigation Measure M-TR-22: Provision of Replacement Commercial Loading Spaces**
>
> Whenever feasible, commercial loading stalls proposed for removal would be relocated within 250 feet of the existing location.

Cumulative Parking Impacts

Impact C-TR-25: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative parking impacts. *(Less than Significant)*

The proposed project or its variant would reduce on-street parking along Second Street and could result in drivers parking farther from the street. The reduction in on-street parking as a result of the project would not be considered substantial in downtown San Francisco, where a supply of off-street parking is available and where there are multiple options for alternative transportation. In addition, the proposed project or its variant would improve conditions for alternative transportation modes, such as transit, bicycles, and walking.

The transportation analysis accounts for potential secondary effects, such as drivers circling and looking for a parking space in areas of limited parking supply. It does this by assuming that all drivers would attempt to find parking at or near the project site and then seek parking farther away if convenient parking is unavailable. The secondary effects of drivers searching for parking is typically offset by a reduction in vehicle trips due to others who are aware of constrained parking conditions in a given area and thus choose to reach their destination by other modes, such as walking, biking, or taking transit or taxis. Therefore, any secondary environmental impacts that may result from a shortfall in parking in the vicinity of the proposed project or its variant would be minor, and the traffic assignments used in the transportation analysis, as well as in the associated noise, air quality, and pedestrian safety analyses, would reasonably address potential secondary effects.

Therefore, the proposed project or its variant's contribution to cumulative parking impacts would not be cumulatively considerable. In combination with past, present, and reasonably foreseeable developments in San Francisco, the proposed project or its variant would result in ***less-than-significant*** cumulative parking impacts.

Cumulative Game Day Conditions

Impact C-TR-26: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would result in a significant cumulative traffic impact under game day conditions. *(Significant and Unavoidable)*

As discussed under Impact TR-15, traffic conditions during weekday games at AT&T Park are much more congested than under regular conditions. With the implementation of the proposed project or its variant, reducing right-turn capacity from northbound Second Street to Harrison and Bryant streets would cause vehicles trying to access the Bay Bridge to stay on Third Street and access the freeway or divert to the Fifth Street on-ramp. This change in traffic pattern would further exacerbate the significant impacts experienced under the proposed project's or project variant's conditions during the p.m. peak hour at these 11 study intersections.

1. Market and New Montgomery streets
2. Mission and New Montgomery streets
3. Howard and New Montgomery streets
4. Howard and Hawthorne streets
5. Folsom and Hawthorne streets
6. Harrison and Hawthorne streets
10. King and Third streets
16. Harrison and Second streets
17. Bryant and Second streets
28. Harrison and First streets
29. Fifth Street/Bryant Street/I-80 eastbound on-ramp

Significant project level traffic impacts could be mitigated to less-than-significant levels at three intersections by implementing Mitigation Measures M-TR-10, M-TR-11, and M-TR-12 (#3 Howard and New Montgomery Streets, #4 Howard and Hawthorne Streets, and #5 Folsom and Hawthorne streets). However, for the remaining eight intersections, which would operate at LOS E or LOS F under the proposed project or its variant, no feasible mitigation measures have been identified, so the identified traffic impacts at these eight intersections during game day conditions would remain significant and unavoidable. Under cumulative plus proposed project conditions, significant and unavoidable cumulative traffic impacts have been identified at the 14 intersections listed below. The project variant would not cause significant cumulative traffic impacts at the Townsend and Second streets intersection (#20), but it would contribute considerably to the significant cumulative impacts at the other 13 intersections.

1. Market and New Montgomery streets
2. Mission and New Montgomery streets
3. Howard and New Montgomery streets
4. Howard and Hawthorne streets
6. Harrison and Hawthorne streets
7. Bryant and Third streets
8. Brannan and Third streets
9. Townsend and Third streets
10. King and Third streets
16. Harrison and Second streets
17. Bryant and Second streets
20. Townsend and Second streets[49]
28. Harrison and First streets
29. Fifth Street/Bryant Street/I-80 eastbound on-ramp

No feasible mitigation measures have been identified for the reasons articulated in the discussions under impacts C-TR-2 through C-TR-19. Traffic conditions in the project area during weekday games at AT&T Park are much more congested than under regular conditions. With the implementation of the proposed project or its variant, reducing right-turn capacity from northbound Second Street to Harrison and Bryant streets would cause vehicles trying to access the Bay Bridge to stay on Third Street and access the freeway or divert to the Fifth Street on-ramp. This change in traffic pattern would further exacerbate the significant cumulative traffic impacts experienced under proposed project or project variant conditions during the p.m. peak hour at 14 study intersections listed above, 13 for the project variant. Therefore, the identified cumulative traffic impact at these 14 intersections under the proposed project and game day scenario or 13 intersections under the project variant and game day scenario would remain ***significant and unavoidable***.

Impact C-TR-27: The proposed project or the project variant, in combination with past, present, and reasonably foreseeable projects, would not result in significant cumulative impacts with respect to transit, pedestrians, bicyclists, or emergency vehicle access during game day conditions. (*Less than Significant*)

The proposed project or its variant would improve transit, bicycle, and pedestrians facilities along the Second Street corridor between Market and King streets. As described under Impacts TR-16 through TR-20, TR-23, C-TR-19 through C-TR-23, and C-TR-25, the

[49] The intersection of Townsend Street/Second Street (Intersection #20) has cumulative impacts only under the cumulative plus proposed project conditions and not under the cumulative plus project variant conditions.

proposed project or its variant would result in less than significant impacts related to transit, bicycles, pedestrians, and emergency vehicle access under both the existing plus proposed project or project variant or cumulative plus proposed project or project variant conditions. Therefore, under game day conditions at either a project or cumulative level, the improvements implemented under the proposed project or its variant would facilitate travel to and from the ballpark by other modes including transit, bicycle, and pedestrians. In particular, the proposed project or its variant would improve pedestrian and bicycle safety and result in greater transit reliability. Under the proposed project or project variant and game day conditions, the same conditions for emergency vehicle access would be maintained as described under Impact TR-20.

During game day conditions, as described on pp. 4.4-24 through 4.4-27 of this EIR, a mitigation measure in the San Francisco Giants Ballpark at China Basin EIR specifies that the Giants and the City are responsible for developing a Transportation Management Plan (TMP) to address the congestion and delay following a ballgame. The TMP is updated regularly based on changing circulation conditions in the ballpark vicinity to manage circulation to and from AT&T Park so that traffic flows have as little impact as possible on the affected community. Under the proposed project or project variant and game day conditions, the same conditions for emergency vehicle access would be maintained as described above.

For these reasons, the cumulative impact under game day conditions related to transit, bicycles, pedestrians, and emergency vehicle access would be ***less than significant***.

4.5 NOISE AND VIBRATION

4.5.1 Introduction

This section supplements the analysis of the Bicycle Plan EIR (pp. V-C-1 to C-V-8) of the potential noise impacts from implementing the proposed project or the project variant. The proposed project includes more excavation and construction activities than Project 2-1 (three options) analyzed in the Bicycle Plan EIR. This is due to the inclusion of additional streetscape elements, the repair and replacement of the sewer system, and the undergrounding of overhead utilities. Therefore, this supplemental analysis addresses the temporary noise and vibration from construction activities, including the greater amount of excavation. The analysis also addresses operational noise impacts based on the transportation analysis in the Transportation Impact Study prepared for the proposed project.[1]

As for the Second Street proposals in the Bicycle Plan EIR, once constructed, the proposed project would not have any ongoing operational vibration impacts. It would not change the number of buses operating along Second Street. Further, operations of the curb ramps, the overhead utilities that would be placed underground, transit bulbs, bus boarding islands, and other similar structures would not entail the use of fans, transformers, or other electromechanical equipment that typically produce stationary source operational vibration. Therefore, the proposed project would not have an operational vibration impact, and this topic is not discussed further in this analysis.

4.5.2 Environmental Setting

NOISE BACKGROUND

Noise is generally defined as loud, unpleasant, unexpected, or undesired sound that is typically associated with human activity and that interferes with or disrupts normal activities. Although prolonged exposure to high noise levels has been demonstrated to cause hearing loss, the principal objection to environmental noise is annoyance.

A single descriptor called the equivalent sound level (L_{eq}) may be used to describe sound that is changing in level. L_{eq} is the energy-mean dBA during a measured time interval. It is the equivalent constant sound level that would have to be produced by a given source to equal the acoustic energy contained in the fluctuating sound level measured.

---

1 CHS Consulting Group. 2014. *Second Street Improvement Project – Final Transportation Impact Study,* prepared for the City and County of San Francisco Planning Department, Environmental Planning Division, July 7, 2014. This report is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

The day-night average sound level (L_{dn} or DNL) is derived from hourly daytime and nighttime sound pressure level, adding a 10 dB penalty to hourly sound levels from 10 p.m. to 7 a.m. The L_{dn} value is typically used to define acceptable land use compatibility with respect to noise. Because of the time-of-day penalties associated with this descriptor, the L_{eq} for a continuously operating sound source during a 24-hour period will be numerically less than the corresponding calculated L_{dn} value.

VIBRATION BACKGROUND

Ground-borne vibration propagates from a source, through the ground via surface waves, to adjacent buildings. The frequency of a vibrating object describes how rapidly it is oscillating, measured in Hertz (Hz). Most environmental vibrations consist of a composite, or spectrum, of many frequencies. These vibrations generally are classified as broadband or random vibrations. The normal frequency range of most ground-borne vibration, which can be felt, generally starts from a low frequency of less than 1 Hz to a high of about 200 Hz. Vibration information for this SEIR has been described in terms of the peak particle velocity (PPV) measured in inches per second (in/sec).

Human sensitivity to vibration varies by frequency and by receiver. Generally people are more sensitive to low-frequency vibration. Human annoyance also is related to the number and duration of events: the more events or the greater the duration, the more annoying they become.

EXISTING CONDITIONS

Ambient Noise Levels

Ambient noise levels in the vicinity of the project area are typical of noise levels throughout San Francisco. These noise levels are dominated by vehicular traffic, including cars, trucks, Muni buses and streetcars, and emergency vehicles. In addition, continuous operation of electromechanical equipment, such as air handling units, fans, chillers, pumps, generators, and transformers, can contribute to ambient noise levels in the urban environment. Short-term or impulsive noises, such as beeping back-up alarms and car door slams, may have little contribution to overall 24-hour ambient noise levels, but their occurrences can annoy or disturb the sleep of nearby residents.

The San Francisco Department of Public Health (DPH) mapped ambient noise levels from transportation sources in San Francisco. DPH based its mapping on modeled baseline traffic volumes derived from the San Francisco County Transportation Authority travel demand model. The Background Noise Levels – 2009 map of the San Francisco General Plan shows that the noise levels in the vicinity of the project are above 65 dBA L_{dn}. It also shows that along some of the streets with lower traffic volumes, the sound levels typically range between 60 dBA and 65 dBA L_{dn}.

Existing Ground-Borne Vibration

Typical sources of ground-borne vibration in San Francisco are large-scale construction projects that involve pile driving or underground tunneling and Muni Metro's light rail vehicles and historic streetcars. Vibration is also caused by transit vehicles in the subway under Market Street, including Muni Metro light rail vehicles and BART trains. Because rubber tires provide vibration isolation, rubber tire vehicles, such as Muni buses, trucks, and automobiles, rarely create substantial ground-borne vibration effects, unless there is a discontinuity or bump in the road.[2]

Sensitive Receptors

Sensitive noise receptors are people who are more susceptible to the effects of noise than others, such as the elderly and children. Therefore, sensitive receptors are generally considered to include people in hospitals, nursing homes, senior citizen centers, schools, churches, libraries, and residences, including hotels. Sensitive vibration receptors include structures (especially older masonry structures), people (especially residents, the elderly in senior citizen centers and nursing homes, and sick people in nursing homes and hospitals), and vibration-sensitive equipment (such as scientific or medical lab equipment). These types of land uses and structures are present throughout the City.

The project construction could affect sensitive receptors along Second Street. After the project is completed, people who currently drive on Second Street may choose to travel on other streets in the project vicinity.

4.5.3 Regulatory Framework

FEDERAL

US Environmental Protection Agency

The federal Noise Control Act of 1972 addressed the issue of noise as a threat to human health and welfare, particularly in urban areas. In response to the act, the United States Environmental Protection Agency (US EPA) published the Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate

[2] FTA. 2006. Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

Margin of Safety.[3] According to these recommendations and under ideal conditions, the yearly average L_{eq} should not exceed 55 dBA outdoors and 45 dBA indoors in noise-sensitive areas, such as residential areas. The US EPA identified an increase of 5 dBA as an adequate margin of safety—relative to a baseline noise exposure level of 55 dBA L_{dn}—before adverse community reaction would noticeably increase.

The US EPA does not promote these recommendations as universal standards or regulatory goals with mandatory applicability to all communities; instead, they are promoted as advisory exposure levels below which there would be no reason to suspect risk from any of the identified health or welfare effects of noise.

Federal Transit Administration

In its Transit Noise Impact and Vibration Assessment (FTA [Federal Transit Administration] Guidelines),[4] the FTA developed a method and set of impact significance criteria. It uses these criteria to evaluate noise impacts at noise-sensitive receivers (e.g., residences) from passenger cars, trucks, buses, and trains. The FTA incremental noise impact criteria are based on the aforementioned US EPA recommended levels and studies of community annoyance from transportation noise. Starting from the US EPA's definition of minimal noise impact as a 5 dBA change from an established protective ambient level of 55 dBA, the FTA extended the US EPA's incremental impact criteria to higher baseline ambient levels. As ambient levels increase, smaller increments of noise are recommended to limit community annoyance; in areas with high ambient noise levels, it takes a smaller increase in noise to attain the same percentage increase in highly annoyed people as a larger increase in noise in areas with lower baseline ambient noise level.

STATE

Governor's Office of Planning and Research

The Governor's Office of Planning and Research General Plan Guidelines 2003 (GP Guidelines) promotes the use of L_{dn} or CNEL for evaluating the compatibility of various land uses with respect to their noise exposure. The GP Guidelines provide ranges of community noise exposure for specific types of land use, as follows:

---

[3] US EPA. 1974. Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety. March. Available online at: http://www.nonoise.org/library/levels74/levels74.htm. Accessed on February 6, 2015.

[4] FTA. 2006. Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

- Normally acceptable—This implies that the interior noise levels would be acceptable to the occupant without the need for any special structural acoustic treatment.
- Conditionally acceptable—This indicates that new construction or development should be undertaken only after a detailed analysis of the noise reduction requirements has been made and needed noise insulation features are included in the design; conventional construction but with closed windows and fresh air supply systems or air conditioning will normally suffice.
- Normally unacceptable—This indicates that new construction or development should generally be discouraged; if new construction does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.
- Clearly unacceptable—This indicates that new construction or development should generally not be undertaken.

The GP Guidelines provide each community some flexibility in setting local noise standards that allow for the variability in community preferences and existing ambient noise levels.

California Vehicle Code

Division 12, Chapter 5, Article 2.5, Sections 27202 through 27207 of the California Vehicle Code establishes maximum allowable noise from vehicles licensed for use on public highways. The maximum allowable noise varies based on the type of vehicle (motorcycles, heavy vehicles, and passenger vehicles and light trucks) and manufacture date. The allowable noise level for most vehicles is 80 dBA at 50 feet. For heavy vehicles the allowable noise varies by gross vehicle weight rating; for motor vehicles, such as buses and transit vans, with a gross vehicle weight rating of more than 10,000 pounds, the limit is generally 88 dBA at 50 feet.

LOCAL

San Francisco General Plan

Section 6530 of the California Government code requires all cities and counties to include a transportation noise element in their general plans. The San Francisco General Plan includes a transportation noise section in the Environmental Protection Element. The objectives and related policies of the transportation noise section primarily concern avoiding or mitigating the adverse effects of transportation noise. The objectives and policies relevant to the proposed project or its variant are summarized below.

Objective 9. Much can be done to reduce noise at the source. Technological means are available for reducing vehicular noise emissions to well below present levels.

Policy 9.2—Impose traffic restrictions to reduce transportation noise. Transportation noise levels vary according to the predominance of vehicle type, traffic volume, and traffic speed. Curtailing any of these variables ordinarily produces a drop in noise level. In addition to setting the speed limit, the City has the authority to restrict traffic on city streets, and it has done so on a number of streets. In addition, certain movement restraints can be applied to slow down traffic or divert it to other streets. These measures should be employed where appropriate to reduce noise.

Policy 9.6—Discourage changes in streets which will result in greater traffic noise in noise-sensitive areas. Widening streets for additional traffic lanes or converting streets to one-way direction can induce higher traffic volume and faster speeds. Other techniques such as tow-away lanes and traffic light synchronization also facilitate heavier traffic flows. Such changes should not be undertaken on residential streets if they will produce an excessive rise in the noise level of those streets.

San Francisco Noise Ordinance

Construction noise is regulated by the San Francisco Noise Ordinance (Article 29 of the Police Code, amended in November 2008). Article 29 states that the City's policy is to prohibit unnecessary, excessive, and offensive noises from all sources subject to police power. Project construction must comply with construction noise regulations set forth in the Noise Ordinance.

Sections 2907 and 2908 of Article 29 regulate construction equipment and construction work at night. Sections 2907 and 2908 are enforced by the Department of Building Inspection, and Section 2909 is enforced by the DPH. Summaries of these and other relevant sections are presented below.

Section 2907 of the ordinance requires that noise levels from individual pieces of construction equipment, other than impact tools, not exceed 80 dBA at a distance of 100 feet from the source. Impact tools, such as jackhammers, hoe rams, and impact wrenches, must have both intakes and exhausts muffled to the satisfaction of the Director of Public Works or the Director of Building Inspection.

Section 2908 of the ordinance prohibits construction work between 8:00 p.m. and 7:00 a.m. This section addresses noise that would exceed the ambient level by 5 dBA at the project property line, unless the Director of Public Works or the Director of Building Inspection was to authorize a night noise permit.

If work is planned within the public right-of-way between 8 p.m. and 7 a.m., the contractor must first obtain a night noise permit from the Public Works' Bureau of Street Use and Mapping. Section 2908 of the ordinance authorizes the Director of Public Works to impose conditions on this permit. One condition imposed on all permits prohibits high level or impact noise after 10 p.m.; Public Works inspects the site to ensure compliance with this requirement.

San Francisco Public Works Code and San Francisco Public Works Orders

Article 2.4 of the Public Works Code governs excavation within the public right-of-way that is under the jurisdiction of the Public Works. The article requires any person excavating in the public right-of-way to obtain an excavation permit and to comply with Public Works' orders and regulations.

Order No. 176,707, Regulations for Excavating and Restoring Streets in San Francisco, establishes rules and regulations for excavating and restoring streets in San Francisco that are under the jurisdiction of Public Works. The order requires contractors to conduct their operations in a manner that causes the least possible noise, consistent with normal construction efficiency. These regulations are intended to "balance the needs to preserve and maintain public health, safety, welfare, and convenience" by minimizing disruption to neighborhoods and the traveling public, while upgrading and maintaining utility services. Any operation or the use of any equipment that makes excessive or unusual noise is not allowed. Compressors must have effective mufflers and be mounted and insulated to the maximum extent feasible to minimize the noise of operation.

SFMTA Blue Book

The Blue Book is a manual that has been prepared as a guide for such City agencies as Public Works, SFMTA, San Francisco Public Utilities Commission (SFPUC), and the Port of San Francisco and for utility crews, private contractors, and others doing work on City streets. Its main purpose is to establish rules so that work can be done safely and in a way that will cause the least possible interference with pedestrians, bicyclists, and transit and other vehicular traffic. In addition to the regulations in this manual, a contractor is responsible for complying with all City, state, and federal codes, rules, and regulations. The Blue Book requires a night noise permit for any construction work done between 8 p.m. and 7 a.m. in the roadway or sidewalk area.

4.5.4 Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

The significance criteria used in this analysis are consistent with the environmental checklist in Appendix G of the CEQA Guidelines, which have been adopted and modified by the San Francisco Planning Department. For the purpose of this analysis, applicable thresholds were used to determine whether implementing the project would result in a significant noise or vibration impact.

Implementation and operation of the proposed project or its variant would have a significant noise or vibration impact if it were to result in any of the following:

- Expose people to or generate noise levels in excess of standards established in the San Francisco General Plan or noise ordinance (Article 29 of the San Francisco Police Code) or applicable standards of other agencies;

- Expose people to or generate excessive ground-borne vibration or ground-borne noise levels;

- Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project; and

- Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project.

Noise and vibration that could be generated by the project would fall into two categories: temporary from construction activities and ongoing from operational changes.

Construction

Project-related noise from construction of either the proposed project or the project variant would be temporary (up to one year), and noise-generating activities would be intermittent. Based on the quantitative significance thresholds in the City of San Francisco *General Plan* or Noise Ordinance, the proposed project or project variant would cause or be subject to a significant noise or vibration impact under one of the following:

- If it would generate construction noise between 8:00 p.m. and 7:00 a.m. that exceeds the ambient noise level by 5 dBA at the nearest property line (unless the Director of Public Works or the Director of Building Inspection has granted a special permit); or

- If it would produce noise by any construction equipment (except impact tools) that would exceed 80 dBA at 100 feet.

The project sponsor would be required to comply with these regulations, as well as with Article 2.4 of the San Francisco Public Works Code/Public Works Order No. 176-707, and the SFMTA Blue Book.

In addition, pursuant to Section 2907 of the San Francisco Noise Ordinance, impact tools and equipment must be equipped with intake and exhaust mufflers recommended by the manufacturers and approved by the Director of Public Works for maximum noise attenuation. Pavement breakers and jackhammers must be equipped with acoustically attenuating shields or shrouds. In accordance with the night noise permit, construction equipment that generates a high level of noise and impact equipment would not be allowed to operate after 10:00 p.m.

Vibration impacts from construction would be significant if the activities were to expose people to excessive ground-borne vibrations or damage buildings. With the exception of pile driving or other activities that generate high vibration impacts, temporary exposure to vibration from standard construction equipment would not be considered excessive. Therefore, exposing nearby sensitive receptors to excessive ground-borne vibrations would be considered a less-than-significant impact. Vibration from construction would be considered significant if it were to exceed the FTA's building vibration damage criteria of 0.5 PPV for reinforced concrete, steel, or timber buildings.

Operation

Potential project operational noise impacts would be associated with project-related changes in the vehicular traffic pattern in the project vicinity. Specifically, potential operational noise changes as a result of the proposed project or its variant could result from diverting existing vehicular traffic from Second Street to the surrounding area.

Based on FTA guidelines, to ameliorate community annoyance caused by noise, the acceptable (i.e., less than moderate) noise increment is based on the baseline ambient noise level; the higher the baseline noise level, the lower the increment that is considered acceptable. For example, in residential areas with a baseline ambient noise level of 55 dBA L_{dn}, a 3 dBA increase in noise levels would be considered a moderate impact; whereas, in residential areas with a higher baseline ambient noise level of 70 dBA L_{dn}, just a 1 dBA increase would be considered a moderate impact.

The impact criteria for the two FTA guidelines categories of noise-sensitive land uses are summarized in Table 4.5-1.

Table 4.5-1: FTA Guidelines Impact Criteria for Noise-Sensitive Land Uses

Existing (L_{dn} dBA)	Moderate Noise Increase (L_{dn} dBA)	Severe Noise Increase (L_{dn} dBA)
Category 2—Residences and Buildings Where People Normally Sleep[1]		
55	3	7
60	2	5
65	1	4
70	1	3
75	0	2

Existing Peak-Hour[2] (L_{eq} dBA)	Moderate Noise Increase (L_{eq} dBA)	Severe Noise Increase (L_{eq} dBA)
Category 3—Institutional Land Uses with Primarily Daytime and Evening Uses[3]		
55	6	12
60	5	9
65	3	7
70	3	6
75	1	5

[1] This category includes homes, hospitals, and hotels where a nighttime sensitivity to noise is assumed to be of utmost importance.

[2] Highest hourly L_{eq} during a 24-hour period.

[3] This category includes schools, libraries, theaters, and churches where it is important to avoid interference with such activities as speech, meditation, and concentration on reading materials.

Source: FTA. 2006. Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

ANALYSIS APPROACH

Construction

Temporary construction-related noise impacts are evaluated by using published noise emission levels (Table 4.5-2) for the types of equipment expected to be used on the project. Impacts are also evaluated by determining if the noise levels from construction equipment would exceed 80 dBA at 100 feet.

Temporary, construction-related, vibration impacts are evaluated by using published vibration levels for the types of project construction equipment that would generate vibration (Table 4.5-3). The types of construction equipment and the duration of the vibration impact are used to determine if the impact would be excessive. The expected vibration level within various distances of construction activity is calculated and compared against the FTA's building vibration damage criteria.

Table 4.5-2: Noise Levels from Construction Equipment

Construction Equipment	Noise Level (dBA [L_{eq}] at 50 feet)	Noise Level (dBA [L_{eq}] at 100 feet)[1]
Sewer Rehabilitation and Replacement		
Saw cutting machine	76[2]	70
Excavator	85[3]	79
Loader/backhoe	80[2]	74
Paving equipment (grinder)	85[3]	79
Other material handling equipment (AC supply truck)	84[3]	78
Paver	85[3]	79
Roller	74[2]	68
Other material handling equipment (concrete mixer)	85[2]	79
Off-highway trucks (sewer dump truck)	84[3]	78
Off-highway trucks (sewer delivery truck for crushed rock)	84[3]	78
Off-highway trucks (sewer delivery truck for piping and manholes)	84[3]	78
Off-highway trucks (paving dump truck)	84[3]	78
Utilities Replacement/Installation (Underground Conduit Installation)		
Utility truck (for electrician) 1-ton F-350	84[3]	78
Truck (for laborers) 1 ½-ton F-550	84[3]	78
Backhoe John Deere 310J	80[2]	74
S-185 Bobcat with breaker	85[2]	79
Ditch Witch FX – 30 Vacuum	85[3]	79
10-yard dump truck F-800	84[3]	78
Compressor diesel 185 CFM	81[2]	75
Diesel turtle walk behind compactor (25 HP)	82[2]	76
Concrete saw 45 HP diesel	90[3]	84
Roller bomag 36-inch diesel	74[2]	68
Utilities Replacement/Installation (Wire Pulling and Setting Gear)		
Utility trucks F-350	84[3]	78
Boom truck F-800	84[3]	78
Flatbed truck and wire trailer F-700	84[3]	78
Power puller (20 HP)	85[3]	79

Table 4.5-2: Noise Levels from Construction Equipment *(continued)*

Construction Equipment	Noise Level (dBA [L_{eq}] at 50 feet)	Noise Level (dBA [L_{eq}] at 100 feet)[1]
Streetscape Improvements		
CAT 308 excavator	85[3]	79
cat 930 loader	85[2]	79
CAT 426 backhoe	80[2]	74
Skid steer	85[2]	79
Roller	74[2]	68
Saw cutting machine	76[2]	70
Paving equipment (grinder)	85[3]	79
Paver	85[3]	79
AC supply truck	84[3]	78
Concrete mixer truck	84[3]	78
Demolition dump truck	84[3]	78
Materials delivery truck	84[3]	78
Roadway striping vehicle	84[3]	78

[1]Noise level at 100 feet assumes a noise attenuation rate of 6 dBA for a doubling of distance from the source at 50 feet.

Sources: [2]FTA, *Transit Noise and Vibration Impact Assessment*, May 2006

[3]Federal Highway Administration, *FHWA. 2006.*FHWA Roadway Construction Noise Model User's Guide. January 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

Table 4.5-3: Vibration Source Levels for Typical Construction Equipment

Equipment	PPV at 10 feet	PPV at 15 feet	PPV at 20 feet	PPV at 25 feet
Vibratory roller	n/a*	0.452	0.293	0.210
Hoe ram	0.352	0.191	0.124	0.089
Large bulldozer	0.352	0.191	0.124	0.089
Loaded trucks	0.300	0.164	0.106	0.076
Jackhammer	0.138	0.075	0.049	0.035
Small bulldozer	0.012	0.006	0.004	0.003

PPV: peak particle velocity

Vibration levels at 10, 15, and 20 feet were calculated from the reference level at 25 feet using the equation: PPV distance = PPV 25 feet X (25/Distance).

*Based on the width of the sidewalks, the vibratory roller would not be closer than 15 feet to an existing structure.

Source: *FTA. 2006.* Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

Operation

Since the project is not a new land use development, the City's noise compatibility guidelines would not be applicable to determine the operational noise impact. Instead, the FTA incremental criteria presented in Table 4.5-2 are used to evaluate impact significance of noise impacts.

Operation

Since the project is not a new land use development, the City's noise compatibility guidelines would not be applicable to determine the operational noise impact. Instead, the FTA incremental criteria presented in Table 4.5-2 are used to evaluate impact significance of noise impacts.

Operational noise that would result from implementing the proposed project or its variant was estimated using the general assessment method described in the FTA guidelines. Traffic noise was estimated for existing automotive volumes based on the existing peak-hour traffic volumes provided in the TIS prepared for the proposed project or its variant. Further, traffic volumes at the study area intersections provided in the TIS for the proposed project or its variant were used to estimate traffic noise that would result from the traffic diversion from Second Street onto other roadway segments in the project vicinity. The estimated operational traffic noise from the proposed project or its variant was then added to the estimated non-traffic component of the baseline ambient outdoor sound level. This resulted in a post-project ambient noise level. The difference between the existing ambient level[5] (that includes current traffic) and the post-project ambient noise level was then compared with the FTA guidance ambient noise increment (i.e., the applicable FTA guidelines criteria from Table 4.5-1).

Operation

Since the project is not a new land use development, the City's noise compatibility guidelines would not be applicable to determine the operational noise impact. Instead, the FTA incremental criteria presented in Table 4.5-2 are used to evaluate impact significance of noise impacts.

Operational noise that would result from implementing the proposed project or its variant was estimated using the general assessment method described in the FTA guidelines. Traffic noise was estimated for existing automotive volumes based on the existing peak-hour traffic volumes provided in the TIS prepared for the proposed project or its variant. Further, traffic

[5] The DPH's Background Noise Levels 2009 map was used to estimate the existing ambient noise level at the vicinity of each noise-sensitive receiver.

volumes at the study area intersections provided in the TIS for the proposed project or its variant were used to estimate traffic noise that would result from the traffic diversion from Second Street onto other roadway segments in the project vicinity. The estimated operational traffic noise from the proposed project or its variant was then added to the estimated non-traffic component of the baseline ambient outdoor sound level. This resulted in a post-project ambient noise level. The difference between the existing ambient level[6] (that includes current traffic) and the post-project ambient noise level was then compared with the FTA guidance ambient noise increment (i.e., the applicable FTA guidelines criteria from Table 4.5-1).

IMPACT EVALUATION

Construction

Impact NO-1: Construction activities as a result of the proposed project or the project variant could result in a substantial temporary or periodic increase in noise levels above existing ambient conditions. *(Less than Significant with Mitigation)*

Project or project variant improvements would be confined to the right-of-way along Second Street and would consist of components listed in Section 2.5 of this SEIR. This would involve rehabilitating or replacing sewers, relocating overhead utilities underground, and making streetscape improvements by installing bicycle, transit, and pedestrian facilities.

Construction would typically occur Monday through Friday, between 9:00 a.m. and 3:00 p.m. Construction is not anticipated to occur on Saturdays, Sundays, or major legal holidays, but could occur during those times on an as-needed basis. Public Works would stipulate the hours of construction and the contractor would need to comply with the San Francisco Noise Ordinance, including requirements to avoid peak-hour construction on adjacent streets and to coordinate with major events at AT&T Park, home ballpark for the San Francisco Giants, and at the Moscone Convention Center. Work may be allowed on weekends or holidays or between 10 p.m. and 7 a.m. if a night noise permit is obtained.

In areas with 50 percent or more commercial frontage, no work would be allowed from the day after Thanksgiving to January 1, inclusive, 24 hours per day, and 7 days per week. All openings in the street and in the sidewalk must be closed by backfilling and paving or by plating over, to provide safe and adequate passage for bicyclists, motorists, and pedestrians.

The noise levels generated by construction equipment would vary greatly, depending on such factors as the activity being performed, the type of equipment, the specific equipment

[6] The DPH's Background Noise Levels 2009 map was used to estimate the existing ambient noise level at the vicinity of each noise-sensitive receiver.

model, and the condition of the equipment. Construction equipment can be considered to operate in two modes: stationary and mobile. Construction could result in temporary increases in ambient noise levels near the construction zones.

The proposed project or its variant would comply with San Francisco's Clean Construction Ordinance. It requires that, for all City projects that result in 20 or more cumulative days of construction, off-road equipment and off-road engines with 25 horsepower or greater must meet or exceed US EPA Tier 2 standards for off-road engines or operate with the most effective verified diesel emission control technology and with noise attenuation devices such as mufflers. Tier 2 construction equipment is manufactured no earlier than 2001; therefore, with the exception of equipment with small, low-horsepower engines, older or noisier construction equipment would not be expected to be used to construct the project components.

In some cases, such as street or sidewalk demolition with an impact hammer mounted on a bulldozer (commonly referred to as a hoe ram), the dominant noise is due to the interaction between the equipment and asphalt or concrete. The sound from pneumatic jackhammers is a combination of the explosive air exhaust and hammering on the asphalt or concrete surface.

Further, the proposed project or its variant would comply with the existing San Francisco Noise Ordinance and Public Works Article 2.4/Order 176,707, and Blue Book regulations, as follows:

- Any construction between 8 p.m. and 7 a.m. shall not produce noise levels in excess of 5 dBA above the ambient noise level at the property line, unless Public Works approves a night noise permit. If a permit is granted, Public Works prohibits high levels of noise or impact noise after 10 p.m.

- Noise from any individual piece of construction equipment, except impact tools, shall be limited to 80 dBA at 100 feet.

- Impact tools and equipment that have approved intake and exhaust mufflers and pavement breakers and jackhammers that are equipped with approved acoustically attenuating shields or shrouds shall be required to achieve maximum noise attenuation.

As previously stated, the amount of time to construct most of the individual elements would be 2 weeks or less. However, some of the proposed construction activities could occur more than 2 weeks in one work area. Table 4.5-2 lists typical noise levels at distances of 50 and 100 feet from various types of equipment that may be used during project construction.

Noise levels would fluctuate, depending on the construction phase, equipment type and duration of use, distance between the noise source and receptor, and presence or absence of noise attenuation barriers.

As shown on Table 4.5-2, the expected noise level from construction equipment used for the project would not emit noise in excess of 80 dBA at 100 feet, with the exception of the concrete saw. Therefore, based on reference sound data shown in Table 4.5-2, the temporary construction noise impact from the concrete saw would be significant. Implementing **Mitigation Measure M-NO-1 – Control or Abatement of Concrete Saw Operation Noise**, which requires noise abatement techniques when using the concrete saw, would reduce the noise impacts during construction. Therefore, noise impacts from the proposed project or project variant during construction would be ***less than significant with mitigation***.

Mitigation Measure M-NO-1: Control or Abatement of Concrete Saw Operation Noise

The project construction contractor shall implement noise mitigation measures to ensure compliance with the allowable maximum noise level of 80 dBA at a distance of 100 feet from concrete saw operation. Such noise control or sound abatement techniques could include one or more of the following options:

- Use a saw that exhibits or can be shown with manufacturer/supplier test data or published engineering specs no more than 86 dBA L_{max} at 50 feet. Such a saw might be designed to include (either from the factory or with factory-approved acoustical upgrades supplied by others) noise control features, such as a hood, vibration dampening, or other techniques.

- Install a temporary portable noise barrier that provides linear occlusion (a line-of-sight block) between the operating saw and the nearby noise-sensitive receiver of concern. Such a barrier would need to be only tall enough to provide this direct sound path occlusion, and long enough so that “flanking” diffraction would be minimized. It would be placed around the saw work area as a single-wall, an L-shaped combination of two wall segments, or a C-shaped layout if needed. As the saw work area may move or progress from day to day, so would this barrier be relocated. To provide this portability, the barrier would be composed of either a

    - Prefabricated curtain or panel-type element suspended from a field-assembled frame or

- o Contractor-built plywood barriers using ½-inch minimum thickness boards (with at least 2-inch thick fiberglass or similar acoustically absorptive media) on the equipment-facing side.

Impact NO-2: Construction activities related to the proposed project or the project variant could expose persons and structures to excessive temporary ground-borne vibration or ground-borne noise levels. *(Less than Significant)*

Construction of the proposed project or its variant would not require construction activities that produce high levels of vibration, such as pile driving or underground tunneling. However, vibration from most rubber-tired construction vehicles moving slowly through the construction area—such as bulldozers with impact hammers (hoe ram) and jackhammers used to demolish the curb, sidewalk, and street—may result in ground-borne vibration impacts. The use of vibration-generating construction equipment may be as close as 10 feet to buildings at some project locations, such as where sidewalk demolition is required. Table 4.5-3 lists typical vibration levels at a distance of 10, 15, 20 and 25 feet from various types of equipment that may be used during construction.

As previously stated, the length of time to construct most of the individual features of the proposed project or project variant, such as rehabilitating/replacing sewer lines or undergrounding overhead utilities, would be approximately 2 weeks or less at a given block; impact equipment for sidewalk and street demolition would be used only for 2 or 4 days. The length of time that any one receptor would be impacted would be further limited by the fact that construction would move along the street or sidewalk as the work progresses. This is because the project is linear in nature and construction would be along the public right-of-way.

Since ground-borne vibration is a localized impact and attenuates rapidly with distance, vibration impacts from various construction activities would not have an additive affect.

Because the proposed project or its variant would use standard construction equipment and would not include such activities as pile driving or underground tunneling, the vibration impact would be temporary and would not be excessive. Therefore, the project's construction vibration impact on people would be ***less-than-significant***.

The potential for ground-borne vibration to damage buildings was evaluated by comparing the expected vibration levels in Table 4.5-3 against the FTA's construction damage criterion of 0.5 in/sec peak particle velocity for reinforced-concrete or steel buildings. Because PPV values for vibration-producing equipment closest to existing structures are less than 0.5 in/sec, vibration from project construction equipment would not have the risk to damage the nearby buildings. Therefore, impacts associated with ground-borne vibration during construction would be a ***less than significant***.

Operational Noise

Impact NO-3: The proposed project or the project variant would not result in a substantial increase in permanent noise levels along Second Street and other streets above existing ambient conditions. ***(Less than Significant)***

The proposed project or its variant is an infrastructure project that would not generate new vehicular trips—i.e., there would be no net increase in traffic volumes. However, the proposed project or its variant could divert vehicular traffic from Second Street to other streets in the vicinity, thereby increasing traffic volumes in those areas. Therefore, noise impacts from changes in vehicular traffic volumes in the project area could occur. There may be sensitive receptors in residential or institutional land uses along the affected streets. Those streets with sensitive receptors have been assessed for the potential noise impacts that could result from the change in existing traffic volumes due to these anticipated diversions from Second Street.

Considering the ambient noise conditions in the City, particularly along the Second Street corridor, pre-project ambient outdoor noise levels were estimated from the DPH's sound plan map, called Background Noise Levels—2009. This estimation was determined by conservatively assuming that the existing ambient noise at a particular location was the lower of the displayed L_{dn} contour range.

Table 4.5-4 presents these existing ambient sound levels for each of the identified noise-sensitive receivers: residential buildings, hotels, and open spaces or common areas. The FTA's general assessment method was used to evaluate the impacts of traffic noise or the portion of the outdoor ambient level on the roadway segments that would result from diverting existing traffic flows from Second Street onto these segments (see Analysis Approach, above). Other noise-producing sources (e.g., building HVAC and human activities) that also contribute to ambient noise are assumed to be unchanged before and after project implementation.

To compare sound levels using the aforementioned increase-over-ambient criteria, the peak-hour noise levels shown in Table 4.5-4 are assumed to be equivalent to L_{dn} levels. This is based on the following factors:

- Peak-hour traffic volumes are approximately 10 percent of average daily traffic volumes; and
- Day/night split percentage of traffic volumes would be 85 percent/15 percent.

Table 4.5-4: Predicted Change in Ambient Sound Level Caused by Traffic Diversion during Project or Project Variant Operation

Receiver ID and Roadway Segments	PM Peak-Hour Traffic Volumes		Peak-Hour Noise Levels (dBA L_{eq})				
	Existing[1]	Proposed Project[1] (or Variant)[1]	Existing Ambient[2]	Estimated Existing Traffic Noise[5]	Post-Project (or Variant) Traffic Noise[3, 4]	Post-Project Ambient (or Variant)	Change in Ambient
R1/R2 - Second Street between King and Townsend streets	516	419 (419)	70	58.9	58.0	70.0	0.0
R3 - Second Street between Townsend and Brannan streets	894	694 (678)	70	61.3	60.2	69.9	- 0.1
R4 - Second Street between Harrison and Folsom streets	930	760 (779)	70	61.4	60.6	69.9	- 0.1
R5/R6 - Second Street between Folsom and Howard streets	1,165	733 (750)	70	62.4	60.4	69.7	- 0.3
R7 - First Street between Harrison and Folsom streets	1,470	1,655 (1,655)	70	63.4	63.9	70.1	0.1
R8 - First Street between Harrison and I-80	41	41 (41)	70	47.9	47.9	70.0	0.0
R9 - Hawthorne Street between Harrison and Folsom streets	669	772 (772)	65	60.0	60.6	65.2	0.2
R10 - Howard Street between Second and Hawthorne streets	2,183	2,474 (2,474)	65	65.1	65.7	65.7	0.7
R11 - Mission Street between Second and First streets	1,348	1,390 (1,390)	70	63.0	63.2	70.0	0.0
R12 - King Street between Second and Third streets	2,039	1,954 (1,954)	70	64.8	64.7	69.9	- 0.1

[1] CHS Consulting Group. 2014. Figures 4, 6, and 9 from the Second Street Improvement Project – Final Transportation Impact Study, prepared for the City and County of San Francisco Planning Department, Environmental Planning Division, July 7, 2014. This report is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.
[2] City and County of San Francisco. 2009. Areas Potentially Requiring Noise Insulations. March. Available online at: http://www.sf-planning.org/ftp/files/publications_reports/library_of_cartography/Noise.pdf. Accessed on January 29, 2015.
[3] Calculated using indicated traffic volume, with automotive source sound levels and algorithm from FTA guidelines Tables 5-3 and 5-4. (FTA. 2006. Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.)
[4] Due to existing traffic diversion from Second Street, causing the indicated post-project automotive traffic volumes (proposed project or variant).

The segment-specific change in traffic volumes as a result of the proposed project or its variant may be as much as a 1 dBA increase in the traffic noise component of the ambient outdoor sound level (see Table 4.5-4); as shown by the rightmost column, its overall effect on the ambient level is consistently less than a 1 dBA increment. For this reason, the change in traffic volume due to the proposed project or its variant would not result in a significant impact, in accordance with the FTA criteria. Therefore, operational noise impacts from the proposed project or its variant due to the changes in the project vicinity's traffic volumes would be ***less than significant***. No mitigation measures are necessary.

Cumulative Noise Impacts

Impact C-NO-1: The construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, would increase construction noise and vibration or operational noise levels within the project corridor above existing ambient conditions. *(Less than Significant With Mitigation)*

Cumulative impacts occur when impacts from a proposed project combine with similar impacts from other past, present, or reasonably foreseeable projects in a similar geographic area. The geographic context for cumulative construction noise and vibration impacts and cumulative operational noise impacts is the Second Street public rights-of-way and nearby streets in the project vicinity.

Cumulative Construction Noise and Vibration

The projects that may be implemented under the plans listed in Section 4.1 may combine with the effects of the proposed project or project variant. These are Muni Forward (formerly referred to as the Transit Effectiveness Project), the Transit Center District Plan, and the draft Central SOMA Area Plan. The construction projects proposed under the plans listed in Section 4.1 would be temporary and would occur within the public right-of-way. Construction noise is a localized impact that reduces as distance from the source increases. Intervening features, such as buildings, increase the attenuation of noise with distance by providing barriers to sound wave propagation. Similar to noise, vibration impacts are localized because vibration attenuates rapidly from the source.

Construction activity within the City would be required to comply with the San Francisco Noise Ordinance, which prohibits construction activities between 8:00 p.m. and 7:00 a.m. and limits noise from any individual pieces of construction equipment, except impact tools approved by Public Works, to 80 dBA at 100 feet. Nighttime construction would require a noise permit from Public Works. Impact tools and equipment must be equipped with intake and exhaust mufflers recommended by the manufacturers and approved by the Director of Public Works for maximum noise attenuation, and pavement breakers and jackhammers must be equipped with acoustically attenuating shields or shrouds. Construction projects performed within the City right-of-way require permits and review by Public Works in accordance with Article 2.4 of the Public Works Code and, if performed within the street right-of-way, traffic permits from SFMTA. These agencies coordinate improvements within the public right-of-way in order to minimize disruption to transit, traffic, and surrounding land uses. The Department of Public Works also coordinates a 5-year repaving plan of the different City streets in order to aggregate public right-of-way improvements by various agencies and utilities.

Cumulative noise and vibration impacts could occur if several construction projects occur within the immediate area of one another. The City's permitting and planning requirements minimize the potential for temporary construction projects within the public right-of-way to occur adjacent to one another and within the same time period. However, construction activities associated with the plans listed above and the proposed project or its variant could be performed concurrently and could contribute to significant cumulative noise impacts. As discussed in Section 4.5 Noise, implementing **Mitigation Measure M-NO-1 – Control or Abatement of Concrete Saw Operation Noise** would reduce the impacts of noise and vibration during construction. Therefore, while construction activities from other projects may occur at the same time as construction of the proposed project or its variant, the noise impacts would not be cumulatively considerable. Therefore, the proposed project or its variant would not be expected to contribute considerably to cumulative vibration impacts and cumulative noise and vibration impacts would be ***less than significant with mitigation***.

Cumulative Operational Noise

Neither the proposed project nor the project variant would generate new vehicle trips. In addition, as discussed above, the proposed project or its variant would not result in significant operational noise impacts once constructed. However, due to traffic diversion off the Second Street corridor, traffic volumes on surrounding streets may increase, resulting in changes to transportation-related noise. A cumulative noise impact could occur if the proposed project or its variant were to result in a cumulatively considerable contribution to the future cumulative noise impacts along the project area public rights-of-way.

Operational noise from the proposed project or its variant was evaluated to determine the impact in combination with other cumulative transportation-related noise sources modeled in the City's Background Noise Levels – 2009 map. Due to the additive properties of noise, a doubling of traffic in the future would be required to increase the traffic-related noise by 3 dBA, the level perceptible to most people.

As described in the TIS and summarized in Table 4.5-5 below, the resulting increase in roadway traffic under 2040 cumulative conditions, which accounts for background growth and anticipated development, would not be expected to double traffic along any transit corridors in the project vicinity.

Table 4.5-5 shows a comparison of predicted noise levels between the cumulative traffic conditions without the project and the cumulative conditions with the project (or with the project variant). The segment-specific change in traffic volumes as a result of the cumulative plus project, shown in the rightmost column in the table, may be up to a 1 dBA increase in the traffic noise component of the cumulative ambient outdoor sound level.

The operational noise that would be generated by future development projects, apart from traffic-related noise described above, would depend on the particular type of development and associated mechanical equipment. However, noise from mechanical equipment installed by future development projects would be required to comply with the San Francisco Noise Ordinance; therefore, no significant cumulative noise impacts would result from the use of mechanical equipment. Therefore, the proposed project or project variant would not contribute considerably to future cumulative operational noise levels; the cumulative operational noise impacts would be ***less than significant***, and no mitigation measures are necessary.

Table 4.5-5: Predicted Change in Cumulative Ambient Sound Level Caused by Traffic Diversion during Project or Project Variant Operation

Receiver ID and Roadway Segments	PM Peak-Hour Traffic Volumes		Peak-Hour Noise Levels (dBA L_{eq})				
	Cumulative without Project[1]	Cumulative with Proposed Project[1] (or with Variant[1])	Cumulative Ambient[2]	Estimated Cumulative without Project Traffic Noise[3]	Post-Project (or Variant) Traffic Noise[5, 4]	Cumulative Plus Project Ambient (or Variant)	Change in Ambient
R1/R2 - Second Street between King and Townsend streets	1,014	851 (851)	70	61.8	61.0	69.9	- 0.1
R3 - Second Street between Townsend and Brannan streets	1,700	1,375 (1,346)	70	64.0	63.1 (63.0)	69.8 (69.7)	- 0.2 (- 0.3)
R4 - Second Street between Harrison and Folsom streets	1,160	933 (968)	70	62.4	61.4 (61.6)	69.9	- 0.1
R5/R6 - Second Street between Folsom and Howard streets	1,618	1,056 (1,087)	70	63.8	62.0 (62.1)	69.6	- 0.4
R7 - First Street between Harrison and Folsom streets	1,968	2,126 (2,126)	70	64.7	65.0	70.1	0.1
R8 - First Street between Harrison and I-80	61	61 (61)	70	49.6	49.6	70.0	0.0
R9 - Hawthorne Street between Harrison and Folsom streets	632	753 (753)	65	59.8	60.5	65.2	0.2
R10 - Howard Street between Second and Hawthorne streets	2,032	2,307 (2,307)	65	64.8	65.4	65.6	0.6
R11 - Mission Street between Second and First streets	1,418	1,514 (1,514)	70	63.3	63.5	70.1	0.1
R12 - King Street between Second and Third streets	2,933	2,792 (2,763)	70	66.4	66.2	69.9	- 0.1

[1] CHS Consulting Group. 2014. Figures 7, 8, and 10 from the Second Street Improvement Project – Final Transportation Impact Study, prepared for the City and County of San Francisco Planning Department, Environmental Planning Division, July 7, 2014. This report is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.

[2] From Background Noise Levels – 2009 map (City and County of San Francisco 2009).

[3] Calculated using indicated traffic volume, with automotive source sound levels and algorithm from FTA guidelines Tables 5-3 and 5-4. (FTA. 2006. Transit Noise and Vibration Impact Assessment. May 2006. This document is available for review in File No. 2007.0347E at the Planning Department, 1650 Mission Street, 4th Floor, San Francisco, California.)

[4] Due to existing traffic diversion from Second Street, causing the indicated post-project automotive traffic volumes (proposed project or variant).

This page intentionally left blank.

4.6 AIR QUALITY

4.6.1 Introduction

This section supplements the analysis of potential impacts on air quality provided in the Bicycle Plan IS and FEIR. The Bike Plan IS, pages 64-66, determined that the impacts of odors from the proposed project or its variant would be limited to brief periods of construction and would not generate intense or prolonged objectionable odors. Therefore, impacts of odors from the proposed project or its variant would be less-than-significant, and the proposed project or its variant would not change this conclusion in the Bicycle Plan IS.

In addition, the FEIR (pages V.B-1 to V.B-24) identified less-than-significant impacts on air quality from construction and operations of the Bicycle Plan and projects implemented as a result of that plan. This analysis supplements the air quality analysis in the Bicycle Plan FEIR and reflects the Planning Department's current approach to air quality analysis.[1] The air quality analysis provided herein addresses the potential air quality impacts of the refined project, including those related to streetscape features, the sewer repair and replacement, and undergrounding of overhead utilities.

This section summarizes and incorporates the results of the Second Street Improvement Project Air Quality Technical Report[2] for the proposed project or its variant (see Appendix C of this SEIR). It evaluates the potential air quality impacts of criteria pollutant emissions and potential health impacts from construction and operation of the proposed project or its variant. Also identified are both project-level impacts and cumulative air quality impacts, and feasible mitigation measures that could reduce or avoid the identified potential impacts.

[1] The Bicycle Plan EIR was finalized in 2009. BAAQMD developed quantitative thresholds of significance for their CEQA Guidance in 2010; these thresholds were also included in the 2011 updated CEQA Guidance. BAAQMD's adoption of the 2010 thresholds of significance was later challenged, resulting in a court ordered ruling issued March 5, 2012 in California Building Industry Association v. BAAQMD, Alameda County Superior Court Case No. RGI0548693. The order requires the BAAQMD thresholds to be subject to further environmental review under CEQA. As a result, BAAQMD released updated guidelines in 2012 with references to the CEQA thresholds removed. BAAQMD later appealed the ruling, and the judgment was reversed on August 13, 2013 by the Court of Appeal of the State of California, First Appellate District. The Court of Appeal's decision was appealed to the California Supreme Court, which granted limited review, and the matter is currently pending there.

[2] URS Corporation. 2014. Second Street Improvement Project Final Air Quality Technical Report. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.

4.6.2 Environmental Setting

REGIONAL AIR QUALITY

The project site and vicinity are within the nine-county jurisdiction of the Bay Area Air Quality Management District (BAAQMD). This body oversees the region's efforts to achieve and maintain state and federal ambient air quality standards by developing and implementing air quality plans. BAAQMD maintains the regional emission inventory of air pollution sources, including those that are stationary, mobile, and area-wide.

BAAQMD is also responsible for implementing programs and issuing permits to construct and operate stationary sources of pollutants. Prevailing winds, topography, and weather, including sunlight and high temperatures, play a role in regional air quality. Warmer temperatures create conditions that can increase ozone formation. In addition, higher temperatures would likely increase electricity use to power air conditioners and refrigerators, which may subsequently increase operation of the region's fossil-fuel-fired power plants to meet the demand.

Climate, Topography, and Meteorology

The San Francisco Bay Area has a Mediterranean climate characterized by mild, dry summers and mild, moderately wet winters, moderate daytime onshore breezes, and moderate humidity. About 90 percent of the annual total rainfall occurs from November to April.

The climate is dominated by a strong, semipermanent, subtropical high-pressure cell over the northeastern Pacific Ocean. Weather is moderated by the adjacent oceanic heat reservoir, which leads to fog. In summer, the northwest winds to the west of the coastline are drawn into the interior valleys through the Golden Gate and over the lower elevations of the San Francisco Peninsula. These topographic conditions channel the wind so that it sweeps eastward and widens downstream across the region. In winter, periods of storminess tend to alternate with periods of stagnation and light winds. Onshore winds from the west dominate within San Francisco, carrying emissions east over San Francisco Bay.

Criteria Air Pollutants

As required by the 1970 federal Clean Air Act, the US EPA has identified six air pollutants that are pervasive in urban environments and for which state and federal health-based ambient air quality standards have been established. US EPA calls these pollutants "criteria air pollutants"; it regulates them by developing specific public health-based and welfare-based criteria as the basis for setting permissible levels.

The federal government and the State of California focus on the following six criteria air pollutants as indicators of ambient air quality: ozone, carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), particulate matter (PM_{10} and $PM_{2.5}$),[3] and lead.

The BAAQMD operates 28 air quality monitoring stations throughout the San Francisco Bay Area Air Basin (SFBAAB), providing information on ambient concentrations of criteria air pollutants within the SFBAAB. In San Francisco, the BAAQMD operates an air quality monitoring station at 16th and Arkansas streets (10 Arkansas Street), in the lower Potrero Hill area, which is the monitoring station closest to the project site. The station measures ozone, CO, NO_2, SO_2, PM_{10}, and $PM_{2.5}$.[4]

Table 4.6-1 presents 5 years of the most currently available data and compares measured pollutant concentrations with the most stringent applicable ambient air quality standards (state or federal). Bold font numerical values in the table indicate criteria pollutant concentrations that exceed an applicable air quality standard.

Ozone

Ozone is a secondary air pollutant produced in the atmosphere through a complex series of photochemical reactions involving reactive organic gases (ROG) and nitrogen oxides (NO_X). The main sources of ROG and NO_X, often referred to as ozone precursors, are combustion processes (including motor vehicle engines) and the evaporation of solvents, paints, and fuels. In the Bay Area, automobiles are the single largest source of ozone precursors.

Ozone is referred to as a regional air pollutant because its precursors are transported and diffused by wind concurrently with ozone production through photochemical reaction. Ozone causes eye irritation, airway constriction, and shortness of breath; it can aggravate existing respiratory diseases, such as asthma, bronchitis, and emphysema.

Table 4.6-1 shows that the most stringent applicable standards (state 1-hour standard of 0.09 parts per million [ppm] and the state 8-hour standard of 0.07 ppm) were not exceeded at the Arkansas Street air monitoring station between 2009 and 2013.

---

[3] PM_{10} is particulate matter less than 10 microns in diameter and $PM_{2.5}$ is particulate matter less than 2.5 microns in diameter.

[4] Data from this single location do not describe pollutant levels throughout San Francisco, as levels may vary depending on distance from key emissions sources and local meteorology. However, the BAAQMD monitoring network does provide a reliable picture of pollutant levels over time.

Table 4.6-1: Criteria Air Pollutants Data Summary for San Francisco (Arkansas Street Air Monitoring Station)

Pollutant	Standard	2009	2010	2011	2012	2013
O_3	<u>1-hour</u>					
	Maximum concentration (ppm)	0.072	0.079	0.070	0.069	0.069
	days > CAAQS[1] (0.09 ppm)	0	0	0	0	0
	<u>8-hour</u>					
	4th Maximum concentration (ppm)	0.057	0.051	0.054	0.049	0.060
	Days > NAAQS[2] (0.075 ppm)	0	0	0	0	0
	Days > CAAQS (0.07 ppm)	0	0	0	0	0
PM_{10}	<u>24-Hour</u>					
	Maximum Concentration ($\mu g/m^3$)	36	40	46	**51**	44
	Days > CAAQS (50 $\mu g/m^3$)	0	0	0	**6**	0
	Days > NAAQS (150 $\mu g/m^3$)	0	0	0	0	0
	<u>Annual Average</u>					
	National annual average (50 $\mu g/m^3$)[a]	18	19	19	17	10
	State annual average (20 $\mu g/m^3$)[a]	19	n/a	20	17.5	n/a
$PM_{2.5}$	<u>24-Hour</u>					
	Maximum concentration ($\mu g/m^3$)	**49.8**	**45.3**	**47.5**	**35.7**	**48.5**
	Days > NAAQS (35 $\mu g/m^3$)	**1**	**3**	**2**	**1**	**2**
	National average 98th percentile ($\mu g/m^3$)[b]	28.7	24.4	26.4	21.5	27.8
	<u>Annual</u>					
	National annual average (12.0 $\mu g/m^3$)	9.6	10.5	9.5	8.2	10.1
NO_2	<u>1-hour</u>					
	Maximum concentration (ppm)	0.059	0.093	0.093	**0.124**	0.073
	Days > NAAQS (0.10 ppm)	0	0	0	**1**[c]	0
	Days > CAAQS (0.18 ppm)	0	0	0	0	0
	<u>Annual</u>					
	CAAQS (0.030 ppm)	0.015	0.013	0.014	0.012	0.013
CO	<u>1-hour</u>					
	Maximum concentration (ppm)	4.3	1.8	1.8	2.0	1.8
	Days > CAAQS (20 ppm)	0	0	0	0	0
	<u>8-hour</u>					
	Maximum concentration (ppm)	2.9	1.4	1.2	1.2	n/a
	Days > CAAQS (9 ppm)	0	0	0	0	0

[1]California ambient air quality standard
[2]National ambient air quality standards
$\mu g/m^3$ = micrograms per cubic meter
Notes: Bold values are in excess of applicable standards; however, an exceedance is not necessarily a violation of the standard.
Ambient data for SO_2 and airborne lead are not included in this table since the basin is currently in compliance with state and federal standards for these pollutants; the monitoring station did not record the data for these pollutants.
[a]State statistics are based on California-approved samplers, whereas national statistics are based on samplers using federal reference or equivalent methods. Therefore, state and national statistics may be based on different samplers.
[b]Attainment condition for $PM_{2.5}$ is that the standard (35 $\mu g/m^3$) must not be exceeded by the 3-year average of the 98th percentile of 24-hour concentrations at each monitoring station.
[c]Attainment condition for national 1-hour NO_2 standard is that the 98th percentile, averaged over 3 years, is not to be exceeded.
Source: ARB. 2014. Available online: http://www.arb.ca.gov/adam/topfour/topfourdisplay.php. Accessed May 30, 2014.

Carbon Monoxide

CO is an odorless, colorless gas usually formed as the result of the incomplete combustion of fuels. The single largest source of CO is motor vehicles; the highest emissions occur during low travel speeds, stop-and-go driving, cold starts, and hard acceleration. Exposure to high concentrations of CO reduces the oxygen-carrying capacity of the blood and can cause headaches, nausea, dizziness, and fatigue. It can impair central nervous system function and induce chest pain in persons with serious heart disease. Very high levels of CO can be fatal.

As shown in Table 4.6-1, the more stringent state CO standards (state 1-hour standard of 20 ppm and the state 8-hour standard of 9 ppm) were not exceeded between 2009 and 2013. Measurements of CO indicate hourly maximums ranging between 6 and 22 percent of the state standard and maximum 8-hour CO levels ranging between 13 and 32 percent of the 8-hour standard.

Particulate Matter

Particulate matter is a class of air pollutants that consists of heterogeneous solid and liquid airborne particles from manmade and natural sources. Particulate matter is measured in two size ranges: PM_{10} for particles less than 10 microns in diameter, and $PM_{2.5}$ for particles less than 2.5 microns in diameter.

In the Bay Area, motor vehicles generate about one-half of the SFBAAB's particulates through tailpipe emissions and brake pad and tire wear.[5] Wood burning in fireplaces and stoves, industrial facilities, and ground-disturbing activities, such as construction, are other sources of such fine particulates. The particulates are small enough to be inhaled into the deepest parts of the lung and can cause adverse health effects.

According to the California Air Resources Board (ARB), studies in the United States and elsewhere "have demonstrated a strong link between elevated particulate levels and premature deaths, hospital admissions, emergency room visits, and asthma attacks"; studies of children's health in California have demonstrated that particle pollution "may significantly reduce lung function growth in children." The ARB also reports that statewide attainment of particulate matter standards could prevent thousands of premature deaths, could lower hospital admissions for cardiovascular and respiratory disease and asthma-related

[5] BAAQMD, California Environmental Quality Act Guidelines, updated May 2012 (BAAQMD, CEQA Air Quality Guidelines, updated May 2012), pp. C-15 to C-16. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/BAAQMD%20CEQA%20Guidelines_Final_May%202012.ashx?la=en. Accessed May 30, 2014.

emergency room visits, and could allow hundreds of thousands of episodes of respiratory illness in California to be avoided.[6]

Among the criteria pollutants that are regulated, particulates are a serious ongoing health hazard, contributing to the death of approximately 200 to 500 people per year in the Bay Area. High levels of particulate matter can exacerbate chronic respiratory ailments, such as bronchitis and asthma, and have been associated with increased emergency room visits and hospital admissions.[7, 8]

Table 4.6-1 shows that between 2009 and 2013, the state PM_{10} 24-hour standard was exceeded only in 2012. No exceedances from the state annual standard have been recorded from 2009 to 2013 at the Arkansas Street monitoring station.

The table also shows that the highest recorded concentrations have exceeded the $PM_{2.5}$ 24-hour standard every year from 2009 to 2013 for 1 to 3 days a year. (Note that the condition for attainment in an area is that the standard [35 $\mu g/m^3$] must not be exceeded by the 3-year average of the 98th percentile of 24-hour concentrations at each monitoring station.) The state annual average standard was not exceeded at the Arkansas Street monitoring station between 2009 and 2013. The US EPA has revised the NAAQS for $PM_{2.5}$ from 15 $\mu g/m^3$ to 12.0 $\mu g/m^3$, which is now consistent with the state ambient air quality standards; the new federal standard is discussed in more detail in Section 4.6.3.

Nitrogen Dioxide

NO_2 is a reddish-brown, highly reactive gas that is a by-product of combustion processes. Motor vehicles and other transportation modes and industrial operations are the main sources of NO_2. Aside from its contribution to ozone formation, NO_2 can increase the risk of acute and chronic respiratory disease and reduce visibility. NO_2 may be visible as a coloring component on high pollution days, especially in conjunction with high ozone levels. Table 4.6-1 shows that the current state standard for NO_2 was met at the Arkansas Street monitoring station during the reported years (2009 through 2013).

In 2010, the US EPA implemented a new 1-hour NO_2 standard at the level of 100 parts per billion (ppb). Currently, the ARB is recommending that the SFBAAB be designated as attainment for the new standard. The US EPA has also established requirements for a new

6 ARB. 2002. Public Hearing to Consider Amendments to the Ambient Air Quality Standards for Particulate Matter and Sulfates, Staff Report, May 3, 2002, pp. 9-18 to 9-24. Available online at: http://www.arb.ca.gov/research/aaqs/std-rs/pm-final/pm-final.htm. Accessed May 30, 2014.

7 ARB. 2005. Air Quality and Land Use Handbook: A Community Health Perspective. April 2005. p. 12. Available online: http://www.arb.ca.gov/ch/landuse.htm. Accessed May 18, 2014.

8 BAAQMD, *CEQA Air Quality Guidelines*, updated May 2012, p. 5-2. Accessed May 30, 2014.

monitoring network to measure NO_2 concentrations near major roadways in urban areas with a population of 500,000 or more. Sixteen new near-roadway monitoring sites will be required in California, three of which are in the Bay Area. The ARB will revise the area designation recommendations, as appropriate, once sufficient monitoring data becomes available. The new federal standard is discussed in more detail in Section 4.6.3.

Sulfur Dioxide

SO_2 is a colorless acidic gas with a strong odor. It is produced by the combustion of sulfur-containing fuels, such as coal, diesel, and oil. SO_2 has the potential to damage materials and can cause health effects at high concentrations. It can irritate lung tissue and increase the risk of acute and chronic respiratory disease. Table 4.6-1 shows that the state standard for SO_2 is being met at the Arkansas Street monitoring station. Data from this monitoring station and other monitoring stations within the SFBAAB suggest that the SFBAAB will continue to meet this standard for the foreseeable future.

In 2010, the US EPA implemented a new 1-hour SO_2 standard.[9] On February 15, 2013, US EPA published a notice in the *Federal Register* of proposed nonattainment designations for the 2010 primary federal SO_2 standards. No California areas are included in the proposal; all areas of the state remain unclassified/attainment. Similar to the new federal standard for NO_2, the US EPA has established requirements for a new monitoring network to measure SO_2 concentrations to be operational by January 2013. No new monitoring stations were required in San Francisco County.[10]

Lead

Leaded gasoline (phased out in the United States in 1973), paint (on older houses and on cars), smelters (metal refineries), and the manufacture of lead storage batteries have been the primary sources of lead released into the atmosphere. Lead has a range of adverse neurotoxic health effects, which puts children at special risk. Some lead-containing chemicals cause cancer in animals. Lead levels in the air have decreased substantially since leaded gasoline was eliminated from use. Ambient lead concentrations are only monitored on an as-warranted, site-specific basis in California. On October 15, 2008, the US EPA strengthened the national ambient air quality standard for lead by lowering it from 1.5 to 0.15 $\mu g/m^3$; it revised the monitoring requirements for lead in December 2010. These

---

[9] The 2010 1-hour SO_2 standard is based on the 3-year average of the annual 99th percentile of 1-hour daily maximum concentrations. It became effective on August 23, 2010. The US EPA also revoked both the 24-hour and the annual primary standards of SO_2, effective August 2010.

[10] BAAQMD, 2011 Air Monitoring Network Report, July 1, 2012, p. 19 and Table 7. Available online at: http://www.baaqmd.gov/Divisions/Technical-Services/Ambient-Air-Monitoring/AAMN-Plan.aspx. Accessed May 20, 2014.

requirements focus on airports and large urban areas, resulting in three new monitors at Bay Area airports. No new monitoring stations are required in San Francisco County.[11]

Toxic Air Contaminants

Toxic air contaminants (TACs) are air pollutants that may lead to serious illness or increased mortality, even when present in relatively low concentrations. The potential human health effects of TACs are birth defects, neurological damage, cancer, and death. There are hundreds of different types of TACs with varying degrees of toxicity; the health risks from TACs are a function of both concentration and duration of exposure. Individual TACs vary greatly in the health risk they present; at a given level of exposure, one TAC may pose a hazard that is many times greater than that of another.

There are no ambient air quality standards for TACs; the BAAQMD regulates them using a risk-based approach. This approach uses a health risk assessment to determine what sources and pollutants to control and the degree of control. A health risk assessment is an analysis in which human health exposure to toxic substances is estimated. This exposure is considered, together with information on the toxic potency of the substances, to provide quantitative estimates of health risks.

In addition to monitoring criteria air pollutants, both the BAAQMD and the ARB operate TAC monitoring networks in the SFBAAB. These monitoring stations measure 10 to 15 TACs, depending on the specific station. The TACs selected for monitoring are those that have traditionally been found in the highest concentrations in ambient air and therefore tend to be substantial contributors to community health risk. The BAAQMD operates an ambient TAC monitoring station at its Arkansas Street monitoring station, which is the only monitoring site for air toxics in the City.

Table 4.6-2 shows ambient concentrations of carcinogenic TACs measured at the Arkansas Street monitoring station and the estimated cancer risks from lifetime (70 years) exposure to these substances. When TAC measurements at this station are compared to ambient concentrations of various TACs for the Bay Area as a whole, the cancer risks associated with mean TAC concentrations in the City are similar. Therefore, the estimated average lifetime cancer risk resulting from exposure to TAC concentrations measured at the Arkansas Street monitoring station do not appear to be any greater than for the Bay Area.

[11] BAAQMD, 2011 Air Monitoring Network Report, July 1, 2012, pp. 13 and 22, Tables 10 and 11. Available online: http://www.baaqmd.gov/Divisions/Technical-Services/Ambient-Air-Monitoring/AAMN-Plan.aspx. Accessed May 20, 2014.

Table 4.6-2: Carcinogenic Toxic Air Contaminants – Annual Average Ambient Concentration and Estimated Cancer Risk (from the Arkansas Street Monitoring Station)

Substance	Concentration (ppb)	Cancer Risk per Million[a]
Gaseous TAC		
Acetaldehyde	0.56	3
Benzene	0.21	19
1,3-butadiene	0.036	13
Para-dichlorobenzene[b]	0.15	10
Carbon tetrachloride	0.085	23
Ethylene dibromide[c]	0.006	3
Formaldehyde	1.37	10
Perchloroethylene	0.012	0.5
Methlylene chloride	0.124	0.4
Methyl tertiary-butyl ether (MTBE)[d]	0.26	0.3
Chloroform	0.023	0.6
Trichloroethylene	0.010	0.1
Particulate TAC	(ng/m^3)	
Chromium (hexavalent)	0.053	8

All values are from the BAAQMD Arkansas Street monitoring station reported for 2012, except for para-dichlorobenzene (2006), ethylene dibromide (1992), and MTBE (2003).

ng/m^3 = nanograms per cubic meter

[a]ARB estimated the cancer risks by applying published unit risk factors to the measured concentrations.

[b]The latest data available for para-dichlorobenzene at the Arkansas Street monitoring station is for 2006.

[c]The latest data available for ethylene dibromide at the Arkansas Street monitoring station is for 1992.

[d]The latest data available for MTBE at the Arkansas Street monitoring station is for 2003.

Source: CARB. 2013. Ambient Air Toxics Summary. Available online: http://www.arb.ca.gov/adam/toxics/sitesubstance.html. Accessed July 8, 2014.

Roadway-Related Air Pollutants

Vehicle tailpipe emissions contain diverse forms of particles and gases and also contribute to particulates by generating road dust and through tire wear. Epidemiological studies have demonstrated that people living near freeways or busy roadways have poorer health, including increased asthma symptoms and respiratory infections and decreased pulmonary function and lung development in children. Air pollution monitoring done in conjunction with epidemiological studies suggests that roadway-related health effects vary with modeled exposure to particulate matter and NO_2.[12] In traffic-related studies, the additional noncancer health risk attributable to roadway proximity is highest within 1,000 feet of high-traffic roadways and is even higher within 300 feet.

Diesel Particulate Matter

The CARB identified diesel particulate matter (DPM) as a toxic air contaminant in 1998, primarily based on evidence demonstrating cancer effects in humans.[13] The exhaust from diesel engines contains hundreds of different gaseous and particulate components, many of which are toxic. Mobile sources, such as trucks, buses and, to a much lesser extent, automobiles, are some of the primary sources of diesel emissions. Moreover, concentrations of DPM are higher near heavily traveled highways. In studies, the US EPA concluded that diesel exhaust ranks with other substances that pose the greatest relative risk.[14]

In 2000, ARB approved a comprehensive Diesel Risk Reduction Plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. Subsequent ARB regulations apply to new trucks and to diesel fuel. The ARB estimated the average Bay Area cancer risk from DPM, based on a population-weighted average ambient diesel particulate concentration, at about 480 in one million as of 2000. This represented a 36 percent drop between 1990 and 2000.[15] While the ARB has not provided more recent health risk estimates for the SFBAAB, the average statewide cancer risk from DPM was estimated to have declined from 540 in one million in 2000 to 450 in one million in 2010. This is an indication that the health risk from DPM continues to decline.

SENSITIVE RECEPTORS

Sensitive receptors are those segments of the population most susceptible to poor air quality: children, the elderly, and those with preexisting serious health problems affected by air quality. Examples of receptors are residences, schools (including colleges and university campuses) and schoolyards, parks and playgrounds, day care centers, nursing homes, and medical facilities. Residences can include houses, apartments, and senior living complexes;

---

[12] San Francisco Department of Public Health. 2008. *Assessment and Mitigation of Air Pollutant Health Effects from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review*, May 6. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2007.0347E.

[13] ARB. 1998. F*act Sheet, The Toxic Air Contaminant Identification Process: Toxic Air Contaminant Emissions from Diesel-fueled Engines*, October 1998. Available online: http://www.arb.ca.gov/toxics/dieseltac/factsht1.pdf. Accessed May 11, 2014.

[14] US EPA Technology Transfer Network. Available online: http://www.epa.gov/ttn/atw/nata/perspect.html (last updated April 2010). Accessed May 11, 2014.

[15] ARB. 2009. *California Almanac of Emissions and Air Quality - 2009 Edition*, Figure 5-14 (p. 5-59) and Table 5-44 (p. 5-61). Available online: http://www.arb.ca.gov/aqd/almanac/almanac09/chap509.htm. Accessed May 22, 2014.

medical facilities can include hospitals, convalescent homes, and health clinics; and playgrounds can be play areas associated with parks or community centers.[16]

Three day care facilities are in proximity to the project site. Bright Horizon Day Care, at 303 Second Street, approximately 140 feet east of the project site, is the closest sensitive receptor. Two other day care facilities near the project site: California Child Care Resources and Referral Network, at 111 New Montgomery Street, is approximately 250 feet west, and Healthy Environmental Child Development Center, at 75 New Hawthorne Street, approximately 400 feet west of the project site. The closest residential receptors are the multi-unit residences along Second Street, between King and Brannan streets.

4.6.3 Regulatory Framework

FEDERAL AND STATE

Federal Ambient Air Quality Standards

The federal Clean Air Act (CAA) was passed in 1970 and was last amended in 1990. It requires that regional planning and air pollution control agencies prepare a regional air quality plan. The plans is to outline the measures by which both stationary and mobile sources of pollutants will be controlled in order to achieve all standards by the deadlines specified in the Clean Air Act.

These ambient air quality standards are intended to protect public health and welfare, and they specify the concentration of pollutants (with an adequate margin of safety) to which the public can be exposed without adverse health effects. They are designed to protect those segments of the public most susceptible to respiratory distress, known as sensitive receptors: asthmatics, children, the elderly, people weak from other illness or disease, and persons engaged in strenuous work or exercise. Healthy adults can tolerate occasional exposure to air pollution levels that are somewhat above the ambient air quality standards before adverse health effects are observed.

The determination of whether a region’s air quality is healthful or unhealthful is made by comparing contaminant levels in ambient air samples to the NAAQS. Data from regional monitoring stations is used to establish a region’s attainment status for criteria air pollutants. The purpose of these designations is to identify planning areas with air quality problems and thereby initiate planning efforts for improvement. The three basic designation categories are nonattainment, attainment, and unclassified. The unclassified designation is used for an

[16] BAAQMD. 2012. Recommended Methods for Screening and Modeling Local Risks and Hazards. Version 3.0 May 2012. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Risk%20Modeling%20Approach%20May%202012.ashx?la=en. Accessed June 23, 2014.

area that cannot be classified on the basis of available information as meeting or not meeting the standards.

The current attainment status for the SFBAAB with respect to federal standards is summarized in Table 4.6-3. In general, the SFBAAB experiences low concentrations of most pollutants when compared to federal standards, except for ozone and particulate matter (PM_{10} and $PM_{2.5}$), for which standards are exceeded periodically.

In June 2004, the SFBAAB was designated as marginal nonattainment for the national 8-hour ozone standard. The US EPA lowered the national 8-hour ozone standard from 0.80 to 0.75 ppm, effective May 12, 2008. On February 7, 2012, it proposed a rule to implement the 2008 national 8-hour ozone standard, establishing an approach for nonattainment classification for planning areas not meeting the 2008 national 8-hour ozone standard. Based on the new 8-hour NAAQS, the SFBAAB is currently designated as marginal nonattainment to achieve the new standard in 3 years.[17, 18]

On January 22, 2010, the US EPA revised the health-based NAAQS for NO_2.[19] A new 1-hour NO_2 standard was set at the level of 100 ppb, a level that defines the maximum allowable concentration anywhere in an area. To determine compliance with the 2010 standard, the US EPA, at that time, also established new ambient air monitoring and reporting requirements for NO_2. These included monitors near major roads in urban areas and in other locations where maximum concentrations are expected. Additional monitors are in large urban areas to measure the highest concentrations of NO_2 that occur more broadly across communities.

In addition, the US EPA, working with the states, will site a subset of monitors in locations to help protect communities that are susceptible and vulnerable to NO_2-related health effects. On March 7, 2013, the US EPA issued a final rule to revise the deadlines by which the near-road monitors within the NO_2 monitoring network are to be operational. This monitoring network will collect data that are compared to the NAAQS for NO_2. The US EPA has established a series of deadlines that require states and local agencies to begin operating the near-road component of the NO_2 network in phases between January 1, 2014, and January 1, 2017. This replaces the 2010 rule requirement that originally required all new NO_2 monitors to begin operating on January 1, 2013.

[17] US EPA Green Book. Available online: http://www.epa.gov/airquality/greenbook/hindex.html.

[18] US EPA, Fact Sheet, Proposed Rule - Implementation of the 2008 National Ambient Air Quality Standards for Ozone: Nonattainment Area Classifications Approach and Attainment Deadlines. Available online: www.epa.gov/glo/pdfs/20120203factsheet.pdf.

[19] US EPA, Factsheet, Revisions to Ambient Nitrogen Dioxide Monitoring Requirements. Available online: http://www.epa.gov/oaqps001/nitrogenoxides/pdfs/20130307fs.pdf. Accessed June 18, 2014.

Table 4.6-3: State and National Ambient Air Quality Standards and Attainment Status for the San Francisco Bay Area Air Basin

Pollutant	Averaging Period	California Standards	California Attainment Status	Federal Standards	Federal Attainment Status
O_3	1-hour	0.09 ppm (180 µg/m^3)	Nonattainment	—	—
	8-hour	0.070 ppm (137 µg/m^3)	Nonattainment	0.075 ppm (147 µg/m^3)	Nonattainment
PM_{10}	24-hour	50 µg/m^3	Nonattainment	150 µg/m^3	Attainment/ Maintenance
	AAM	20 µg/m^3	Nonattainment	—	Unclassified
$PM_{2.5}$	24-hour	—	—	35 µg/m^3	Nonattainment
	AAM	12 µg/m^3	Nonattainment	12.0 µg/m^3	Attainment
CO	8-hour	9.0 ppm (10 mg/m^3)	Attainment	9 ppm (10 mg/m^3)	Unclassifiable/ Attainment
	1-hour	20 ppm (23 mg/m^3)	Attainment	35 ppm (40 mg/m^3)	Attainment/ Maintenance
NO_2	AAM	0.030 ppm (57 µg/m^3)	Attainment	53 ppb (100 µg/m^3)	Attainment
	1-hour	0.18 ppm (338 µg/m^3)	Attainment	100 ppb (188 µg/m^3)	Unclassified
SO_2	24-hour	0.04 ppm (105 µg/m^3)	Attainment		—
	3-hour[1]	—	—	—	—
	1-hour	0.25 ppm (655 µg/m^3)	Attainment	75 ppb (196 µg/m^3)	Attainment
Lead	30-day average	1.5 µg/m^3	Attainment	—	—
	Calendar quarter	—	—	1.5 µg/m^3	Attainment
	Rolling 3-month average	—	—	0.15 µg/m^3	—
Visibility reducing particles	8-hour	Extinction coefficient of 0.23 per kilometer	Attainment	No federal standards	
Sulfates	24-hour	25 µg/m^3	Attainment		
Hydrogen sulfide	1-hour	0.03 ppm (42 µg/m^3)	Unclassified		
Vinyl chloride	24-hour	0.01 ppm (26 µg/m^3)	Unclassified		

— = not applicable
AAM—annual arithmetic mean
mg/m^3—milligrams per cubic meter
[1]The 3-hour SO_2 standard is a secondary NAAQS of 0.5 ppm (not listed in this table). Secondary standards are established to protect the environment and are not health based.

Sources:
ARB. 2014a. Ambient Air Quality Standards. Available online: http://www.arb.ca.gov/research/aaqs/aaqs2.pdf,
____. 2013. Area designation maps. Available online: http://www.arb.ca.gov/desig/adm/adm.htm.

The US EPA issued final area designations for lead on November 8, 2011, with the SFBAAB being designated as unclassifiable/attainment; the US EPA uses this designation in practice for initial designations to mean that available information does not indicate that the air quality in these areas exceeds the 2008 lead NAAQS.[20] The SFBAAB is in attainment for other criteria pollutants, with the exception of the 24-hour standards for PM_{10} and $PM_{2.5}$, for which the SFBAAB is designated unclassified and nonattainment, respectively.

On December 14, 2012, the US EPA revised the NAAQS for $PM_{2.5}$ to 12.0 $\mu g/m^3$.[21] The US EPA is also updating and improving the nation's $PM_{2.5}$ monitoring network. This includes relocating a small number of monitors to measure fine particulates near heavily traveled roads in areas with populations of 1 million or more. These relocations will be phased in from 2015 to 2017 and will not require additional monitors. The US EPA anticipates making initial attainment/nonattainment designations by December 2014, with those designations likely becoming effective in early 2015. States would have until 2020 (five years after designations are effective) to meet the revised annual $PM_{2.5}$ attainment standard. A state may request a possible extension to 2025, depending on the severity of an area's fine particle pollution problems and the availability of pollution controls.

State Ambient Air Quality Standards

In 1988, California passed the California Clean Air Act (California Health and Safety Code, Sections 39000 et seq.), which, like its federal counterpart, called for the designation of areas as attainment or nonattainment, but based on state ambient air quality standards rather than the federal standards.

Although the federal CAA established NAAQS, individual states retained the option to adopt more stringent standards and to include other pollution sources. California had already established its own air quality standards when federal standards were established. Because of the unique meteorological problems in California, there is considerable diversity between the CAAQS and the NAAQS, as shown in Table 4.6-3. CAAQS tend to be at least as protective as NAAQS and are often more stringent. As indicated in the table, the SFBAAB is designated as nonattainment for state ozone and PM_{10}, and $PM_{2.5}$ standards; it attains the state standards for other pollutants.

[20] US EPA, Federal Register, Volume 76, No. 225, November 22, 2011, p. 72106. Available online: http://www.gpo.gov/fdsys/pkg/FR-2011-11-22/pdf/2011-29460.pdf. Accessed June 18, 2014.

[21] US EPA, Factsheet – Overview of EPA's Revision to the Air Quality Standards for Particle Pollution (Particulate Matter). Available online: http://www.epa.gov/airquality/particlepollution/2012/decfsoverview.pdf. Accessed June 18, 2014.

Diesel Risk Reduction Plan

In October 2000, ARB approved a comprehensive diesel risk reduction plan to reduce diesel emissions from both new and existing diesel-fueled vehicles and engines. In 2008, as part of the plan, ARB approved a new regulation for existing heavy-duty diesel vehicles that will require retrofitting and replacement of the vehicles themselves or their engines. This transition would take place over time, such that by 2023 all vehicles must have a 2010 model year engine or equivalent. The regulation is anticipated to result in an 80 percent decrease in statewide diesel health risk in 2020 from the 2000 risk levels.[22] Additional regulations apply to new trucks and to diesel fuel.

In 2005, ARB approved a regulatory measure to reduce emissions of toxic and criteria pollutants by limiting the idling of new heavy-duty diesel vehicles (California Air Resources Board Idling Regulations). The regulations generally limit idling of commercial motor vehicles (including buses and trucks) within 100 feet of a school or residential area for more than 5 consecutive minutes or for periods aggregating more than 5 minutes in any 1 hour.[23] Bus and other vehicle operators also must turn off their engines on stopping at a school and must not start their engines more than 30 seconds before beginning to depart from a school. Also, state law SB351 (adopted in 2003) prohibits locating public schools within 500 feet of a freeway or busy traffic corridor.

In addition to implementing more stringent engine controls (diesel engines produced today have one-eighth the tailpipe exhaust of those built in 1990), diesel fuel is required to have lower levels of sulfur. As of June 1, 2006, at least 80 percent of on-road diesel fuel refined in the United States is required to be ultra-low sulfur diesel, which has reduced sulfur emissions by 97 percent.

All of the diesel fuel sold in California for use with on-road trucks is now ultra-low sulfur. Particulate matter emissions are projected to be reduced by about 7 tons per day in 2014 and another 3 tons per day in 2023; NO_X emissions are projected to be reduced by about 88 tons per day in 2023.[24] These reductions are critical to meeting federal clean air standards.

---

[22] ARB, Facts About Truck and Bus Regulation Emissions Reductions and Health Benefits, February 25, 2009. Available online: http://www.bcaqmd.org/page/_files/tbhealthfs.pdf. Accessed May 30, 2014.

[23] There are 12 exceptions to this requirement, for example in emergency situations; if it is a military vehicle; under adverse weather conditions; when a vehicle's power takeoff is being used to run pumps, blowers, or other equipment; when a vehicle is stuck in traffic, stopped at a light, or under direction of a police officer; when a vehicle is queuing beyond 100 feet from any restricted area; or when an engine is being tested, serviced, or repaired.

[24] ARB, Facts About Truck and Bus Regulation Reducing Emissions from Existing Diesel Vehicles, July 20, 2012. Available online: www.arb.ca.gov/msprog/onrdiesel/documents/fsoverview.pdf. Accessed May 30, 2014.

The regulation would also reduce diesel particulate matter emissions by the maximum level achievable from in-use trucks and buses. ARB staff estimates that about 3,500 premature deaths statewide would be avoided by implementing the regulation.

REGIONAL

Bay Area Air Quality Planning Relevant to State and Federal Standards

Air quality plans developed to meet federal requirements are referred to as state implementation plans. The federal and state Clean Air Acts require plans to be developed for areas designated as nonattainment (with the exception of areas designated as nonattainment for the state PM_{10} standard). The BAAQMD adopted the 2010 Bay Area Clean Air Plan on September 15, 2010, in cooperation with the Metropolitan Transportation Commission (MTC), the Bay Conservation and Development Commission (BCDC), and Association of Bay Area Governments (ABAG). The 2010 Clean Air Plan outlines a multipollutant approach for addressing ozone, particulate matter, air toxics, and greenhouse gas emission reductions in a single integrated strategy. The primary objectives of the plan are to improve local and regional air quality, to protect public health, and to minimize climate change impacts. The 2010 Clean Air Plan replaces the Bay Area 2005 Ozone Strategy, adopted in 2006.

The 2010 Clean Air Plan is the current ozone attainment plan and serves to achieve the following:

- Update the 2005 Ozone Strategy in accordance with the requirements of the California CAA to implement "all feasible measures" to reduce ozone;

- Provide a control strategy to reduce ozone, particulate matter, toxic air contaminants, and greenhouse gases in a single integrated plan;

- Review progress in improving air quality in recent years; and

- Establish emission control measures to be adopted or implemented in the 2010-2012 timeframe.

The control strategy includes stationary-source control measures to be implemented through BAAQMD regulations; mobile-source control measures to be implemented through incentive programs and other activities; and transportation control measures to be implemented through transportation programs in cooperation with the MTC, local governments, transit agencies, and others. The 2010 Clean Air Plan also represents the Bay Area's most recent triennial assessment of the region's strategy to attain the state 1-hour ozone standard.[25]

LOCAL

San Francisco General Plan Air Quality Element

The San Francisco General Plan includes the 1997 Air Quality Element.[26] The objectives specified by the City are the following:

Objective 1: Adhere to state and federal standards and regional programs;

Objective 2: Reduce mobile sources of air pollution through implementation of the Transportation Element of the San Francisco General Plan;

Objective 3: Decrease the air quality impacts of development by coordination of land use and transportation decisions;

Objective 4: Improve air quality by increasing public awareness regarding the negative health effects of pollutants generated by stationary and mobile sources;

Objective 5: Minimize particulate matter emissions from road and construction sites; and

Objective 6: Link the positive effects of energy conservation and waste management to emission reductions.

San Francisco Health Code Construction Dust Control Ordinance

The San Francisco Health Code Article 22B and San Francisco Building Code, Section 106A.3.2.6, collectively constitute the City's Construction Dust Control Ordinance (adopted in July 2008). The ordinance requires that all site preparation work, demolition, and other construction activities in the City comply with specific dust control measures whether or not the activity requires a permit from the Department of Building Inspection (DBI). This applies to activities that have the potential to create dust or to expose or disturb more than 10 cubic yards or 500 square feet of soil. For projects over one-half acre, the ordinance requires that the project sponsor submit a dust control plan for approval by the DPH before the DBI issues a building permit.

---

[25] BAAQMD, Bay Area 2010 Clean Air Plan. Available online: http://www.baaqmd.gov/Divisions/Planning-and-Research/Plans/Clean-Air-Plans.aspx. Accessed June 11, 2014.

[26] City and County of San Francisco, San Francisco General Plan, Air Quality Element, 1997, updated 2000. Available online: http://www.sf-planning.org/ftp/General_Plan/I10_Air_Quality.htm. Accessed May 30, 2014.

The Construction Dust Control Ordinance requires project sponsors and contractors responsible for construction to control construction dust on the site or implement other practices that result in equivalent dust control that are acceptable to the Director of Public Health. Dust suppression activities are referred to as best management practices (BMPs). They may include watering all active construction areas sufficiently to prevent dust from becoming airborne and increasing watering frequency whenever wind speeds exceed 15 miles per hour. Reclaimed water must be used if required by Article 21, Section 1100 et seq., of the San Francisco Public Works Code.

The Construction Dust Control Ordinance has a mandate for “no visible dust.” Section 1247 of Article 22B of the Public Health Code requires that all City agencies that authorize construction or other improvements on City property adopt rules and regulations to ensure that the Article 22B dust control requirements are followed. The BMPs employed in compliance with the ordinance provide an effective strategy for controlling fugitive dust. Since the proposed project or its variant would be required to comply with the ordinance, particulate matter from fugitive dust is not quantified for this SEIR.

San Francisco Clean Construction Ordinance

Section 6.25 of Chapter 6 of the San Francisco Administrative Code (Clean Construction Ordinance) requires clean construction practices for all City projects that consist of 20 or more cumulative days of construction. The ordinance requires that off-road equipment and off-road engines with 25 horsepower or greater be fueled by biodiesel fuel grade B20 or higher; if they are used more than 20 hours, they must either meet or exceed Tier 2 emissions standards[27] for off-road engines or operate with the most effective verified diesel emission control technology. The requirement does not apply to portable or stationary generator engines.

4.6.4 Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

The significance criteria used in this analysis are consistent with the environmental checklist in Appendix G of the CEQA Guidelines, which the San Francisco Planning Department has adopted and modified. Implementation of the proposed project or its variant would have a significant effect on air quality if were to result in the following:

- Violate any air quality standard or contribute substantially to an existing or projected air quality violation;

[27] Federal emission standards (Tier1 through Tier 4) for off-road diesel engines, including construction equipment, are based on the engine horsepower and year manufactured.

- Result in a cumulatively considerable net increase of any criteria air pollutant for which the region is in nonattainment under an applicable federal or state ambient air quality standard;
- Expose sensitive receptors to substantial pollutant concentrations; or
- Conflict with or obstruct implementation of the applicable air quality plan.

Thresholds of Significance

This section discusses the thresholds for determining whether a project would result in a significant air quality impact. Table 4.6-4, Criteria Pollutant Significance Thresholds, summarizes the air quality thresholds of significance. The table is followed by a discussion of each threshold.

Table 4.6-4: Criteria Pollutant Significance Thresholds

Pollutant	Construction	Operation	
	Daily Average Emissions (pounds/day)	Daily Average Emissions (pounds/day)	Maximum Annual Emissions (tons/year)
ROG	54	54	10
NOX	54	54	10
PM10 (exhaust)	82	82	15
PM2.5 (exhaust)	54	54	10
Fugitive dust	BMPs	—	

— = Not applicable

Source: BAAQMD 2010a. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx?la=en.

Criteria Pollutants

In determining whether construction or operation of a proposed project or its variant would violate an air quality standard, contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase of any criteria air pollutant, this analysis considers whether the proposed Second Street Improvement Project would emit criteria pollutants in excess of the levels provided in Table 4.6-4. These levels are from BAAQMD CEQA guidance. A discussion of these significance thresholds is provided below.

Ozone Precursors

The SFBAAB is currently designated as nonattainment for ozone. The potential for a project to result in a cumulatively considerable net increase in criteria air pollutants, which may contribute to an existing or projected air quality violation, is based on emissions limits for stationary sources set in the state and federal Clean Air Acts. The federal New Source Review (NSR) program was created by the CAA to ensure that stationary sources of air pollution are constructed in a manner that is consistent with attainment of federal health-based ambient air quality standards. Similarly, to ensure that new stationary sources do not cause or contribute to a violation of an air quality standard, Rule 2 of the BAAQMD Regulation 2 requires that any new source that emits criteria air pollutants above a specified emissions limit must offset those emissions. For ozone precursors, ROG, and NO_X, the offset emissions level is an annual average of 10 tons (or 54 pounds per day). These levels represent emissions by which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants.[28]

Projects that result in emissions below the BAAQMD thresholds would not be considered to contribute to an existing or projected air quality violation or result in a cumulatively considerable net increase in ROG and NO_X emissions. Because construction activities are temporary, only the average daily thresholds are applicable to construction phase emissions.

Particulate Matter

The SFFAAB is also currently designated as nonattainment for inhalable PM_{10} and fine $PM_{2.5}$. The BAAQMD has not established an offset limit for $PM_{2.5}$; the current federal prevention of significant deterioration threshold level of 100 tons per year for PM_{10} would not be an appropriate significance threshold for the SFBAAB, considering its nonattainment status for PM_{10}.

More appropriate significance thresholds for the SFBAAB are the emissions limits provided in the federal NSR regulations that apply to stationary sources of criteria air pollutants in areas designated as nonattainment for PM_{10} and $PM_{2.5}$. The emissions limits for PM_{10} and $PM_{2.5}$ under the NSR regulations are 15 tons per year (82 pounds per day) and 10 tons per year (54 pounds per day), respectively. These emissions limits represent levels at which a source is not expected to have an impact on air quality.

Although NSR applies to new or modified stationary sources, the thresholds represent levels at which new sources are not anticipated to contribute to an air quality violation or result in a considerable net increase in criteria air pollutants. As such, although the Second Street Improvement Project has only non-stationary emission sources, the above thresholds can be applied to the construction and operational phases of the proposed project or its variant.

[28] BAAQMD, Revised Draft Options and Justification Report: California Environmental Quality Act Thresholds of Significance, October 2009, pp. 1-2. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en. Accessed May 22, 2014.

Those projects that result in average daily or annual emissions below the NSR emission limits are considered to contribute to an existing or projected air quality violation or result in a cumulatively considerable net increase in PM_{10} and $PM_{2.5}$ emissions. Because construction activities are temporary, only the average daily thresholds are applicable to construction-phase emissions.

Other Criteria Pollutants

Regional concentrations of CO have not exceeded the CAAQS in the past 12 years, and SO_2 concentrations have never exceeded the standards. The primary source of CO impacts from transportation corridors and roadway projects is vehicle traffic. Construction-related SO_2 emissions represent a negligible portion of the total basin-wide emissions; construction-related CO emissions represent less than 5 percent of the total basin-wide CO emissions.[29]

The SFBAAB is designated as attainment for both CO and SO_2. Furthermore, the BAAQMD has demonstrated that in order to exceed the CAAQS of 9.0 ppm (8-hour average) or 20.0 ppm (1-hour average) for CO, project traffic in addition to existing traffic would need to exceed 44,000 vehicles per hour at affected intersections (or 24,000 vehicles per hour where vertical or horizontal mixing[30] is limited).[31] As an infrastructure project, the proposed project or its variant would not generate new vehicle trips. However, it may divert traffic to the surrounding streets. The TIS[32] prepared for the proposed project or its variant determined that approximately 950 vehicles would be diverted, during p.m. peak hour, from their existing routes to parallel routes in proximity. The TIS demonstrated that the BAAQMD threshold of 24,000 vehicles per hour would not be exceeded at any intersection as a result of traffic diversion. Therefore, given the SFBAAB's attainment status and the potential limited CO and SO_2 emissions, the project would not result in a cumulatively considerable net increase in CO or SO_2, and quantitative analysis is not required.

---

[29] BAAQMD, Revised Draft Options and Justification Report: California Environmental Quality Act Thresholds of Significance, October 2009, p. 27. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en. Accessed May 22, 2014.

[30] e.g., tunnel, parking garage, bridge underpass, natural or urban street canyon, below-grade roadway)

[31] BAAQMD, CEQA Air Quality Guidelines, May 2010. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Draft_BAAQMD_CEQA_Guidelines_May_2010_Final.ashx?la=en. Accessed May 18, 2014.

[32] CHS Consulting Group. 2014. Second Street Improvement Project, Transportation Impact Study – Final. July 7. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, as part of Case No. 2007.0347E.

Fugitive Dust

Fugitive dust emissions are typically generated during certain construction phases. Studies have shown that the application of BMPs at construction sites substantially control fugitive dust.[33] Individual measures have been shown to reduce fugitive dust by anywhere from 30 percent to 90 percent.[34]

The BAAQMD has identified a number of BMPs to control fugitive dust emissions from construction activities. The City's Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008) requires many of these and other measures to be implemented during construction. The BMPs employed in compliance with the City's Construction Dust Control Ordinance provide an effective strategy for controlling fugitive dust.

Health Risks to Sensitive Populations

Construction typically requires the use of heavy-duty diesel vehicles and equipment, which emit DPM. Trucks and buses, which are mobile, are among the primary sources of diesel emissions, and concentrations of DPM are higher near heavily traveled highways.

Projects that require a substantial amount of heavy-duty diesel vehicles and equipment would result in emissions of DPM and possibly other TACs that may affect nearby sensitive receptors. Construction-phase TACs, however, would be temporary, and current health risk modeling methods are associated with longer-term exposure periods of 9, 40, and 70 years. These do not correlate well with the temporary and highly variable nature of construction, which makes it difficult to produce accurate modeling results.[35] Nevertheless, DPM is a known TAC, so appropriate thresholds are identified to ensure that a project does not expose sensitive receptors to substantial pollutant concentrations.

Similar to criteria pollutant thresholds identified above, the BAAQMD Regulation 2, Rule 5, sets cancer risk limits for new and modified sources of TACs at the maximally exposed individual sensitive receptor (MEI). In accordance with Regulation 2, Rule 5, the BAAQMD Air Pollution Control Officer shall deny any permit to operate a source that would increase

[33] Western Regional Air Partnership, Fugitive Dust Handbook, September 7, 2006, pp. 3-16. Available online: http://www.wrapair.org/forums/dejf/fdh/content/FDHandbook_Rev_06.pdf. Accessed May 18, 2014.

[34] BAAQMD, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October 2009, p. 27. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en. Accessed May 12, 2014.

[35] Ibid., p. 29.

cancer risk of 10 per million at the MEI. This threshold is designed to ensure that the source does not contribute to a cumulatively significant health risk impact.[36]

In addition, particulate matter, primarily from vehicle emissions, is strongly associated with mortality, respiratory diseases, and impairment of lung development in children and hospitalization for cardiopulmonary disease. Based on toxicological and epidemiological research, smaller particles and those associated with traffic appear to be more closely related to adverse health effects.[37] Therefore, estimates of $PM_{2.5}$ impacts from a new source can be used to approximate broader potential adverse health effects.

In 2010, the US EPA established a significant impact level (SIL) for $PM_{2.5}$ of 0.3 μg/m^3 (annual average concentration). The SIL represents the level of incremental $PM_{2.5}$ emissions impact that would result in a significant contribution to nonattainment in regions currently designated as nonattainment for $PM_{2.5}$.[38] Therefore, the US EPA $PM_{2.5}$ SIL of 0.3 μg/m^3 is an appropriate threshold for determining the significance of a source's $PM_{2.5}$ impact.

Potential health risks from new sources on sensitive receptors are assessed within a 1,000-foot zone of influence, based on guidance from BAAQMD, the ARB's *Land Use Compatibility Handbook,* and Health and Safety Code, Section 42301.6 (Notice for Possible Source Near School).[39] Health risks from new sources that exceed either of the following thresholds at the MEI are determined to be significant: excess cancer risk of 10 per one million, or an annual average $PM_{2.5}$ increase of 0.3 μg/m^3.

Consistency with Applicable Air Quality Plan

As discussed above in the Regulatory Framework section, the BAAQMD has published the 2010 Clean Air Plan (CAP), representing the most current applicable air quality plan for the SFBAAB region. Consistency with this plan is the basis for determining whether the proposed project or its variant would conflict with or obstruct implementation of an applicable air quality plan. To determine consistency with the CAP, this analysis considers whether the project (1) would support the primary goals of the CAP, (2) would include applicable control measures from the CAP, and (3) would not disrupt or hinder implementation of control measures identified in the CAP.

---

[36] BAAQMD, CEQA Air Quality Guidelines, May 2011, p. D-40.

[37] San Francisco Department of Public Health, Assessment and Mitigation of Air Pollutant Health Effects from Intra-urban Roadways: Guidance for Land Use Planning and Environmental Review, May 2008, p. 5. Available online: http://www.sfdph.org/dph/EH/Air/MitRoadway111907.pdf. Accessed May 18, 2014.

[38] BAAQMD, CEQA Air Quality Guidelines, May 2011, p. D-36.

[39] Ibid., pp. D-38 and D-40.

Cumulative Air Quality Impacts

Regional air quality impacts are by their very nature cumulative. Emissions from past, present, and future projects cumulatively contribute to adverse regional air quality impacts. No single project by itself would be sufficient in size to result in nonattainment of ambient air quality standards; instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts.[40]

As described above, the project-level air quality thresholds for criteria pollutants are based on levels by which new sources are not anticipated to contribute to an air quality violation or result in considerable net increase in criteria air pollutants levels. Therefore, if a project's emissions are below the project-level thresholds, the project would not be expected to result in a considerable contribution to cumulative regional air quality impacts.

With respect to localized health risks, while most of San Francisco is endowed with good air quality, the areas that are close to freeways, busy roadways, and other sources of air pollution experience higher concentrations of air pollutants. These air pollutant exposure zones result in additional health risks for affected populations.

In an effort to identify air pollutant exposure zones, San Francisco partnered with the BAAQMD to inventory and assess air pollution and exposures from mobile, stationary, and area sources in the City. This included dispersion modeling of emissions from the primary sources of air pollutants in the City, so the results represent a comprehensive assessment of cumulative exposures to air pollution throughout the City.

The BAAQMD conducted citywide dispersion modeling using American Meteorological Society/Environmental Protection Agency Regulatory Model (AERMOD)[41] to assess the emissions from the following primary sources: roadways, permitted stationary sources, port and maritime sources, and Caltrain. PM_{10}, $PM_{2.5}$, and total organic gases (TOGs) were modeled on a 20-meter by 20-meter receptor grid covering the entire City. The method and technical documentation for modeling citywide air pollution is available in The San Francisco Community Risk Reduction Plan: Technical Support Documentation.[42]

---

[40] BAAQMD, CEQA Air Quality Guideline. June, 2010.

[41] AERMOD is the US EPA's preferred and recommended steady state air dispersion plume model. For more information on AERMOD and to download the AERMOD Implementation Guide, see: http://www.epa.gov/ttn/scram/dispersion_prefrec.htm#aermod.

[42] BAAQMD, San Francisco Department of Public Health, and San Francisco Planning Department, The San Francisco Community Risk Reduction Plan: Technical Support Documentation, December 2012. A copy of this document is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2011.0558E.

Using the citywide air pollution model results, the City identified air pollutant exposure zones based on two health-protective criteria: (1) excess cancer risk from the contribution of emissions from all modeled sources and (2) cumulative $PM_{2.5}$ concentrations.

In determining the additional health impacts from $PM_{2.5}$ exposure, $PM_{2.5}$ concentrations throughout the City were modeled from the primary sources listed above; ambient $PM_{2.5}$ concentrations were then added to determine total $PM_{2.5}$ exposure concentrations.

The following health protective criteria are used to determine air pollutant exposure zones and are further discussed below:

- Excess cancer risk from all sources greater than 100 per one million population; and
- $PM_{2.5}$ concentrations from all sources, including ambient concentrations greater than 10 μg/m^3.

Excess Cancer Risk

The above-noted 100 per one million persons (100 excess cancer risk) criteria is based on US EPA guidance for conducting air toxic analyses and making risk management decisions at the facility and community-scale level.[43] As described by the BAAQMD, the US EPA considers a cancer risk of 100 per million to be within the acceptable range of cancer risk.

Furthermore, in the 1989 preamble to the benzene National Emissions Standards for Hazardous Air Pollutants rulemaking,[44] the US EPA states that it "…strives to provide maximum feasible protection against risks to health from hazardous air pollutants by (1) protecting the greatest number of persons possible to an individual lifetime risk level no higher than approximately one in one million and (2) limiting to no higher than approximately one in ten thousand (100 in one million) the estimated risk that a person living near a plant would have if he or she were exposed to the maximum pollutant concentrations for 70 years." The 100 per one million excess cancer cases is also consistent with the ambient cancer risk in the most pristine portions of the SFBAAB, based on BAAQMD regional modeling.[45]

---

[43] BAAQMD, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October 2009, p. 67. Available online: http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en. Accessed May 30, 2014.

[44] 54 Federal Register 38044, September 14, 1989.

[45] BAAQMD, Revised Draft Options and Justification Report, California Environmental Quality Act Thresholds of Significance, October 2009, p. 67. Available online http://www.baaqmd.gov/~/media/Files/Planning%20and%20Research/CEQA/Revised%20Draft%20CEQA%20Thresholds%20%20Justification%20Report%20Oct%202009.ashx?la=en. Accessed May 30, 2014.

Fine Particulate Matter

In April 2011, the US EPA published Policy Assessment for the Particulate Matter Review of the National Ambient Air Quality Standards, the "Particulate Matter Policy Assessment." Its purpose was to bridge the gap between the scientific information and the judgments required of the US EPA Administrator in determining whether it is appropriate to retain or revise the particulate matter standards.

In this document, US EPA concluded that the currently available information calls into question the adequacy of the federal standard of 15 μg/m^3 for $PM_{2.5}$ and that consideration should be given to revising the standards to provide increased public health protection. US EPA staff further concluded that the current annual $PM_{2.5}$ standard should be revised to a level within the range of 13 to 11 μg/m^3, with evidence strongly supporting a standard within the range of 12 to 11 μg/m^3.

On December 14, 2012, the US EPA finalized the revised fine particulate matter standard under the federal CAA, reducing the national ambient air quality standard from 15 μg/m^3 to 12 μg/m^3.[46] This revised annual standard is equivalent to California's fine particulate matter standard of 12 μg/m^3.[47]

Identified air pollutant exposure zones in San Francisco are based on the health protective $PM_{2.5}$ standard of 11 μg/m^3, as supported by the US EPA's Particulate Matter Policy Assessment. However, San Francisco's air pollutant exposure zones have been identified using a lower $PM_{2.5}$ concentration of 10 μg/m^3. This was done to be even more health protective and to account for uncertainty in accurately predicting air pollution concentrations using air dispersion modeling programs. The project site is in an identified air pollutant exposure zone.

Projects within these air pollutant exposure zones require special consideration to determine whether the project's activities would expose sensitive receptors to substantial air pollutant concentrations or add emissions to areas already adversely affected by poor air quality. The Planning Department considers a project to contribute considerably to cumulative health risks if it would result in one of the following at the maximally exposed individual (MEI):

- A considerable contribution to cumulative excess cancer risk greater than 100 per one million persons exposed; or

---

[46] US EPA, press release: USEPA Announces Next Round of Clean Air Standards to Reduce Harmful Soot Pollution, December 14, 2012. Available online: http://yosemite.epa.gov/opa/admpress.nsf/. Accessed May 18, 2014.

[47] ARB, Ambient Air Quality Standards (AAQS) for Particulate Matter, November 24, 2009. Available online: http://www.arb.ca.gov/research/aaqs/pm/pm.htm#3. Accessed May 12, 2014.

- A considerable contribution to cumulative $PM_{2.5}$ concentrations that exceed 10 μg/m^3 (inclusive of ambient $PM_{2.5}$ concentrations).

As discussed above, the BAAQMD considers projects that exceed the cancer risk of less than 10 per one million persons exposed, or an annual average $PM_{2.5}$ concentration of less than 0.3 μg/m^3, to not contribute considerably to cumulatively significant levels of health risk.[48] Therefore, project-related emissions of TACs and $PM_{2.5}$ concentrations below these levels would not result in a cumulatively considerable contribution to localized health risks.

APPROACH TO ANALYSIS

The impact analysis below describes the air quality impacts from the proposed project or its variant. Project-related air quality impacts fall into two categories: short-term due to construction and long-term due to project operation. The approach to the analysis of construction-related impacts is described below.

Emissions would temporarily affect local air quality during construction of the proposed project or its variant. Construction is projected to start in fall 2016 and to continue for approximately one year (240 working days). Emissions from project construction were estimated using California Emissions Estimator Model (CalEEMod), 2013, version 2013.2.2, which is the BAAQMD and City approved model. CalEEMod quantifies criteria pollutant emissions from construction from a variety of land use projects.

The construction module of CalEEMod was used to estimate the emissions from project construction. The model quantifies direct emissions from construction (including vehicle and off-road equipment use). San Francisco Public Works provided the project construction information, which includes project-specific construction equipment lists, phase durations, and hauling activities.

For input data that was not provided, such as equipment load factor and worker trip activity, CalEEMod default values were used. The construction of the proposed project or its variant would be subject to the City’s Clean Construction Ordinance. The requirements related to the type of construction equipment and emission standards required would be specified in construction bid documents. This analysis does not account for project compliance with the Clean Construction Ordinance, and it therefore provides a very conservative estimate of emissions. Compliance with the Clean Construction Ordinance, described under Construction Activities and Schedule above, would further reduce the estimated emissions that are presented and discussed below.

[48] BAAQMD, CEQA Air Quality Guidelines, May 2011, pp. D-39 to D-40.

IMPACT EVALUATION

Construction Air Quality

Impact AQ-1: Construction of the proposed project or the project variant would not result in a violation of air quality standards or contribute substantially to an existing or projected air quality violation; nor would it result in a cumulatively considerable net increase of criteria air pollutants, for which the project region is in nonattainment under an applicable ambient air quality standard. *(Less than Significant)*

Construction for the project or project variant would include construction to rehabilitate or replace sewers, relocate overhead utilities underground, and install streetscape improvements. These would be bicycle, transit, and pedestrian facilities, which would take approximately one year to complete. Construction activities would emit criteria air pollutants and air toxics (including DPM) from off-road construction equipment. Fugitive dust emissions would result from excavation and trenching. On-road activity from worker vehicle and hauling truck trips would also generate criteria pollutant emissions.

Table 4.6-4 provides the thresholds for determining whether emissions of criteria air pollutants during construction would be significant; Table 4.6-5 lists the estimated construction criteria air pollutants.

Table 4.6-5 shows that the proposed project or its variant construction emissions of criteria pollutants would be well below the BAAQMD quantitative significance thresholds.

Table 4.6-5: Project Construction Emissions of Criteria Pollutants

Construction Emission	ROG	NO_X	PM_{10} (exhaust)	PM_{10} (fugitive dust)	$PM_{2.5}$ (exhaust)	$PM_{2.5}$ (fugitive dust)
Total emissions (tons/ construction duration)	0.44	2.76	0.13	0.20	0.12	0.04
Average daily emissions (pounds/day)	3.69	22.47	1.10	1.64	1.01	0.33
BAAQMD average daily significance thresholds (pounds/day)	54	54	82	BMPs	54	BMPs
Exceeds BAAQMD thresholds?	No	No	No	—[1]	No	—[1]

[1]The BAAQMD does not have quantitative mass emission thresholds for fugitive dust PM_{10} and $PM_{2.5}$ emissions.
Source: URS 2014.

The BAAQMD does not have quantitative mass thresholds for construction fugitive dust emissions. Instead, it recommends that BMPs be implemented to reduce fugitive dust emissions; the BAAQMD guidance lists BMPs that, when implemented, would reduce fugitive dust emissions to less than significant.[49]

The proposed project or its variant would implement these BMPs, so construction emissions of criteria pollutants would be well below the BAAQMD thresholds of significance. Additionally, the proposed project or its variant would be required to comply with the City's Construction Dust Control Ordinance (Ordinance 176-08, effective July 30, 2008). It requires a number of fugitive dust control measures to ensure that construction projects do not result in visible dust, such as the following:

- Watering all active construction areas sufficiently to prevent dust from becoming airborne;
- Applying as much water as necessary to control dust (without creating runoff) in any area of excavation, earth movement, drilling, or other dust-generating activity; and
- During excavation and earth moving activities, wet sweeping or vacuuming the streets and sidewalks where work is in progress at the end of each workday.

Implementation of BMPs such as the above control measures is an effective strategy for controlling construction-related fugitive dust.

Emissions of criteria pollutants during construction of the proposed project or its variant would be below the applicable significance thresholds. Project construction emissions of criteria pollutants at levels below the applicable significance thresholds would not violate ambient air quality standards, contribute substantially to an existing or projected air quality violation, nor result in a cumulative considerable net increase in emissions of any criteria air pollutant. Therefore, the impact of proposed project or project variant construction emission of criteria air pollutants would be ***less than significant***. No mitigation measures are required.

[49] Examples of these BMPs are listed in Table 8-1 of the BAAQMD 2011 CEQA Air Quality Guidelines.

Impact AQ-2: Construction of the proposed project or the project variant could generate emissions of $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter that may expose sensitive receptors to substantial pollutant concentrations. *(Less than Significant with Mitigation)*

Unlike criteria air pollutants, TACs do not have ambient air quality standards but are regulated by the BAAQMD using a risk-based approach. This is to determine which sources and pollutants to control, as well as the degree of control. Health risk assessments estimate human health exposure to toxic substances. Together with information on the toxic potency of the substances, these assessments provide quantitative estimates of health risks.[50]

To identify areas most adversely affected by sources of TACs, the City partnered with the BAAQMD to inventory and assess air pollution and exposures from mobile and stationary sources. Areas with poor air quality, termed air pollutant exposure zones, were identified based on two health-protective criteria: excess cancer risk from the contribution of emissions from all modeled sources greater than 100 per one million population and cumulative $PM_{2.5}$ concentrations greater than 10 $\mu g/m^3$. This assessment identified air pollutant exposure zones within the City.

Most of the Second Street corridor, the project site, is within an air pollutant exposure zone, meaning that the existing cancer risk exceeds 100 per one million, or ambient $PM_{2.5}$ concentrations exceed 10 $\mu g/m^3$, or both. As described above, sensitive receptors such as residences and day care facilities are located along the project alignment.

The site is in an area that already experiences poor air quality, and construction would generate additional short-term air pollution, affecting nearby sensitive receptors and potentially resulting in a significant impact. Therefore, Mitigation Measure M-AQ-2, Construction Emissions Minimization, has been identified to address this impact. As discussed below, implementing measure **Mitigation Measure M-AQ-2: Construction Emissions Minimization**, discussed below, would reduce the project or project variant air quality impacts to ***less than significant with mitigation***.

Reducing emissions by limiting idling, educating workers and the public, and properly maintaining construction equipment is difficult to quantify; however, other measures, specifically those requiring equipment with Tier 2 engines (San Francisco's Clean Construction Ordinance) and Level 3 Verified Diesel Emission Control Strategy (VDECS),

---

[50] In general, a health risk assessment is required if the BAAQMD concludes that projected emissions of a specific air toxic compound from a proposed new or modified source suggest a potential public health risk. The applicant is then subject to a health risk assessment for the source in question. Such an assessment generally evaluates chronic long-term effects, estimating the increased risk of cancer from exposure to one or more TACs.

can reduce construction emissions by 89 to 94 percent. This is compared to equipment with engines meeting no emission standards and without a VDECS. Reducing emissions by combining Tier 2 equipment with Level 3 VDECS is almost equivalent to requiring only equipment with Tier 4 Final engines with higher emission reduction efficiency. These engines are not yet widely available.

Mitigation Measure M-AQ-2: Construction Emissions Minimization

A. *Construction Emissions Minimization Plan*. Before a construction permit is issued, the San Francisco Public Works shall submit a construction emissions minimization plan to the ERO for review and approval by an environmental planning air quality specialist. The plan shall detail project compliance with the following requirements:

1. All off-road equipment greater than 25 horsepower and operating for more than 20 total hours over the duration of construction shall meet the following requirements:

   a) Where access to alternative sources of power are available, portable diesel engines shall be prohibited;

   b) All off-road equipment engines shall

      i. Meet or exceed either the US EPA or ARB Tier 2 off-road emission standards and

      ii. Be retrofitted with an ARB Level 3 VDECS;[51]

   c) Exceptions

      i. Exceptions to A(1)(a) may be granted if the project sponsor has submitted evidence to the satisfaction of the ERO that an alternative source of power is limited or infeasible at the project site and that the requirements of this exception provision apply. Under this circumstance, the sponsor shall submit documentation of compliance with A(1)(b) for onsite power generation.

      ii. Exceptions to A(1)(b)(ii) may be granted if the project sponsor has submitted evidence to the satisfaction of the ERO that a particular

[51] Equipment with engines meeting Tier 4 Interim or Tier 4 final emission standards automatically meet this requirement; therefore, a VDECS would not be required.

piece of off-road equipment with a CARB Level 3 VDECS is (1) technically not feasible; (2) would not produce desired emissions reductions due to expected operating modes; (3) would create a safety hazard or impaired visibility for the operator; or (4) would interfere with a compelling emergency need to use off-road equipment that is not retrofitted with an ARB Level 3 VDECS and the sponsor has submitted documentation to the ERO that the requirements of this exception apply. If granted an exception to A(1)(b)(ii), the project sponsor must comply with the requirements of A(1)(c)(iii).

iii. In accordance with A(1)(c)(ii), the project sponsor shall provide the next cleanest piece of off-road equipment (see Table 4.6-6).

Table 4.6-6: Off-Road Equipment Compliance Step-Down Schedule

Compliance Alternative	Engine Emission Standard	Emissions Control
1	Tier 2	ARB Level 2 VDECS
2	Tier 2	ARB Level 1 VDECS
3	Tier 2	Alternative fuel[1]

How to use the table: If the requirements of (A)(1)(b) cannot be met, then the project sponsor would need to meet Compliance Alternative 1. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 1, then Compliance Alternative 2 would need to be met. Should the project sponsor not be able to supply off-road equipment meeting Compliance Alternative 2, then Compliance Alternative 3 would need to be met.

[1]Alternative fuel is not a VDECS.

Source: ARB, "Verified Retrofits for Off-Road Diesel Vehicles," ARB web page last updated June 23, 2014. Available online: http://www.arb.ca.gov/msprog/ordiesel/vdecs.htm.

2. The project sponsor shall require the idling time for off-road and on-road equipment be limited to no more than 2 minutes, except as provided in the applicable state regulations for idling off-road and on-road equipment. Legible and visible signs shall be posted in English, Spanish, and Chinese in designated queuing areas and at the construction site to remind operators of the 2-minute idling limit.

3. The project sponsor shall require that construction operators properly maintain and tune equipment in accordance with manufacturer specifications.

4. The plan shall include estimates of the construction timeline by phase, with a description of each piece of off-road equipment required for every construction

phase. Off-road equipment descriptions and information may include equipment type, equipment manufacturer, equipment identification number, engine model year, engine certification (tier rating), horsepower, engine serial number, and expected fuel use and hours of operation. For VDECS installed, the information may include technology type, serial number, make, model, manufacturer, ARB verification number level, and installation date and hour meter reading on installation date. For off-road equipment using alternative fuels, reporting shall indicate the type of alternative fuel being used.

5. The plan shall be kept onsite and available for review by any persons requesting it, and a legible sign shall be posted at the perimeter of the construction site indicating to the public the basic requirements of the plan and a way to request a copy. The project sponsor shall provide copies of the plan to members of the public as requested.

B. *Reporting*. Quarterly reports shall be submitted to the ERO indicating the construction phase and off-road equipment information used during each phase, including the information required in A(4). In addition, for off-road equipment using alternative fuels, reporting shall include the actual amount of alternative fuel used.

Within six months of construction completion, the project sponsor shall submit to the ERO a final report summarizing activities. The final report shall indicate the start and end dates and duration of each construction phase. For each phase, the report shall include the detailed information required in A(4). In addition, for off-road equipment using alternative fuels, reporting shall include the actual amount of alternative fuel used.

C. *Certification Statement and Onsite Requirements*. Before construction begins, the project sponsor must certify compliance with the plan and that all applicable requirements of the plan have been incorporated into contract specifications.

Operational Air Quality

Impact AQ-3: Operation of the proposed project or the project variant would not result in violation of air quality standards or contribute substantially to an existing or projected air quality violation; nor would it result in a cumulatively considerable net increase of any criteria air pollutant, for which the project region is in nonattainment under an applicable ambient air quality standard. *(Less than Significant)*

The proposed project or its variant would not generate any new vehicle trips in the area. However, it would result in physical roadway changes along the extent of Second Street.

The proposed reduction in roadway capacity, prohibition of left-turn movements at most intersections, and reconfiguration of lane geometries would alter travel patterns in and around Second Street.

The TIS[52] prepared for the proposed project or its variant (see Appendix B) estimated that approximately 950 trips would be diverted to alternate corridors, such as First and Third streets, during the PM peak period.

The TIS included a level of service analysis of 29 study intersections along the corridor and neighboring roadways. The study intersections are those most likely to be adversely affected by the proposed project or its variant. The results of the intersection level of service evaluation performed for the TIS (see Appendix B, pages 53, 92, 104, and 107) indicate that implementing the proposed project or its variant would increase the PM peak-hour vehicle delay at some intersections and would decrease the PM peak-hour vehicle delay at others. The project variant would result in similar increases and decreases in PM peak-hour vehicle delay.

As stated, the proposed project or its variant would not generate additional vehicles trips, but reducing roadway capacity may increase delays at some locations and therefore may increase emissions of criteria pollutants or ozone precursors in particular locations. These localized isolated increases are likely to be minor because drivers would be expected to modify their travel routes, or in some cases, change their travel modes, as a result of project implementation.

Any changes in travel mode, such as a shift from private passenger vehicles to taking transit, bicycling, or walking, would reduce vehicle-generated emissions that could otherwise occur. Furthermore, changes in criteria air pollutant and ozone precursor emissions are evaluated on an average daily and maximum annual basis. The proposed project or its variant would not generate new vehicle trips, would divert trips to alternate corridors, and would increase delay at some intersections while decreasing delay at others. Because of this, the air quality impact from vehicle delays at intersections would be relatively minor. No exceedances of operational criteria pollutant thresholds are anticipated.

Emissions from traffic at congested intersections can, under certain circumstances, cause a localized buildup of CO concentrations (a CO hot-spot). Based on the BAAQMD guidelines, intersections with a volume of 44,000 or more vehicles per hour have the potential for significantly elevated concentrations of localized CO. As described in the TIS, the increased

[52] CHS Consulting Group. 2014. Second Street Improvement Project – Final Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

traffic volumes at affected intersections on adjacent streets would be less than 44,000 vehicles per hour; the study intersections with the highest volumes would experience fewer than 10,000 vehicles per peak hour under existing plus project and cumulative scenarios.[53] Therefore, ambient air quality standards with respect to localized CO would not be violated.

Operational emissions of criteria air pollutants and ozone precursors would be below the applicable significance thresholds for the proposed project or its variant. Project operational-phase criteria air pollutant emissions that are below the applicable thresholds would not violate or result in a violation of an existing ambient air quality standard, contribute substantially to an existing or projected air quality violation, or result in a cumulatively considerable net increase in emissions of any criteria air pollutant. Therefore, the impact of the proposed project or its variant on operational criteria air pollutant emissions would be ***less than significant***. No mitigation measures are necessary.

Impact AQ-4: Operation of the proposed project or the project variant would not generate emissions of $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter, at levels that would expose sensitive receptors to substantial pollutant concentrations. *(Less than Significant)*

As described above, the proposed project or its variant would not add any new sensitive receptors or new sources of TACs (e.g., new vehicle trips or new stationary sources of air toxics). Project operations would not generate emissions of $PM_{2.5}$ or TACs, including DPM, at levels that would expose existing sensitive receptors to substantial pollutant concentrations. Therefore, the proposed project or its variant would not expose sensitive receptors to substantial levels of air pollutants, and operational health risks would be ***less than significant***. No mitigation measures are necessary.

Impact AQ-5: The proposed project or the project variant would not conflict with or obstruct implementation of the applicable air quality plan, the 2010 Bay Area Clean Air Plan. *(Less than Significant)*

In determining consistency with the 2010 CAP, this analysis considers whether the project would (1) support the primary goals of the 2010 CAP, (2) include applicable control measures from the 2010 CAP, and (3) avoid disrupting or hindering implementation of control measures identified in the 2010 CAP.

The primary goals of the 2010 CAP are to attain air quality standards, reduce pollutant exposure and protect public health, and reduce greenhouse gas (GHG) emissions. The

[53] CHS Consulting Group, 2014. Second Street Improvement Project – Final Transportation Impact Study. This document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

discussion of the project GHG emissions is presented in Section 4.2, which demonstrates that the proposed project or its variant would comply with the applicable provisions of the City's Greenhouse Gas Reduction Strategy.

The Second Street Improvement Project would implement a transit-, pedestrian- and bicycle-friendly street along Second Street, from Market to King streets. In addition to the roadway and streetscape improvements, the proposed project or its variant would include rehabilitation or replacement of the sewer and undergrounding of overhead utilities. Implementing the proposed improvements would result in short-term criteria pollutant emissions during construction (see Table 4.6-3), which would be below the significance thresholds. The project would not result in any significant change in operational emissions of criteria pollutants or toxic air contaminants.

The analysis above illustrates that neither construction nor operation of the proposed project or its variant would result in emissions of criteria air pollutants that would impede attainment of air quality standards (Impacts AQ-1 and AQ-3). The construction and operational health risk evaluation presented above (Impacts AQ-2 and AQ-4) demonstrates that the proposed project or its variant would not substantially increase risks to public health.

As the proposed project or its variant would not result in substantial long-term increases in criteria air pollutants, would not expose receptors to substantial pollutant concentrations, and would not result in substantial long-term increases in GHG emissions (as discussed in the Section 4.2), the proposed project or its variant would support the primary goals of the 2010 CAP.

The 2010 CAP recognizes that, to a great extent, community design dictates individual travel modes and that a key long-term control strategy to reduce emissions of criteria pollutants, air toxics, and GHGs from motor vehicles is to channel future Bay Area growth into vibrant urban communities. Under such a scenario, goods and services are close at hand and people have a range of viable transportation options.

The proposed project or its variant, by providing cycle tracks, bicycle lanes, and pedestrian and transit facilities to facilitate alternate modes of travel to private passenger vehicles, is consistent with the goals and strategies of the CAP to reduce vehicle trips, use, miles traveled, idling and traffic congestion for the purpose of reducing motor vehicle emissions. As such, the project is consistent with the applicable air quality plan, impacts would be ***less than significant***, and no mitigation is necessary.

Cumulative Impacts

Impact C-AQ-1: Construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, would not result in a cumulatively considerable net increase of any criteria air pollutant for which the project region is in nonattainment under applicable ambient air quality standards. *(Less than Significant)*

As discussed above, regional air pollution is by its very nature largely a cumulative impact. Emissions from past, present, and future projects cumulatively contribute to the region's adverse air quality. No single project by itself would be sufficient in size to result in regional nonattainment of ambient air quality standards. Instead, a project's individual emissions contribute to existing cumulative adverse air quality impacts.[54]

The project-level thresholds for criteria pollutants and ozone precursors are based on levels where new sources are not anticipated to contribute to an air quality violation or result in a cumulatively considerable net increase in criteria air pollutants. The proposed project or project variant's construction (Impact AQ-1) and operational (Impact AQ-3) emissions would not exceed the project-level thresholds for criteria pollutants. Because of this, the proposed project or project variant's construction and operation would also not result in a cumulatively considerable contribution to regional air quality impacts. Cumulative impacts would be ***less than significant***, and no mitigation measures are necessary.

Impact C-AQ-2: Construction and operation of the proposed project or the project variant, in combination with other past, present, and reasonably foreseeable future projects, could generate emissions of $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter, at levels that would expose sensitive receptors to substantial pollutant concentrations. *(Less than Significant with Mitigation)*

As discussed above, the project site is in an area that already experiences poor air quality. However, the project would not add any new sensitive land uses or new sources of TACs (e.g., new vehicle trips or stationary sources). Because the project construction occurs in an area already adversely affected by air quality, resulting in a considerable contribution to cumulative health risk impacts on sensitive receptors, this would be a significant cumulative impact.

[54] BAAQMD, CEQA Air Quality Guidelines, June 2010; and adopted Thresholds of Significance, June 2010, pp. 2-1 to 2-3. A copy of this document is available for review at the San Francisco Planning Department, 1650 Mission Street, Suite 400, as part of Case File No. 2011.0558E.

The City would be required to implement **Mitigation Measure M-AQ-2, Construction Emissions Minimization**, which would reduce construction period emissions and could reduce them by as much as 94 percent. Implementation of this mitigation measure would reduce the project's contribution to cumulative air quality impacts to a less than significant level. Overall, cumulative impacts on air quality from the proposed project or its variant would be ***less than significant with mitigation***.

CHAPTER 5: OTHER CEQA CONSIDERATIONS

5.1 GROWTH INDUCEMENT

As required by Section 15126.2(d) of the CEQA Guidelines, an EIR must consider the ways in which the proposed project could directly or indirectly foster economic or population growth or the construction of additional housing. Growth-inducing impacts can result from the following:

- Elimination of obstacles to growth;
- Increased stimulation of economic activity that would, in turn, generate increased employment or demand for housing and public services; and
- As a result of policies or measures that encourage or do not effectively minimize premature or unplanned growth.

Examples of projects likely to have substantial or adverse growth-inducing effects are as follows:

- Expansion of infrastructure systems, such as extensions of roadways or water service lines;
- Increased capacity of roadway systems, electrical lines, water and wastewater treatment facilities beyond what is needed to serve current demand in the project vicinity; and
- Development of new residential uses in areas that are currently sparsely developed or undeveloped.

Impact GR-1: Implementation of the proposed project or the project variant would not result in growth-inducing impacts. *(No Impacts)*

The proposed project or its variant consists of the following components along Second Street, between Market and King streets: widening sidewalks; installing one-way cycle track bicycle facilities in each direction, bicycle lanes and sharrows in a few locations, street trees, transit boarding islands at most transit stops, planted medians, and site furnishings (trash receptacles, bicycle racks, benches, and pedestrian-scale street lighting); signal phasing; reducing the roadway from four travel lanes to two; restricting left turns at most intersections; grinding and repaving the asphalt curb-to-curb; installing Americans with Disabilities Act-compliant curb ramps; reconfiguring the southeast corner at the intersection of Harrison and

Second streets; repairing and replacing the sewer; and placing overhead utilities underground.

As analyzed in the Bicycle Plan FEIR, the conclusion was that the type and extent of facilities proposed by the Bicycle Plan and related projects would not introduce growth beyond what the City has analyzed and planned for. This conclusion considered improvements for the Second Street corridor, such as adding bicycle lanes or sharrows, removing loading zones and parking spaces, and imposing turn restrictions, as described for the Near-Term Improvement Project 2-1 (all options).

For efficiency and in keeping with City requirements to coordinate other agency projects for the same ROW, the refined project design for the Second Street corridor includes rehabilitating or replacing sewer facilities along this corridor and undergrounding overhead utilities between Stillman and Townsend streets (approximately 0.27 mile).

The need for sewer repair work was determined after a condition assessment conducted by the San Francisco Public Utilities Commission Wastewater Enterprise. The assessment was performed as part of the ongoing coordination process with other City departments' planned projects to find joint opportunities, thereby minimizing disruption to the public. The sewer repair work involves replacing or repairing defective or broken sections of the main sewer and sewer laterals (sections that stretch from the face of the curb to the main sewer pipeline). The project would upsize the middle segment of the sewer pipe between Townsend and King streets. The upsizing would be in compliance with the Public Works subdivision regulation, which requires replacing the 8-inch-diameter sewer pipelines with a minimum of 12-inch-diameter pipelines.

Public Works Order No. 124,677 was approved on January 6, 1982, and requires that "main sewers shall be a minimum of 12 inches in diameter unless otherwise permitted by the Director." Therefore, in any replacement project that has sewer pipes of less than 12 inches, the upsizing is required. Due to this planned replacement, the upstream and downstream segments would also be replaced and upsized. The upsizing of the sewer segment between Townsend and King streets would not increase the capacity of the sewer system and therefore would not increase housing development beyond that already planned for by the City. Therefore, it would not induce population growth beyond what is expected to occur without the proposed project or its variant.

Undergrounding the overhead utilities would not increase the electricity supply or capacity, so it would not induce population growth in the project area.

Based on the discussion above, the proposed project or its variant's components would not have indirect or direct significant growth-inducing effects, and no mitigation measures are necessary.

5.2 SIGNIFICANT UNAVOIDABLE IMPACTS

In accordance with Section 21067 of CEQA and with Sections 15126(b) and 15126.2(b) of the CEQA Guidelines, this section identifies significant environmental impacts that could not be eliminated or reduced to less-than-significant levels by implementing the project's mitigation measures or by other mitigation measures that could be implemented. These measures were identified in Chapter 4, Environmental Setting, Impacts, and Mitigation Measures.

The analysis in Chapter 4 addresses impacts of the proposed project or its variant. The project variant would be the same as the proposed project along the Second Street corridor, except for the following differences at the intersection of Second and Brannan streets: southbound left-turning movements would be permitted, and there would be no separate signal phase at the crosswalk and cycle track on the east side of the intersection to separate left- or right-turning vehicles from pedestrians and cyclists. The project variant would have the same impacts as those identified for the proposed project, except for cumulative traffic impacts at the intersection of Townsend and Second streets (#20). Unlike the proposed project, the project variant would not contribute considerably to the significant cumulative impacts at this intersection.

This section is subject to final determination by the San Francisco Planning Commission as part of the CEQA findings for this SEIR. If necessary, this section will be revised in the Final EIR to reflect the findings of the Planning Commission.

The following significant and unavoidable impacts are identified in this SEIR:

Impact TR-2: The proposed project or project variant would cause the level of service at the intersection of Market and New Montgomery streets (Intersection #1) to deteriorate from LOS D to LOS E during the p.m. peak hour.

Impact TR-3: The proposed project or project variant would cause the level of service at the intersection of Mission and New Montgomery streets (Intersection #2) to deteriorate from LOS E to LOS F during the p.m. peak hour.

Impact TR-4: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS D to LOS E during the p.m. peak hour.

Impact TR-5: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10), and the intersection would continue to perform at LOS F during the p.m. peak hour.

Impact TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Second streets (Intersection #16) to deteriorate from LOS D to LOS F during the p.m. peak hour.

Impact TR-7: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17), and the intersection would continue to perform at LOS F during the p.m. peak hour.

Impact TR-8: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28), and the intersection would continue to perform at LOS F during the p.m. peak hour.

Impact TR-9: The proposed project or project variant would contribute considerably to the unsatisfactory operation at the intersection of Fifth Street/Bryant Street/I-80 eastbound on-ramp (Intersection #29), and the intersection would continue to perform at LOS F during the p.m. peak hour.

Impact TR-15: The unsatisfactory intersection conditions experienced at 11 of the 29 study intersections during the weekday baseball games at AT&T Ball Park could deteriorate further under the proposed project or project variant and game day conditions.

Impact TR-22: The proposed project or project variant would remove on-street commercial loading zones along Second Street that could not be relocated nearby and would thereby result in potential conflict between trucks and other traffic.

Impact C-TR-2: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Market and New Montgomery streets (Intersection #1), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-3: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Mission and New Montgomery streets (Intersection #2), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-4: The proposed project or project variant would cause the level of service at the intersection of Howard and New Montgomery streets (Intersection #3) to deteriorate from LOS B to LOS E under cumulative plus project conditions.

Impact C-TR-5: The proposed project or project variant would cause a significant project impact at the intersection of Howard and Hawthorne streets (Intersection #4) under existing plus project conditions and would continue to cause significant impacts under cumulative plus project conditions.

Impact C-TR-6: The proposed project or project variant would cause the level of service at the intersection of Harrison and Hawthorne streets (Intersection #6) to deteriorate from LOS C to LOS F under cumulative plus project conditions.

Impact C-TR-7: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Third streets (Intersection #7), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-8: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Brannan and Third streets (Intersection #8), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-9: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of the Townsend and Third streets (Intersection #9), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-10: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of King and Third streets (Intersection #10), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-11: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and Second streets (Intersection #16), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-12: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant and Second streets (Intersection #17), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-13: The proposed project or project variant would cause the level of service at the intersection of Townsend and Second streets (Intersection #20) to deteriorate from LOS E to LOS F under cumulative plus project conditions.

Impact C-TR-14: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Harrison and First streets (Intersection #28) and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-15: The proposed project or project variant would contribute cumulatively considerable traffic to the unsatisfactory operation at the intersection of Bryant Street/Fifth Street/I-80 eastbound on-ramp (Intersection #29), and the intersection would continue to perform at LOS F under cumulative plus project conditions.

Impact C-TR-24: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would contribute considerably to cumulative impacts on commercial loading along the Second Street corridor.

Impact C-TR-26: The proposed project or project variant, in combination with past, present, and reasonably foreseeable projects, would result in a significant cumulative traffic impact under Game Day scenario.

As identified in Section 4.4, Transportation and Circulation, under **Impact TR-2 through TR-9**, the project or its variant would result in significant unavoidable traffic impacts at the following intersections: Market and New Montgomery streets, Mission and New Montgomery streets, Harrison and Hawthorne streets, King and Third streets, Harrison and Second streets, Bryant and Second streets, Harrison and First streets, and Fifth/Bryant streets at the

I-80 eastbound on-ramp. No feasible mitigation measures have been identified at the intersections where significant unavoidable impacts were identified under **Impact TR-2** through **TR-9**, **TR-15**, and **C-TR-2** through **C-TR-13**. This is due to right-of-way constraints and the project objectives to accommodate the use of alternative modes such as pedestrians, bicycles, and transit within the available right-of-way

In San Francisco, the range of feasible traffic mitigation measures is typically limited due to physical constraints and competing priorities for the use of the available right-of-way. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. While curbside parking lanes that may include commercial loading stalls can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes), in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow.

Further, the transportation and circulation analysis identified, under **Impact TR-15**, significant unavoidable impacts at the following intersections during the weekday baseball games at the AT&T Ballpark: Market and New Montgomery streets, Mission and New Montgomery streets, Howard and New Montgomery streets, Howard and Hawthorne streets, Folsom and Hawthorne streets, Harrison and Hawthorne streets, King and Third streets, Harrison and Second streets, Bryant and Second streets, Harrison and First streets, and Fifth Street/ Bryant Street/I-80 eastbound on-ramp. The conditions at Howard and New Montgomery streets, Howard and Hawthorne streets, and Folsom and Hawthorne streets would be improved by implementing **Mitigation Measures M-TR-10, M-TR-11, and M-TR-12**. However, for the eight other intersections that would operate at LOS E or F under the proposed project or its variant. No feasible mitigation measures have been identified due to right-of-way constraints, and for the reasons articulated above.

In San Francisco, the range of feasible traffic mitigation measures is typically limited due to physical constraints and competing priorities for the use of the available right-of-way. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. While curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes), in downtown San Francisco providing on-street loading is critical, and the street network has already been optimized to balance downtown loading needs versus traffic flow. Therefore, the identified traffic impacts would remain significant and unavoidable.

As identified under **Impact C-TR-2 through C-TR-15**, the proposed project would contribute considerably to the cumulative traffic impacts at the 14 intersections listed below under the cumulative plus project conditions. The project variant would result in similar significant cumulative impacts, except it would not cause cumulative impacts at the Townsend/Second streets intersection (Intersection #20): Market and New Montgomery streets, Mission and New Montgomery streets, Howard and New Montgomery streets, Howard and Hawthorne streets, Harrison and Hawthorne streets, Bryant and Third streets, Brannan and Third streets, Townsend and Third streets, King and Third streets, Harrison and Second streets, Bryant and Second streets, Townsend and Second streets, Harrison and First streets, and Fifth Street/Bryant Street/I-80 eastbound on-ramp. Further, under game day conditions cumulative traffic impacts would remain significant and unavoidable at these intersections (14 intersections under the proposed project and 13 intersections under the project variant) (**Impact C-TR-26**).

Further, the proposed project or its variant would remove on-street commercial loading stalls along its corridor (project level **Impact TR-22**) and would contribute considerably to cumulative commercial loading impacts (**Impact C-TR-24**). All available curbside space in the vicinity that could be repurposed for commercial loading zones has already been established by SFMTA; there is likely no further opportunities to create additional commercial loading zones. However, as engineering design proceeds SFMTA shall continue to consider where commercial loading stalls may be installed. Mitigation measure M-TR-22 was identified for this reason. However, since the potential to create additional commercial loading spaces is unknown, the impacts at both project and cumulative level would remain significant and unavoidable. Therefore, individual and cumulative impacts related to the availability of commercial loading zones would be ***significant and unavoidable with mitigation***.

5.3 AREAS OF KNOWN CONTROVERSY AND ISSUES TO BE RESOLVED

On July 7, 2014, Environmental Planning issued a neighborhood notice to inform the public about the decision to supplement the Bicycle Plan FEIR for the Second Street Improvement Project. Parties that received the notice were as follows:

- Owners and occupants of properties within 300 feet of the project site;
- Neighborhood organizations for the project vicinity;
- Persons who commented on the EIR for the San Francisco Bicycle Plan Project; and
- Others who expressed an interest in the project during the subsequent public outreach conducted for the current proposal.

Responders requested to be kept informed about the project and the environmental review process. Further, commenters raised issues about the timeframe for implementing bicycle facilities along this corridor and suggested improved signage. Commenters also expressed concern for traffic flow and the overall environmental footprint of the proposed project or its variant, given that traffic along the corridor is often headed to the Bay Bridge. In particular, one commenter noted that the analysis must include a full and accurate assessment of traffic impacts along Second Street as well as all adjacent streets—in typical and worst case rush hour conditions. The commenter also noted that the review of this project should also address delays to drivers that would result from project implementation, as well as the congestion, pollution, and noise impacts of the project.

This page intentionally left blank.

CHAPTER 6: ALTERNATIVES

6.1 INTRODUCTION

This chapter contains descriptions of the alternatives to the proposed Second Street Improvement Project and its variant. The environmental impacts associated with each alternative are evaluated relative to existing conditions and to the significant environmental impacts of the proposed project and project variant analyzed in this EIR. Also included is a discussion of the potential of each alternative to meet the project objectives, while avoiding or substantially reducing the proposed project's and project variant's significant environmental impacts.

One of the alternatives is identified as environmentally superior, which is the alternative that would result in the least adverse effect on the environment.

The analysis of alternatives is of benefit to decision-makers because it provides more complete information about the potential impacts of land use decisions; consequently, there is a better understanding of the interrelationship among all of the environmental topics under evaluation. Decision makers must consider approval of an alternative if it would substantially lessen or avoid significant environmental impacts identified for the proposed project and if the alternative is determined to be feasible.

State CEQA Guidelines Section 15126.6(a) requires that an EIR evaluate "a range of reasonable alternatives to the project, or the location of the project, which would feasibly attain most of the basic project objectives but would avoid or substantially lessen any of the significant effects, and evaluate the comparative merits of the alternatives." An EIR need not consider every conceivable alternative to a proposed project. Rather, a range of potentially feasible alternatives, governed by the "rule of reason," must be considered. This is to foster informed decision-making and public participation (State CEQA Guidelines Section 15126.6[f]).

State CEQA Guidelines Sections 15126.6(f)(1) and (f)(3) state that "among the factors that may be taken into account when addressing the feasibility of alternatives are site suitability, economic viability, availability of infrastructure, general plan consistency, other plans or regulatory limitations, jurisdictional boundaries." It further states that an EIR "need not consider an alternative whose effect cannot be reasonably ascertained and whose implementation is remote and speculative." The final determination of feasibility will be made by project decision-makers based on substantial evidence in the record. This includes information presented in the EIR, comments received on the Draft EIR, and responses to those comments.

6.2 ALTERNATIVES ANALYSIS

In accordance with the CEQA Guidelines, the analysis must address alternatives that meet the following three criteria:

- The alternative would attain most of a project's basic objectives;
- The alternative would not cause or would substantially lessen one or more of the significant environmental impacts of the proposed project; and
- The alternative must be potentially feasible.

An EIR need not consider an alternative whose impact could not be reasonably ascertained and whose implementation would be remote and speculative. Furthermore, an EIR need not consider every conceivable alternative; instead, it must consider a reasonable range of alternatives that will foster informed decision-making and public participation.

To develop a reasonable range of alternatives, this section first presents the project objectives (from Chapter 2, Project Description), then summarizes the significant environmental impacts of the proposed project identified in Chapter 4, Environmental Setting and Impacts. The alternatives approaches and strategies that would substantially lessen or avoid significant impacts are described, and then the feasibility of an alternative and its ability to meet project objectives are discussed.

6.2.1 Project Sponsor Objectives

The overall purpose of the Second Street Improvement project is to implement a pedestrian- and bicycle-friendly street along Second Street from Market to King streets. The objectives of the project are as follows:

- Improve safety and accessibility for pedestrians, bicyclists, and transit passengers along the entirety of the Second Street corridor;
- Prioritize the needs of people walking, bicycling, and taking transit, consistent with the San Francisco Transit First Policy;
- Decrease the likelihood of pedestrian and bicyclist collisions with vehicles by reducing the number of conflicts between vehicles and pedestrians and bicycles;
- Reduce the number of vehicles accessing the freeway from Second Street;
- Increase the amount of space dedicated to pedestrians along Second Street;

- Fulfill the recommendations of the San Francisco Bicycle Plan by installing a dedicated bicycle facility along Second Street;
- Maintain system-wide reliability for transit routes along Second Street;
- Inspect, rehabilitate, and restore the sewer system along the corridor; and
- Relocate underground the overhead utilities along the east side of Second Street between Stillman and Townsend Streets.

6.2.2 Significant Environmental Impacts of the Proposed Project

As stated in the CEQA Guidelines, alternatives to a project must substantially lessen or avoid any of the significant environmental impacts associated with the project. The following section summarizes these significant impacts. The impacts provided the basis for developing alternatives to the proposed project.

There are two groups of significant impacts: significant and unavoidable impacts and significant impacts that can be mitigated to less than significant.

SIGNIFICANT AND UNAVOIDABLE IMPACTS

The analysis of the alternatives in this chapter is to consider implementing a pedestrian- and bicycle-friendly street along Second Street from Market to King streets. Its intent would be to avoid or lessen significant and unavoidable impacts from improving the Second Street corridor under the proposed project or project variant (see Chapter 4). The conclusion reached in this SEIR is that the project or project variant, if implemented as proposed, would result in significant and unavoidable project-specific and cumulative impacts on transportation and circulation, specifically related to traffic and commercial loading.

The proposed project or the project variant would result in significant unavoidable traffic impacts at eight intersections under existing plus project conditions; it would result in significant unavoidable traffic at 14 intersections under cumulative plus project conditions; and it would result in significant unavoidable traffic impacts at 13 intersections under cumulative plus project conditions. These traffic impacts are described in detail in Section 4.4 on pages 4.4-44 through 4.4-48 and 4.4-52 (**Impacts TR-2 through TR-9** and **TR-15**) and on pages 4.4-75 through 4.4-85 (**Impacts C-TR-2 through C-TR-15**).

The proposed project or the project variant would result in significant unavoidable commercial loading impacts along the Second Street corridor under both existing plus proposed project or variant conditions and under cumulative plus proposed project or variant conditions. These commercial loading impacts are described in detail in Section 4.4 on pages 4.4-64 through 4.4-66 and on page 4.4-93 (**Impacts TR-22 and C-TR-24**).

SIGNIFICANT IMPACTS THAT COULD BE MITIGATED TO LESS THAN SIGNIFICANT

Cultural and Paleontological Resources

As described in Section 4.3, Cultural and Paleontological Resources, the proposed project and project variant could result in significant impacts at a project and cumulative level on archeological and paleontological resources. The impacts would be reduced to less than significant with mitigation measures (**Impact CP-2, Impact CP-3, and C-CP-1**).

Transportation and Circulation

The proposed project or its variant would result in significant traffic impacts that could be mitigated to less than significant at the following intersections:

- **Impact TR-10—**Howard and New Montgomery streets (Intersection #3);
- **Impact TR-11—**Howard and Hawthorne streets (Intersection #4); and
- **Impact TR-12—**Folsom and Hawthorne streets (Intersection #5).

Noise and Vibration

As described in Section 4.5, Noise and Vibration, the proposed project and project variant could result in significant impacts at a project and cumulative level on construction noise. This would be reduced to less-than-significant levels with mitigation (**Impact NO-1** and **Impact C-NO-1).**

Air Quality

As described in Section 4.6, Air Quality, the proposed project and project variant could result in significant impacts at a project and cumulative level on construction air quality. This would be mitigated to less-than-significant levels with mitigation (**Impact AQ-2** and **Impact C-AQ-2**).

6.2.3 Summary of Selected CEQA Alternatives

This chapter evaluates the following three alternatives:

- The No Project Alternative (Alternative 1)—The proposed improvements along Second Street would not be implemented, and there would be no change from existing conditions.

- The Bicycle Lanes Alternative (Alternative 2)—One travel lane and one bicycle lane in each direction would be provided; the existing 60-second signal cycle lengths at all locations would be included, with no separate bicyclist/pedestrian signal phase at the signalized intersections along Second Street. Rehabilitation and replacement of the sewer system along Second Street and undergrounding the overhead utilities between Stillman and Townsend streets.

- The Center-Turn Lane Alternative (Alternative 3)—A northbound and southbound Class II bicycle lane would be provided, with a two-way, left-turn center lane along two sections of Second Street. Rehabilitation and replacement of the sewer system along Second Street and undergrounding the overhead utilities between Stillman and Townsend streets.

Similar to the proposed project and its variant, Alternative 2 and Alternative 3 would be constructed in the right-of-way. The alternatives would consist of pedestian, bicycle, and transit facilities and improvements to rehabilitate sewer facilties and to relocate overhead utilities underground. Similar to the proposed project or project variant, the alternatives are infrastructure projects that would not generate transportation trips; therefore, they would have either no impact or less-than-significant impacts on the following topics: land use and land use planning; aesthetics; population and housing; greenhouse gas emissions; wind and shadow; recreation; utilities and service systems; public services; biological resources; minerals and energy resources; and agricultural resources. Therefore, these topics are not discussed further in the analyses below.

Alternatives analyzed below would differ from the proposed project or its variant. Except for Alternative 1, which would not change existing conditions, these alternatives would include some of the improvements under the proposed project or its variant, such as replacing or rehabilitating sewer facilities, or they would include different design of streetscape improvements, such as bicycle lanes along the Second Street corridor instead of cycle tracks, or bus bulbs or bus zones instead of bus boarding islands. All of the alternatives would occur within the public right-of-way. In addition, all alternatives except Alternative 1 would require the same depth of excavation and would include similar construction activities as the proposed project or its variant. Therefore, similar to the proposed project and its variant, the alternatives discussed below would have either no impact or less-than-significant impacts related to cultural resources for historic architectural resources, geology and soils, hydrology and water quality, and hazards and hazardous materials. Therefore, these topics are not discussed further in the analyses below.

Similar to the proposed project or project variant, Alternatives 2 and 3 would reduce the vehicular capacity along Second Street by removing a travel lane in each direction. This would be done to implement bicycle, pedestrian, and transit facilties within the right-of-way.

Therefore, transportation and circulation conditions on game days under either Alterantive 2 or Alternative 3 would be similar to those under either the proposed project or project variant. The reduction in vehicular capacity could exacerbate traffic conditions; however, improvements for bicycles, pedestrians, and transit would also improve circulation by alternative transportation modes before and after games. Therefore, this topic is not discussed further in the analysis below.

6.2.4 Alternative 1: No Project Alternative

CEQA Guidelines Section 15126.6(e) requires that, among the project alternatives, a "no project" alternative be evaluated. "The purpose of describing and analyzing a no project alternative is to allow decision-makers to compare the impacts of approving the proposed project with the impacts of not approving the proposed project."

CEQA Guidelines Section 15126.6(e)(2) requires that the no project alternative analysis "discuss the existing conditions…as well as what would be reasonably expected to occur in the foreseeable future if the project were not approved, based on current plans and policies and consistent with the available infrastructure and community services."

DESCRIPTION

As shown in Table 6-1, under Alternative 1, the No Project Alternative, the proposed improvements along Second Street would not be implemented; therefore, there would be no change from existing conditions. As a result, Public Works' objectives to provide a pedestrian- and bicycle-friendly environment and to improve transit facilities along the Second Street corridor would not be met.

SIGNIFICANT IMPACTS UNDER ALTERNATIVE 1

The following discussion examines whether this alternative would substantially lessen or avoid significant environmental impacts identified for the proposed project and the project variant and listed above in Section 6.2.2.

Cultural and Paleontological Resources under Alternative 1

Since Alternative 1 would not result in any excavation or ground disturbance, no archaeological deposits, human remains, or paleontological resources could be disturbed. Therefore, under Alternative 1, cultural and paleontological resources would not be affected, and there would be no impact. Potentially significant archaeological and paleontological impacts and the required mitigation measures identified for the proposed project and the project variant would not be applicable to this alternative. (**Impacts CP-2, CP-3,** and **C-CP-1: reduced to no impact**).

Table 6-1: Description of the Proposed Project/Project Variant and Alternatives

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Traffic	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction with new right-turn pockets at every intersection. Right-turn capacity at the northbound Second Street approach at Harrison Street would be reduced from two to one lane and the movement would be signalized. Retain one exclusive eastbound left-turn lane from Bryant Street to Second Street. Eliminate most left turns, except northbound at Townsend Street and southbound at King Street. The southbound Second Street approach at Townsend Street approach would include a right-turn bay and a shared through-left lane. Install a new traffic signal at the intersection of Second and South Park streets.	No improvements to the Second Street corridor.	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction. Right-turn capacity at the northbound Second Street approach at Harrison Street would be reduced from two to one lane and the movement would be signalized. An exclusive left-turn lane would be included. Retain two exclusive eastbound left-turn lanes from Bryant Street to Second Street. Eliminate most left turns, except northbound at Townsend Street, southbound at King Street, northbound at Harrison Street, and at a shared northbound through-left lane at Brannan Street. The southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane. Install a new traffic signal at the intersection of Second and South Park streets. A p.m. peak tow-away, southbound left-turn lane along Hawthorne Street at Folsom Street.	Reduce travel lanes along the Second Street corridor from two in each direction to one in each direction. No right-turn pockets at locations other than northbound approach to Harrison Street. The northbound Second Street approach at Harrison Street would include a shared through-left lane and an exclusive right-turn lane; a bicycle lane would be provided between these lanes. The northbound right-turn capacity would be reduced from two lanes to one lane and the movement would be signalized. Retain one eastbound left-turn lane on Bryant Street at the Second Street intersection. Retain all the existing left-turn opportunities along Second Street (southbound and northbound at Mission, Harrison, Brannan, and Townsend streets; southbound at Folsom and King streets; and northbound at Howard Street). The southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane. Install a new traffic signal at the intersection of Second and South Park streets.

Table 6-1: Description of the Proposed Project/Project Variant and Alternatives *(continued)*

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Transit	The proposed project or its variant would consolidate Second Street bus stop locations from 13 under existing conditions to 10, and optimize placement of the remaining stops. Bus-boarding islands would be installed at all Second Street transit stops, except for a proposed far-side outbound stop on the northwest corner of Townsend Street at Second Street, which would become a bus zone.	No improvements to the Second Street corridor.	Alternative 2 would consolidate bus stop locations from 13 under existing conditions to 10. It would provide bus bulbs at all stops except the Townsend Street outbound stop at Second Street, which would become a bus zone.	Consolidate bus stop locations from 13 under existing conditions to 10. Optimize placement of the remaining bus stops, similar to the proposed project. Provide bus bulbs at bus stops on the west side of Second Street and bus zones on the east side of Second Street. The outbound bus stop on Townsend Street would be a bus zone.
Pedestrian Facilities and Streetscape	Widen sidewalks on Second Street between Harrison and Townsend streets to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install planted medians, generally aligned at the ends of bus-boarding islands; new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.	No improvements to the Second Street corridor.	Widen sidewalks between Harrison and Townsend streets on the west side on Second Street to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.	Widen sidewalks on Second Street between Harrison and Townsend streets to 15' (from existing 10'), upgrade crosswalks at signalized intersections with high-visibility markings and install raised crosswalks at alley crossings. Install new trash receptacles; new benches; new pedestrian-scale light fixtures; and new bicycle racks installed on the sidewalk.
Bicycle Facilities	Grade separated cycle track (Class IV) would be installed on both sides of Second Street. Traffic signal cycle lengths would be increased from 60 seconds to 90 seconds and signal phasing would be modified to include combined bicycle, pedestrian, and through-traffic phases at all intersections along Second Street, with a separate right-turn phase at right-turn pockets.	No improvements to the Second Street corridor.	Class II bicycle lanes, on both sides of Second Street. Traffic signals would have shorter signal lengths (60 seconds) and no phased signals for bicycles and pedestrians.	Class II bicycle lanes, on both sides of Second Street. Traffic signals retain existing signal cycle (60 second cycle) except at Second Street intersections with Howard, Folsom, and Harrison street (90 second cycle) and no phased signals for bicycles and pedestrians.

Table 6-1: Description of the Proposed Project/Project Variant and Alternatives *(continued)*

Project Component/ Description	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Parking and Loading	Net removal of 129 on-street parking spaces and 19 motorcycle parking spaces in the project area. Also remove 6 passenger loading zones and 25 commercial loading stalls, 4 of which would be relocated, and 2 could be created.	No improvements to the Second Street corridor.	Would remove 28 parking spaces and 13 commercial loading stalls, 5 of which would be relocated along Second Street and adjacent streets. It would also remove two passenger loading zones, one of which could be relocated within the same block.	Would remove 91 parking spaces, 32 motorcycle spaces, 24 commercial loading stalls, and 9 passenger loading zones.
Sewer	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.	No improvements to the Second Street corridor.	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.	Repair or replace sewer facilities in some locations along the Second Street corridor between Market and King streets.
Utilities	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.	No improvements to the Second Street corridor.	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.	Place underground the existing overhead electrical and telecommunication utilities between Stillman and Townsend streets.

Transportation and Circulation under Alternative 1

Under Alternative 1, existing conditions would continue, and bicycle and pedestrian conditions would remain unchanged. There would be no increase in traffic or transportation trips, similar to the proposed project and project variant. Unlike the proposed project or its variant, there would be no changes to traffic, transit, loading, pedestrian facilities, bicycle facilities, or parking, and the mitigation measures identified for the proposed project and its variant would not be applicable. Therefore, compared to the proposed project and its variant, which would have significant and unavoidable traffic and commercial loading impacts, Alternative 1 would not have any significant impacts related to transportation and circulation. (**Impacts TR- 2, TR-3, TR-4, TR-5, TR-6, TR-7, TR-8, TR-9, TR-10, TR-11, TR-12 TR-15, TR-22, C-TR-2, C-TR-3, C-TR-4, C-TR-5, C-TR-6, C-TR-7, C-TR-8, C-TR-9, C-TR-10, C-TR-11, C-TR-12, C-TR-13, C-TR-14, C-TR-15,** and **C-TR-24: reduced to no impact**). In addition, transit, bicycle and pedestrian improvements would not be constructed under this alternative.

Noise and Vibration under Alternative 1

Under Alternative 1 there would be no construction activities, such as street or sidewalk demolition and excavation associated with the proposed improvements along the Second Street corridor. Therefore, the site vicinity would not experience temporary increases in ambient noise levels and ground-borne vibration. The significant impact related to the proposed project's or project variant's noise impacts would not occur and the mitigation measures identified for the proposed project or project variant would not be applicable. Ambient noise levels would remain similar to existing conditions. (**Impacts NO-1** and **C-NO-1: reduced to no impact**).

Air Quality under Alternative 1

Because no construction would occur, the Alternative 1 would avoid the need to mitigate potentially hazardous construction emissions. It would avoid the potentially significant exposure of sensitive receptors to $PM_{2.5}$ and toxic air contaminants, including diesel particulate matter associated with construction of the proposed project or its variant. (**Impact AQ-2** and **Impact C-AQ-2: reduced to no impact**).

CONCLUSIONS FOR ALTERNATIVE 1

Alternative 1 would continue existing conditions within the Second Street corridor. Since existing conditions would not change, there would be no impacts on cultural and paleontological resources, transportation and circulation, noise, and air quality.

However, Alternative 1 would not achieve any of the objectives listed by the project sponsor in Chapter 2, Project Description, Section 2.2 on page 2-2. Alternative 1 would not meet the project objectives to improve bicycle and pedestrian safety along the Second Street corridor, increase the amount of space dedicated to pedestrians along Second Street, fulfill the recommendations of the San Francisco Bicycle Plan by installing a dedicated bicycle facility along Second Street, maintain system-wide reliability for transit routes along Second Street, or decrease the likelihood of pedestrian and bicyclist collisions. It would not prioritize the needs of people walking, bicycling, and taking transit, and would not be consistent with the San Francisco Transit First Policy. Alternative 1 would not reduce the number of vehicles accessing the freeway from Second Street, nor would it inspect, rehabilitate, or restore the sewer system along the corridor or relocate overhead utilities underground.

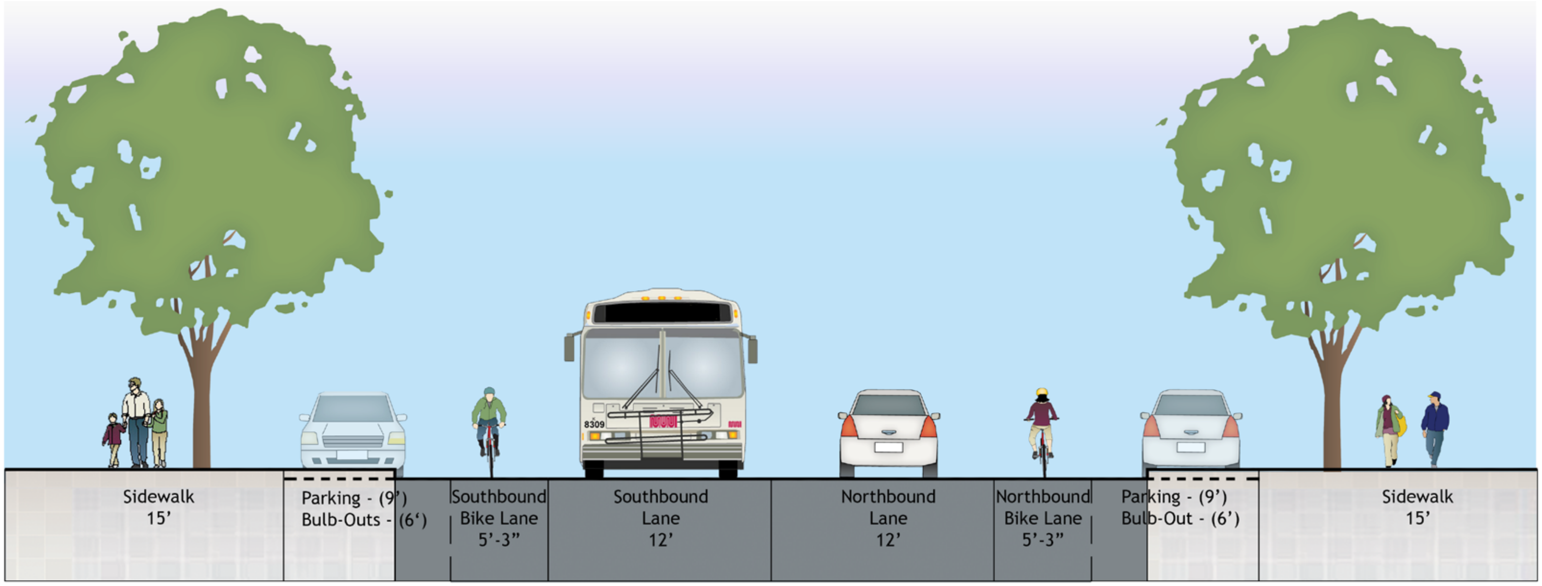
6.2.5 Alternative 2: Bicycle Lanes Alternative

DESCRIPTION

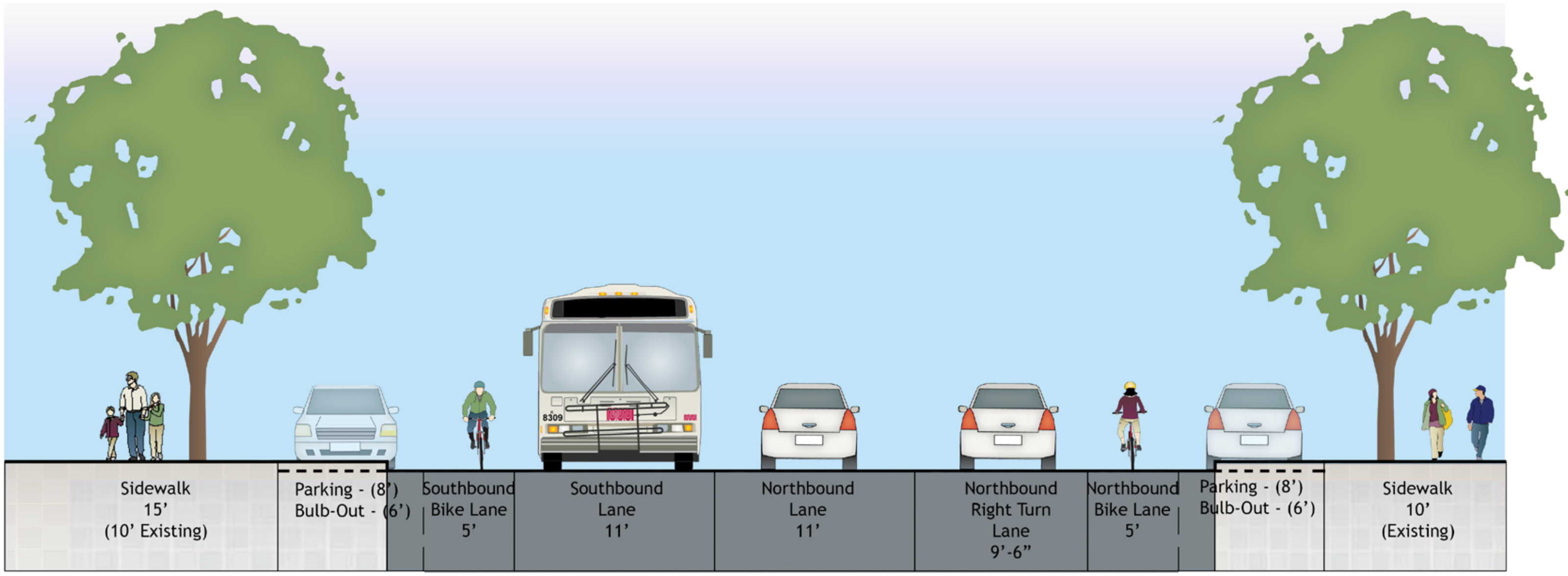
The streetscape design for Alternative 2 was developed by modifying Project 2-1, Modified Option 1 from the San Francisco Bicycle Plan EIR[1] in order to reduce or eliminate traffic and commercial loading impacts of the proposed project or project variant. This section describes the proposed improvements along the Second Street corridor under Alternative 2 and provides the key differences between this alternative and the proposed project and its variant. Like the proposed project or project variant, Alternative 2 would rehabilitate or replace sewers, would relocate overhead utilities underground between Stillman and Townsend Streets, and would provide bicycle, pedestrian, and transit improvements. Alternative 2 would meet basic project objectives to provide a complete street. See Table 6-1 on pages 6-7 through 6-9 for a comparison of features included in the proposed project, project variant, and Alternative 2.

Bicycle Lanes—As shown in Figure 6-1, Alternative 2 would include a northbound and a southbound Class II bicycle facility, except along two blocks: northbound between Stevenson and Market streets and southbound between Townsend and King streets. Bicycle sharrows (shared lane markings) would be added to the travel lane at these two locations. This differs from the proposed project and its variant, which would include a grade-separated cycle track (Class IV) on both sides of Second Street. Under the proposed project, project variant, and Alternative 2, these bicycle facilities would be accommodated by removing one travel lane in each direction.

[1] San Francisco Planning Department. 2009. San Francisco Bicycle Plan Project Final EIR, Case No. 2007.0347E, State Clearinghouse No. 2008032052. August. Certified June 25, 2009. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA 94103 as part of Case File 2007.0347E. Also available online at: http://www.sf-planning.org/index.aspx?page=1828.



Market Street to Harrison Street
Bike Lanes, Parking Both Sides, Bulb-Outs



Bryant Street to Townsend Street
Bike Lanes, Parking Both Sides, Bulb-Outs, Optional Turn Lane

ALTERNATIVE 2 - BICYCLE LANES ALTERNATIVE
CROSS SECTIONS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 6-1

Source: Public Works, 2014.

01/21/15 hk T:\SFDPW 2nd Street Improvement\Graphics\Figs_6-1&6-2_xsections.indd

Travel Lanes—As shown in Table 6-2, under Alternative 2 left turns would be prohibited at most streets, except northbound at Townsend, Brannan, and Harrison streets and southbound at Townsend and King streets. Left turns would be permitted at alleys. Right-turn pockets would be provided northbound at Mission and Folsom streets and southbound at Mission, Howard, and Harrison streets. Two eastbound left-turn lanes would be retained along Bryant Street to Second Street, and an exclusive southbound left-turn lane would be added to Hawthorne Street at Folsom Street. This would be accomplished by eliminating a commercial loading zone along the east side of Hawthorne Street.

Compared to the proposed project and its variant, Alternative 2 would retain two exclusive eastbound left-turn lanes from Bryant Street to Second Street, while the proposed project and its variant would include only one such lane.

As shown in Table 6-2, the proposed project would allow left turns at only three locations, while its variant would allow left turns at one additional location: southbound at Second and Brannan streets. However, Alternative 2 would allow left turns at the same intersections as the proposed project and at two additional locations: northbound at Harrison Street, as discussed above, and from a shared northbound through-left lane at Brannan Street. Unlike the project variant, Alternative 2 would not include southbound left turn at Second and Brannan streets.

Under Alternative 2, the southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane. Under the proposed project and its variant, the southbound approach would include a right-turn bay and a shared through-left lane.

Alternative 2 would include a p.m. peak tow-away, southbound left-turn lane along Hawthorne Street at Folsom Street. This lane is proposed as a mitigation measure for the proposed project and its variant at the significantly impacted Hawthorne and Folsom streets intersection.

Alternative 2 would allow the northbound right turn onto Harrison Street only from a single curbside lane. It would do this by converting the p.m. tow-away lane along Second Street into a permanent exclusive right-turn lane. The shared through-right lane would be converted to a through-only lane, and the northbound left-turn lane would be retained. Additionally, the southeast corner at the Harrison and Second streets intersection would be reconfigured to eliminate uncontrolled (channelized) northbound right turns; motorists would be required to make a turn at the signalized intersection. The modified configuration at the Second and Harrison streets intersection would improve pedestrian safety in the east crosswalk.

Table 6-2: Comparison of Left-Turn Opportunities Among the Proposed Project and its Variant, Alternative 1, Alternative 2, and Alternative 3

Intersection with Second Street (Segment)	Proposed Project	Project Variant	Alternative 1: No Project Alternative (Same as Existing Conditions)	Alternative 2: Bicycle Lanes Alternative	Alternative 3: Center Turn-Lane Alternative
Market Street					
Northbound					
Mission Street[1]					
Northbound			❍		❍
Southbound			❍		❍
Howard Street[1]					
Northbound			❍		❍
Southbound					
Folsom Street					
Northbound					
Southbound			❍		❍
Harrison Street					
Northbound			❍	❍	❍
Southbound			❍		❍
Bryant Street					
Northbound					
Southbound					
Brannan Street[1]					
Northbound			❍	❍	❍
Southbound		❍	❍		❍
Townsend Street					
Northbound	❍	❍	❍	❍	❍
Southbound	❍	❍	❍	❍	❍
King Street					
Southbound	❍	❍	❍	❍	❍

❍: Left-turn opportunity

Source: Project Design Plans (these documents are available for public review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E).

A Second and Harrison streets intersection, the northbound right-turn capacity would be reduced from two lanes to one, and the movement would be signalized under both the proposed project and its variant and under Alternative 2. However, Alternative 2 would include an exclusive left-turn lane, which would be eliminated under the proposed project and its variant.

Traffic Signals—Similar to the proposed project and its variant, Alternative 2 would include a new traffic signal at the intersection of Second and South Park streets. However, unlike the proposed project and its variant, it would not include a separate bicyclist/pedestrian signal phase (i.e., not separate from the vehicular traffic signal) at the signalized intersections along Second Street. Bicyclists and pedestrians would cross intersections with vehicular traffic under this alternative, and bicyclists would weave around right-turning vehicles, which is the typical operation for bicyclists in a bicycle lane.

Traffic signal timing for the intersections along Second Street would be adjusted under this alternative to minimize traffic delay and facilitate smooth and coordinated flow of traffic along Second Street. However, signal cycle lengths would remain at 60 seconds at all intersections.

Alternative 2 would retain the existing signal cycle lengths of 60 seconds at all locations and would not include a separate bicycle signal phase along Second Street. The proposed project and its variant would increase traffic signal cycle length along Second Street to 90 seconds to accommodate the separate bicyclist/pedestrian signal phases. Further, no vehicular turns would be permitted during the bicyclist/pedestrian phase under the proposed project, to increase pedestrian and bicyclist safety. Traffic-signal improvement under the project variant would be similar to that under the proposed project, except at the Brannan and Second streets intersection. Here the crosswalk and cycle track on the east side of the intersection would not be separated from left- or right-turning vehicles through signal phasing.

Transit—Alternative 2 would consolidate bus stop locations throughout the Second Street Corridor, from a total of 13 (6 in the inbound direction and 7 in the outbound direction) under existing conditions to 10 (5 in the inbound direction and 5 in the outbound direction). It would optimize or adjust the placement of the retained bus stops, in accordance with the SFMTA's Stop Spacing Guidelines. This is similar to the bus stop consolidation placement strategy for the proposed project and its variant. Alternative 2 would provide bus bulbs at 9 of the 10 bus stops, whereas the proposed project or variant would provide bus boarding islands in those locations. Under Alternative 2, the Townsend Street outbound stop would be a bus zone, similar to what would be implemented under the proposed project and its variant.

Pedestrian facilities—Alternative 2 would include similar improvements to pedestrian facilities as the proposed project and its variant, such as raised crosswalks at the alleys, except for sidewalk widening and traffic signal timing. Under Alternative 2, only the west side of the sidewalk between Harrison Street and Townsend Street would be widened from 10 feet to 15 feet; the east side would remain unchanged, unlike the proposed project or its variant, which would also widen the sidewalk on the eastside of Second Street. Unlike the proposed project or project variant, Alternative 2 would not provide a separate bicyclist/pedestrian signal phase; therefore, conflicts between pedestrians and bicyclists with turning vehicles would remain similar to existing conditions.

Parking and Loading—Under Alternative 2, the existing 168 on-street vehicle parking spaces and 56 motorcycle parking spaces would generally be preserved on both sides of Second Street. The exception would be the east side of the Second Street corridor, between Bryant and Harrison streets, where the existing p.m. tow-away lane would be converted into a full-time right-turn lane, removing parking spaces. Additionally, parking spaces would be removed along Second Street northbound at Mission and Folsom streets and southbound at Mission, Howard, and Harrison streets. This would accommodate exclusive right-turn pockets. In total, Alternative 2 would remove 28 parking spaces along the Second Street corridor. It would also remove 12 motorcycle spaces between Howard and Tehama streets on the west side of Second Street. Alternative 2 would also remove 13 commercial loading stalls along the Second Street corridor. Five of the commercial loading stalls would be relocated along Second Street and adjacent streets within a reasonable distance of the existing commercial loading stall locations. This alternative would also remove two passenger loading zones, between Mission and Howard streets. Each of the removed passenger loading zones could be relocated within 150 feet of their existing locations.

Net parking loss under Alternative 2 would be 28 parking spaces and 12 motorcycle spaces; net commercial loading stalls loss would be eight commercial loading stalls; and net passenger loading zone loss would be one zone. Under the proposed project or its variant, on-street parking would be provided on only one side of the street along most of Second Street, between the curbside cycle track and the travel lane. The proposed project or its variant would remove 129 on-street parking spaces and 19 motorcycle parking spaces. It would also remove 25 commercial loading stalls, four of which would be relocated, and two could be created. The proposed project or its variant would remove six passenger loading zones.

Streetscape—Improvements under Alternative 2 would include bus bulbs, as described for transit above, new trash receptacles, new benches, new pedestrian-scale light fixtures, and new bicycle racks installed on the sidewalks. Streetscape improvements under the proposed project or its variant would be similar to those under Alternative 2, except it would construct bus-boarding islands instead of the bus bulbs and planted medians, which would be generally aligned at the ends of the bus-boarding islands.

Sewer and Utilities—Similar to the proposed project and its variant, streetscape improvements under Alternative 2 would be coordinated with the rehabilitation and replacement of portions of the City's underground sewer infrastructure along the Second Street corridor, between Market and King streets. In addition, also similar to the proposed project and its variant, under this alternative, overhead electrical and telecommunication utilities between Stillman and Townsend streets would be placed underground.

SIGNIFICANT IMPACTS UNDER ALTERNATIVE 2

The following discussion examines whether this alternative would substantially lessen or avoid significant environmental impacts identified for the proposed project or its variant and listed above in Section 6.2.2. See Table 6-3 on pages 6-18 through 6-24, Comparison of the Environmental Impacts of the Alternatives, for a summary of the information below.

Cultural and Paleontological Resources under Alternative 2

Implementation of Alternative 2 would be within the same ROW as the proposed project or its variant. In addition, depth of excavation and construction activities would be similar to that of the proposed project and its variant, although this alternative would have different improvements, such as bicycle lanes and bus bulbs instead of cycle tracks and bus boarding islands. As such, potential impacts of Alternative 2 related to archaeological and paleontological deposits would be significant, similar to those of the proposed project and its variant, as described in Section 4.3. **Mitigation Measure M-CP-2: Archeological Monitoring**, and **Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery**, identified for the proposed project or its variant would also be applicable to this alternative to address these significant impacts. Similar to the proposed project and its variant, implementation of these mitigation measures would reduce potential impacts on any archaeological and paleontological resources in the Second Street corridor under Alternative 2. These impacts would be ***less than significant with mitigation*** (**Impact CP-2** and **Impact CP-3: similar**).

Also, there would be a significant cumulative impact on archaeological and paleontological resources under this alternative, similar to the proposed project and its variant. However, with **Mitigation Measures M-CP-2** and **M-CP-3**, the contribution of Alternative 2 to significant cumulative archeological and paleontological impacts would no longer be cumulatively considerable. This is similar to the proposed project and its variant (**Impact C-CP-1: similar**).

Table 6-3: Comparison of the Environmental Impacts of the Alternatives

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Ability to Meet Project Objectives	Would meet all project objectives.	Would not meet any of the project objectives.	Would meet some of the project objectives but would have reduced bicycle and pedestrian safety and reduced improvements to transit reliability compared to the proposed project or project variant.	Would meet some of the project objectives but would have reduced bicycle and pedestrian safety and reduced improvements to transit reliability compared to the proposed project or project variant.
IMPACTS				
Cultural and Paleontological Resources				
Impact CP-1 Historical Resources	LS	NI	Similar (LS)	Similar (LS)
Impact CP-2 Archaeological Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Impact CP-3 Paleontological Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Impact C-CP-1 Contribution to Cumulative Impacts on Cultural Resources	LSM	NI	Similar (LSM)	Similar (LSM)
Transportation and Circulation				
Impact TR-1 Construction Impacts	LS	NI	Similar (LS)	Similar (LS)
Impacts TR-2 and TR-3 Traffic Impacts at Intersections #1 and #2	SU	NI	Similar (SU) for TR-2 and TR-3	Eliminated (LS) for TR-2 and TR-3

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impacts TR-4 through TR-6 and TR-9 Traffic Impacts at Intersections #6, #10, #16, and #29	SU	NI	Similar (SU) for TR-4, TR-5, and TR-9 Reduced (SU)[1] for TR-6	Similar (SU) for TR-4, TR-5, and TR-9 Reduced (SU)[1] for TR-6
Impact TR-7 Traffic Impact at intersection # 17	SU	NI	Eliminated (LS) for TR-7	Greater (SU) [2] for TR-7
Impact TR-8 Traffic Impact at intersection #28	SU	NI	Similar (SU) for TR-8	Eliminated (LS) for TR-8
Impacts TR-10 through TR-12 Traffic Impacts at Intersections #3, #4, and #5	LSM	NI	Similar (LSM) for TR-10 and TR-11 Reduced (LS) for TR-12	Reduced (LS)
Impacts TR-13 Traffic Impacts at Intersection #23 and #27	LS	NI	Similar (LS)	Similar (LS)
TR-14 Traffic Impacts at Intersections #7, #8, #9, #11, #12, #13, #14, #15, #18 through #22, and #24 through #26	LS	NI	Similar (LS)	Similar (LS) at Intersections #7, #8, #9, #11, #12, #13, #14, #18 through #22, and #24 through #26 Greater (SU) at Intersection #15
Impact TR-15 Traffic Impacts during weekday baseball games	SU	NI	Similar (SU)	Similar (SU)
Impact TR-16 Transit Impacts	LS	NI	Reduced (LS)[1]	Greater (SU) on Route 10 Reduced (LS) on Route 12
Impact TR-18 Pedestrian Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact TR-19 Bicycle Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact TR-20 Emergency access Impacts	LS	NI	Reduced (LS)	Reduced (LS)
Impact TR-21 Passenger Loading Impacts	LS	NI	Reduced (LS)[1]	Greater (SUM)
Impact TR-22 Commercial Loading Impacts	SUM	NI	Eliminated (LS)	Greater (SUM)
Impact TR-23 Parking Impacts	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Impact C-TR-1	LS	NI	Similar (LS)	Similar (LS)
Impact C-TR-2 through C-TR-5 Cumulative Traffic Impacts at Intersections #1, #2, #3, and #4	SU	NI	Similar (SU) for C-TR-2 through C-TR-5	Eliminated (LS) for C-TR-2 through C-TR-5
Impact C-TR-6 through C-TR-11 and C-TR-15 Cumulative Traffic Impacts at Intersections #6, #7, #8, #9, #10, #16, and #29	SU	NI	Similar (SU) for C-TR-6 through C-TR-8, C-TR-10, and C-TR-15. Greater (SU) for C-TR-9, C-TR-11	Similar (SU) for C-TR-6 through C-TR-10 and C-TR-15 Greater (SU) for C-TR-11
Impact C-TR-12 Cumulative Traffic Impact at Intersections #17	SU	NI	Eliminated (LS) for C-TR-12	Greater (SU) for C-TR-12

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-TR-13 Cumulative Traffic Impact at Intersections #20 for the proposed project	SU	NI	Eliminated (LSM) for C-TR-13	Eliminated (LSM) for C-TR-13
Impact C-TR-14 Cumulative Traffic Impact at Intersections #28	SU	NI	Similar (SU) for C-TR-14	Eliminated (LS) for C-TR-14
Impact C-TR-16 Cumulative Traffic Impacts at Intersections #5, #14, #15, #21, #22, #23, #26, and #27	LS	NI	Similar (LS) for #5, #15, #21, #22, #23, #26, and #27 Reduced (LS) for #14	Similar (LS) for #5, #21, #22, #23, #26, and #27 Greater (SU) for Intersections #14 and #15
Impact C-TR-17 Project Variant Cumulative Traffic Impacts at Intersection #5, #14, #15, #20, #21, #22, #23, #26, and #27 (Project Variant)	LS[3]	NI	Reduced (LSM) for Intersection #20 Similar (LS) for #5, #14, #15, #21, #22, #23, #26, and #27	Reduced (LSM) for Intersection #20 Similar (LS) for 5, , #21, #22, #23, #26, and #27
Impact C-TR-18 Cumulative Traffic Impacts at Intersection #11, #12, #13, #18, #19, #24, and #25	LS	NI	Similar (LS)	Similar (LS)
Impact C-TR-19 Cumulative Transit Impacts	LS	NI	Greater for Muni Route 10 (LS)[2] Reduced for Muni Route 12 (LS)[1]	Greater for Muni Route 10 (SU)[2] Greater for Muni Route 12 (LS)[2]

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-TR-20 Cumulative Pedestrian impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact C-TR-21 Cumulative Bicycle Impacts	LS	NI	Greater (LS)[2]	Greater (LS)[2]
Impact C-TR-22 Cumulative Emergency Access Impacts	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Impact C-TR-23 Cumulative Passenger Loading Impacts	LS	NI	Reduced (LS)[1]	Greater (SU)
Impact C-TR-24 Cumulative Commercial Loading Impacts	SUM	NI	Eliminated (LS)[1]	Greater (SUM)
Impact C-TR-25 Cumulative Parking Impact	LS	NI	Reduced (LS)[1]	Reduced (LS)[1]
Noise				
Impact NO-1 Construction Noise Impacts	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Impact NO-2 Construction Ground-Borne Vibration Impacts	LS	NI	Reduced (LS)[1]	Similar (LS)
Impact NO-3 Permanent Noise Impacts	LS	NI	Similar (LS)[1]	Similar (LS)

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-NO-1 Cumulative Noise Impacts	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Air Quality				
Impact AQ-1 Construction Air Quality Impacts Related to Criteria Air Pollutants	LS	NI	Reduced (LS)[1]	Similar (LS)
Impact AQ-2 Construction Air Quality Impacts Related to Sensitive Receptors	LSM	NI	Reduced (LSM)[1]	Similar (LSM)
Impact AQ-3 Operation Air Quality Impacts Related to Violation of Air Quality Standards	LS	NI	Similar (LS)[1]	Similar (LS)
Impact AQ-4 Operation Air Quality Impacts Related to Sensitive Receptors	LS	NI	Similar (LS)[1]	Similar (LS)
Impact AQ-5 Air Quality Impacts Related to Implementation of Air Quality Plan	LS	NI	Similar (LS)[1]	Similar (LS)
Impact C-AQ-1 Cumulative Construction and Operation Air Quality Impacts Related to Criteria Pollutants	LS	NI	Reduced (LS)[1]	Similar (LS)

Table 6-3: Comparison of the Environmental Impacts of the Alternatives *(continued)*

Topic/Impact	Proposed Project and Project Variant	Alternative 1 No Project Alternative	Alternative 2 Bicycles Lanes Alternative	Alternative 3 Center-Turn Lane Alternative
Impact C-AQ-2 Cumulative Construction and Operation Air Quality Impacts Related to Sensitive Receptors	LSM	NI	Reduced (LSM)[1]	Similar (LSM)

Notes:

[1] Although the impact conclusion does not change, the level or intensity of the impact would be reduced under this alternative.

[2] Although the impact conclusion does not change, the level or intensity of the impact would be greater under this alternative.

[3] This comparison is between the alternative and the project variant.

LS = Less-than-Significant impact, no mitigation required

LSM = Less-than-Significant Impact with Mitigation

SU = Significant and Unavoidable impact for which feasible mitigation is not available

SUM = Significant and Unavoidable impact, with implementation of feasible mitigation

Overall, Alternative 2 would have similar impacts on cultural and paleontological resources as those identified for the proposed project and its variant in Section 4.3, which would be mitigated to less-than-significant levels with incorporation of the same mitigation measures as those identified for the proposed project and its variant.

Transportation and Circulation under Alternative 2

The approach used for the traffic analysis for project alternatives is similar to that used for the proposed project and its variant (see Section 4.4) and is described below. Information in this section is based on the transportation consultant's technical memorandum for the proposed project alternatives' transportation impacts (See Appendix D of this SEIR).[2]

This section provides an analysis of the project-level and cumulative impacts for traffic, transit, pedestrians, bicycles, emergency vehicle access, loading, and parking that were identified as significant under the proposed project or its variant. An analysis is also provided for impacts that are different from those identified for the proposed project and its variant.

Traffic Analysis Approach

Similar to the proposed project and its variant, Alternative 2 would not generate any new vehicles trips. However, changes to the street, such as reducing roadway capacity and turning opportunities and reconfiguring lane geometries, would alter travel patterns or divert traffic in and around Second Street. This would impact intersection operations, measured in terms of level of service (LOS) and volume to capacity (v/c) ratio, as described below and in Section 4.4.

- **Intersection level of service.** LOS is used to describe how efficiently an intersection operates for vehicular traffic. Intersection designations range from LOS A, which indicates negligible delays with free flow speed, to LOS F, which indicates delays with queuing that may block upstream intersections. LOS D or better is acceptable intersection operation, whereas LOS E or LOS F would be unacceptable intersection operation. Please see Intersection Levels of Service in Section 4.4.2 on page 4.4-5.

- **Volume to capacity ratio.** The v/c ratio compares the roadway demand (the number of vehicles) to its traffic carrying capacity. A v/c ratio of less than 0.85 generally indicates that adequate capacity is available and motorists are not expected to experience significant queues and delays. As the v/c ratio approaches 1.0, traffic flow

[2] CHS Consulting Group. 2014. Final Supplemental Transportation Technical Memorandum for Transportation Impact Assessment of Project Alternatives. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

may become unstable and delay and queuing conditions may occur. Once the demand exceeds the capacity (a v/c ratio greater than 1.0), traffic flow becomes unstable and excessive delay and queuing is expected. Under these conditions, more than one signal cycle may be required for motorists to pass through the intersection.

The operational impact on signalized intersections is considered significant when alternative-related traffic would cause the intersection LOS to deteriorate from LOS D or better to LOS E or LOS F or from LOS E to LOS F.

Some intersections operate at LOS E or LOS F under existing conditions and would continue to operate at the same LOS under existing plus alternative conditions. For these intersections this analysis examines if the alternative has a substantial contribution to the poor operation, as described below:

- If the intersection is along Second Street, the level of contribution to the traffic impact is based on the projected v/c ratios. The alternative is considered to have a substantial contribution to the intersection's poor operation if its overall v/c ratio is 10 percent higher under existing plus alternative conditions than under existing conditions. The same threshold of a 10 percent increase applies for cumulative plus alternative conditions.

- If the intersection is located in the surrounding area but not on Second Street, the traffic impact would be considered significant if the level of contribution of the alternative to the intersection's critical movement traffic volumes is greater than or equal to five percent. The analysis examines the critical movement traffic volumes at the intersections in the surrounding area because the proposed project would not add traffic trips; instead it would divert traffic to streets near the Second Street corridor.

For the cumulative analysis, and pursuant to the TIA Guidelines,[3] if the existing plus project conditions result in a significant impact, then the assumption is that the significant impact would continue under cumulative plus alternative conditions.

Traffic Impacts under Alternative 2

Before mitigation, Alternative 2 would have significant project level traffic impacts at nine intersections (#1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, #6 Harrison and Hawthorne streets, #10 King and Third streets, #16 Harrison and Second streets, #28

[3] San Francisco Planning Department. 2002. *Transportation Impact Analysis Guidelines for Environmental Review*. 2002. Available online at http://sf-planning.org/Modules/ShowDocument.aspx?documentid=6753. Accessed January 22, 2015.

Harrison and First streets, and #29 Fifth and Bryant streets, and the I-80 eastbound on-ramp). The mitigation measures identified for the proposed project in Section 4.4 for two intersections (Howard and New Montgomery streets [#3] and Howard and Hawthorne streets [#4]), **Mitigation Measure M-TR-10: Increase Signal Cycle Length** (Howard and New Montgomery streets) and **Mitigation Measure M-TR-11: Increase Signal Cycle Length** (Howard Street and Hawthorne streets), would also be feasible at these same intersections to mitigate Alternative 2 traffic impacts to less-than-significant levels. Therefore, traffic impacts under Alternative 2 at Intersections #3 and #4 would be reduced to ***less-than-significant levels with mitigation.*** See Table 6-4 on p. 6-28 for a comparison of traffic impacts between Alternative 2 and the proposed project or project variant.

No feasible mitigation measures have been identified for Alternative 2 at the remaining seven significantly impacted intersections. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available right-of-way, such as to provide facilities for pedestrians, transit, and bicyclists, as proposed by the proposed project or its variant. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. Curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes); even so, providing on-street loading in downtown San Francisco is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow.

In addition, left turns off two-way streets can sometimes be prohibited to mitigate traffic impacts (as left-turning vehicles block intersections while waiting for a safe time to turn). However, this is already proposed for some intersections under Alternative 2 (off Second Street). Therefore, this tool is not available as mitigation for this alternative. The only feasible mitigation measure is optimization of timing at signalized intersections; specifically, increasing the signal cycle length to 90 seconds and modifying green splits, as proposed for two intersections discussed above. Increasing signal cycle length and signal timing modifications would not improve intersection performance at the remaining seven significantly impacted intersections to less-than-significant levels. Because of this, these measures were not proposed for implementation at these seven intersections. Further, cycle lengths above 90 seconds create only marginal additional traffic capacity for congested movements, while substantially increasing delay for uncongested movements (as well as pedestrians and bicyclists). Therefore, impacted signalized intersections with a cycle length at or above 90 seconds cannot be lengthened further.

Table 6-4: Comparison of Traffic Impacts—Proposed Project or Variant and Alternative 2

Intersection (#/Name)	Project or Variant/Alternative-Specific Impacts				Cumulative Impacts			
	Impact Number	Existing Baseline Conditions	Existing Plus Proposed Project/Variant	Existing Plus Alternative 2	Impact Number	Cumulative Baseline Conditions	Cumulative Plus Proposed Project/ Variant	Cumulative Plus Alternative 2
1. Market and Montgomery streets	TR-2	–	SU/SU	SU	C-TR-2	O	SU/SU	SU
2. Mission and New Montgomery streets	TR-3	O	SU/SU	SU	C-TR-3	O	SU/SU	SU
3. Howard and New Montgomery streets	TR-10	–	LSM/LSM	LSM	C-TR-4	–	SU/SU	SU
4. Howard and Hawthorne streets	TR-11	–	LSM/LSM	LSM	C-TR-5	–	SU/SU	SU
5. Folsom and Hawthorne streets	TR-12	O	LSM/LSM	LS	C-TR-16	O	LS/LS	LS
6. Harrison and Hawthorne streets	TR-4	–	SU/SU	SU	C-TR-6	–	SU/SU	SU
7. Bryant and Third streets	TR-14	–	LS/LS	LS	C-TR-7	O	SU/SU	SU
8. Brannan and Third streets	TR-14	–	LS/LS	–LS	C-TR-8	O	SU/SU	SU
9. Townsend and Third streets	TR-14	–	LS/LS	–LS	C-TR-9	O	SU/SU	SU (>)
10. King and Third streets	TR-5	O	SU/SU	SU	C-TR-10	O	SU/SU	SU
16. Harrison and Second streets	TR-6	–	SU/SU	SU (<)	C-TR-11	O	SU/SU	SU (>)
17. Bryant and Second streets	TR-7	O	SU/SU	LS	C-TR-12	O	SU/SU	LS
20. Townsend and Second streets	TR-14	–	LS/LS	LS	C-TR-13/C-TR-17	O	SU/LS	LSM
28. Harrison and First streets	TR-8	O	SU/SU	SU	C-TR-14	O	SU/SU	SU
29. Fifth and Bryant streets and the I-80 on-ramp	TR-9	O	SU/SU	SU	C-TR-15	O	SU/SU	SU

Notes:
– = Intersection performs acceptably (LOS D or better) under the respective scenario.
O = Intersection performs at LOS E or LOS F under existing or cumulative (baseline) conditions.
LS = Less-than-significant project/alternative-specific impact or cumulative impact. Project traffic would not result in the deterioration of intersection operations in these locations nor contribute significantly to intersections operating at the same LOS E or LOS F under (i) existing conditions or (ii) cumulative (baseline) conditions.
LSM = Significant Project/Alternative-Specific or Cumulative Impact. Project traffic would contribute significantly to the decline of intersection operations. Feasible mitigation measures would reduce the impact to less than significant.
SU = Significant and unavoidable project/alternative-specific or cumulative impact. Project traffic would contribute significantly to the decline of intersection operations. No mitigation measures are feasible.
< = Reduced level of significant and unavoidable impact
> = Greater level of significant and unavoidable impact
Source: CHS Consulting Group 2014.

For the above reasons, the traffic impacts under Alternative 2 would be ***significant and unavoidable*** at the following seven intersections:

- #1 Market and Montgomery streets;
- #2 Mission and New Montgomery streets;
- #6 Harrison and Hawthorne streets;
- #10 King and Third streets;
- #16 Harrison and Second streets;
- #28 Harrison and First streets; and
- #29 Fifth Street, Bryant Street, and the I-80 eastbound on-ramp.

The remaining 20 intersections in the study area would either continue to operate at acceptable LOS D or better under Alternative 2 conditions or would not contribute substantially to the poor intersection operation (See Table 6-4). Therefore, traffic impacts under Alternative 2 at the remaining 20 intersections in the study area would be ***less than significant.***

Comparison of Traffic Impacts of Alternative 2 and the Proposed Project or its Variant

Under the proposed project or its variant, the traffic signal timing along the length of Second Street would be 90 seconds. This would accommodate a separate bicycle/pedestrian signal phase at all Second Street intersections such that bicycles and pedestrians would proceed through the intersection without conflicting with turning traffic. However, under Alternative 2, signal cycle length at all intersections would remain the same as under existing conditions, with a 60-second cycle and without a separate bicyclist/pedestrian phase. The lack of a separate bicyclist/pedestrian phase under Alternative 2, compared to the proposed project or its variant, would increase intersection capacity for vehicular traffic and result in less-congested intersections during the peak hour. Therefore, under Alternative 2 the levels of service and delays at acceptably performing intersections along Second Street would be better when compared to the proposed project or its variant.

As noted above, under Alternative 2, before mitigation, nine intersections would have significant traffic impacts, compared to 11 intersections with significant impacts under the proposed project or its variant (SU and LSM, as shown on Table 6-4). Alternative 2 would not result in significant traffic impacts at intersections #5 Folsom and Hawthorne streets and #17 Bryant and Second streets, unlike the proposed project or its variant. The significant traffic impact at #5 Folsom and Hawthorne streets intersection would be reduced to less-than-significant levels with mitigation under the proposed project or its variant. Under Alternative 2 this intersection would operate at an acceptable LOS D. Intersection #17 Bryant and Second streets would result in a significant and unavoidable traffic impact under the proposed project or its variant, whereas Alternative 2 would result in a less-than-significant traffic impact at this intersection. Therefore, Alternative 2 would eliminate the significant impact at Intersection #17 Bryant and Second streets as a result of the proposed project or project variant. Alternative 2 would result in significant and unavoidable traffic impacts at seven intersections compared to eight intersections under the proposed project or its variant (SU only, as shown on Table 6-4; **Impacts TR-2, TR-3, TR-4, TR-5, TR-8, TR-9: similar; Impacts TR-6: reduced** and **TR-7: eliminated**).

Of the intersections with poor operating conditions under both Alternative 2 and the proposed project or its variant, Table 6-4 shows that the level of service, delay, and v/c ratio are similar at most intersections. However, compared to the proposed project or project variant conditions, Alternative 2 would improve traffic operations at three intersections, as discussed below.

- **#5 Folsom and Hawthorne streets—**This intersection's level of service would improve under Alternative 2 compared to the proposed project or its variant. The proposed project or its variant would not include a southbound left-turn pocket at this intersection; the increase in southbound traffic would further deteriorate operations from LOS E under existing conditions to LOS F under the proposed project or its variant. Thus, the proposed project or its variant would cause a significant impact at this intersection. However, a southbound left-turn pocket along Hawthorne Street is proposed as a feasible mitigation measure (M-TR-12) for this intersection under the proposed project or its variant as identified in Section 4.4. M-TR-12 would reduce the traffic impact at this intersection under the proposed project or its variant to a less-than-significant level. Under Alternative 2, the addition of p.m. peak, southbound, left-turn storage at the Hawthorne and Folsom streets intersection would cause the intersection operations to improve from unacceptable LOS E to acceptable LOS D; thus Alternative 2 would cause less-than-significant impacts at this intersection **(Impact TR-12: reduced**).

- **#16 Harrison and Second streets—**Although this intersection would perform at LOS F and would result in significant unavoidable impacts under the proposed project or its variant and Alternative 2, the v/c ratio under Alternative 2 would improve compared to the proposed project's v/c ratio. Under the proposed project or its variant, a separate bicycle/pedestrian signal phase would be provided at intersections along Second Street. The roadway configuration and cycle length under the proposed project or its variant would increase average vehicular traffic delay and v/c ratio for drivers using this intersection. Compared to the proposed project or its variant, the signal cycle length under Alternative 2 would be shorter and would not include a separate bicycle/pedestrian phase. Therefore, the v/c ratio under Alternative 2 would be better than under the proposed project or its variant, with ratios of 1.86 and 2.0, respectively. Traffic at this intersection would experience extensive congestion under the proposed project or variant and Alternative 2 scenarios because the v/c ratio is greater than 1, as described above. Nevertheless, traffic would clear through this intersection faster under Alternative 2 relative to the proposed project or its variant (**Impact TR-6: reduced**).

- **#17 Bryant and Second streets—**This intersection's level of service would improve under Alternative 2, compared to the proposed project or its variant. The intersection operates at unacceptable LOS F under existing conditions and would continue to operate at LOS F under the proposed project or its variant. This would be due to the reduction in eastbound left-turn capacity (from Bryant Street onto Second Street) from two lanes to one lane. The v/c ratio would increase from 1.3 to 1.53 under the proposed project or its variant, an increase in the overall intersection v/c ratio of 18 percent. This would result in a significant and unavoidable traffic impact. Under Alternative 2, the availability of two eastbound left-turn lanes and the reduction in intersection traffic due to traffic diversion off Second street would cause this intersection's level of service to improve from F under existing conditions to E. Additionally, with signal timing changes and optimization, the intersection v/c ratio would be reduced from 1.30 to 1.10. The traffic impact at this intersection would be less than significant under Alternative 2 (**Impact TR-7: eliminated**). Therefore, Alternative 2 would eliminate the proposed project's or project variant's significant and unavoidable traffic impact at the intersection of Bryant and Second streets.

Cumulative Traffic Impacts under Alternative 2

As shown in Table 6-4, under 2040 cumulative (no project) conditions, 20 of the 29 study intersections would operate at unacceptable LOS conditions (LOS E or F). Before mitigation, Alternative 2 would result in significant cumulative traffic impacts at the 13 of the 29 study intersections (#1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, #6 Harrison and Hawthorne streets, #7 Bryant and Third streets, #8 Brannan and Third streets, #9 Townsend and Third streets, #10 King and Third streets, #16 Harrison and Second streets, #20 Townsend and Second streets, #28 Harrison and First streets, and #29 Fifth Street/Bryant Street/I-80 eastbound on-ramp). The alternatives analysis identified the following feasible mitigation measure to reduce the cumulative traffic impacts at intersection #20 Townsend and Second streets under Alternative 2 to less-than-significant levels.

Mitigation Measure M-TR-ALT-1, Reconfiguring the Southbound Movements: At the #20 Townsend and Second streets intersection, under Alternative 2 and existing conditions, there is a southbound exclusive left-turn pocket and southbound shared lane, serving both the southbound-through and southbound-right movements. As a mitigation measure, restriping the southbound left-turn pocket to a shared through-left movement and the adjacent shared southbound through-right lane to an exclusive right-turn lane would improve the intersection operation from LOS F to D. With the implementation of **Mitigation Measure M-TR-ALT-1**, the intersection of Townsend and Second streets would operate at an acceptable level of service, and the cumulative impact at this intersection under Alternative 2 would be ***less than significant with mitigation***.

No feasible mitigation measures have been identified for the remaining 12 intersections due to right-of-way constraints. In general, the existing right-of-way within San Francisco cannot be expanded. Trade-offs need to be made when the goal of a project is to improve facilities to accommodate alternative modes of travel, such as pedestrians, bicyclists, and transit, within the existing right-of-way, as proposed under Alternative 2 and the proposed project or its variant. In a constrained environment such as the right-of-way in San Francisco, mitigation measures that would preclude implementing facilities for other modes may not be possible. Therefore, cumulative traffic impacts would remain ***significant and unavoidable*** at the remaining 12 intersections.

As shown in Table 6-4, cumulative traffic impacts of Alternative 2 at the remaining 16 intersections in the study area would be ***less than significant***.

Comparison of Cumulative Traffic Impacts of Alternative 2 and the Proposed Project

As shown in Table 6-4, the level of service and delays at most acceptably performing intersections along Second Street would be better under cumulative plus Alternative 2 conditions than under cumulative plus proposed project or project variant conditions. This would be mainly due to the difference in traffic signal timing at intersections along Second Street. Under cumulative plus proposed project or project variant conditions, the traffic signals at all Second Street intersections would operate at a 90-second cycle. This is required in order to enable a separate bicyclist/pedestrian signal phase that would remove bicyclist/pedestrian conflicts with turning traffic, thus improving bicyclist/pedestrian safety.

Cumulative plus Alternative 2 conditions would also include 90-second cycle length signals along the Second Street corridor as a result of other projects that would be implemented under the 2040 cumulative conditions. However, even though the cycle length would be longer, cumulative plus Alternative 2 conditions would not include a separate bicyclist/pedestrian phase at the intersections along Second Street. This would increase the availability of green time for other high demand movements, such as through-traffic along the Second Street corridor, when compared to the proposed project or its variant. Therefore, Alternative 2 would clear traffic through uncongested intersections during the peak hour and would improve intersection operations, compared to the proposed project or its variant.

Before mitigation, Alternative 2 would result in significant cumulative traffic impacts at 13 of the 29 study intersections. As described in Section 4.4, the proposed project would have significant cumulative traffic impacts at 14 intersections. Thirteen of these would be the same intersections as those identified under cumulative plus Alternative 2 conditions and at one additional intersection, #17 Bryant and Second streets. The project variant traffic impacts would differ from the proposed project under cumulative conditions. The project variant would have significant cumulative traffic impacts at 13 intersections. Twelve of these would be the same intersections as those identified under cumulative plus Alternative 2 conditions (not including the #20 Townsend and Second streets intersection) and at one additional intersection, #17 Bryant and Second streets. The project variant would have less-than-significant impacts at the #20 Townsend and Second streets intersection.

The Alternative 2 impact at the #20 Townsend and Second streets intersection could be mitigated to less-than-significant levels; thus, cumulative traffic impacts would be significant and unavoidable at 12 intersections under cumulative plus Alternative 2 after mitigation. No mitigation measures would be feasible under cumulative plus proposed project or cumulative plus project variant. Therefore, the cumulative impacts at all 14 intersections under cumulative plus proposed project conditions and all 13 intersections under cumulative plus project variant conditions would be significant and unavoidable. Thus, Alternative 2 would eliminate the significant and unavoidable cumulative traffic impacts at two intersections compared to the proposed project and at one intersection compared to the project variant.

Table 6-4 shows that the LOS, delay, and v/c ratios between Alternative 2 and the proposed project or project variant are similar at intersections along Hawthorne, New Montgomery, and First streets. However, traffic operations would differ along the Third Street and Second Street intersections, as discussed below.

#9 Townsend and Third streets—This intersection would perform unacceptably at LOS F under cumulative and cumulative plus proposed project, project variant, and Alternative 2 conditions; the cumulative traffic impacts would be significant for the proposed project or project variant, and Alternative 2. The v/c ratio would deteriorate from 1.69 under cumulative no project conditions to 2.4 under cumulative plus proposed project or project variant conditions and to 2.93 under cumulative plus Alternative 2 conditions. Therefore, cumulative traffic conditions would be slightly worse at this intersection under Alternative 2 compared to either the proposed project or project variant (**Impact C-TR-9: greater**).

#16 Harrison and Second streets—This intersection would perform unacceptably at LOS F under cumulative plus proposed project or project variant conditions and under cumulative plus Alternative 2 conditions. The v/c ratio would deteriorate from 2.58 under cumulative no project conditions to 3.39 under cumulative plus proposed project or variant conditions and to 3.87 under cumulative plus Alternative 2 conditions. This would increase vehicular delay.

Both the proposed project and its variant and Alternative 2 would have similar lane geometry and traffic volumes at this intersection. However, unlike the proposed project and its variant, Alternative 2 would allow northbound left turns at this intersection. This would alter the signal timing and traffic progression through the intersection and would cause its v/c ratio to deteriorate to a greater degree than under the proposed project or project variant (**Impact C-TR-11: greater**).

#17 Bryant and Second streets—This intersection would operate at unacceptable LOS F under cumulative conditions and would continue to perform at LOS F under cumulative plus proposed project or project variant conditions and cumulative plus Alternative 2 conditions. The v/c ratio would deteriorate from 2.26 under cumulative no project conditions to 2.56 under cumulative plus proposed project or project variant conditions, resulting in increased vehicular delay. Whereas, the v/c ratio would improve under cumulative plus Alternative 2 conditions to 1.63 due to the availability of two eastbound left-turn lanes and the reduction in diverting traffic. Therefore, the cumulative traffic impact under cumulative plus Alternative 2 conditions would be less than significant (**Impact C-TR-12: eliminated**).

#20 Townsend and Second streets—This intersection would perform at LOS E under cumulative no project conditions. The intersection performance would deteriorate to LOS F under cumulative plus proposed project conditions and cumulative plus Alternative 2 conditions. Implementation of **Mitigation Measure C-TR-ALT-1** under Alternative 2 would improve the LOS from LOS F to LOS D and therefore would reduce the cumulative traffic impact at this intersection to a less-than-significant level under Alternative 2. This mitigation measure could not be implemented under the proposed project condition because the streetscape improvements identified under the mitigation measure are already part of the proposed project's improvements. Therefore, the project's significant cumulative traffic impact at this intersection would be eliminated under Alternative 2 (**Impact C-TR-13: eliminated**).

This is the only intersection with a different significance finding under cumulative plus project variant conditions when compared to cumulative plus proposed project conditions. Permitting southbound left turns at Brannan Street under the project variant (and not under the proposed project) would slightly reduce the traffic (by 20 vehicles) diverting to the congested southbound right-turn movement at the Townsend intersection. This would reduce the average vehicular delay and would improve intersection performance under the project variant, compared to the proposed project. However, this intersection would continue to perform at LOS E under cumulative and cumulative plus project variant conditions, and the v/c ratio would increase from 1.20 under cumulative conditions to 1.29 under cumulative plus project variant conditions, or by 8 percent.

Because it would not exceed the City threshold, described above and in Section 4.4.4., the cumulative traffic impact at this intersection would be considered less than significant under cumulative plus project variant conditions. As discussed above, this intersection would deteriorate from LOS E under cumulative conditions to LOS F under cumulative plus Alternative 2 conditions. However, with the implementation of **Mitigation Measure C-TR-ALT-1** under Alternative 2, LOS would improve from LOS F to LOS D, and v/c would be 1.17. This mitigation measure could not be implemented under the project variant conditions because the streetscape improvements identified under this measure are already part of the project variant. Therefore, the less-than-significant cumulative traffic impact for the project variant at this intersection would be improved from LOS E to LOS D under Alternative 2. As discussed above, the cumulative traffic impact under Alternative 2 would also be less than significant but with mitigation (**Impact C-TR-17: reduced**).

The **#14 Howard and Second streets** intersection would have less-than-significant cumulative traffic impacts under the proposed project or its variant and under Alternative 2. However, the intersection would perform significantly better at LOS C under cumulative plus Alternative 2 conditions, compared to LOS F under cumulative plus proposed project or its variant conditions. Under cumulative plus proposed project or its variant conditions, this intersection would continue to perform at LOS F, although the project contribution to this impact would not be considerable. The intersection’s poor performance under cumulative plus proposed project or its variant conditions would be mainly due to the turning restriction during the bicycle/pedestrian signal phase. Under Alternative 2, traffic would be diverted, the street geometry would be changed, and the signal green time would increase for the heavy westbound movement. Therefore, the intersection performance would improve from unacceptable LOS F under cumulative conditions to acceptable LOS C under cumulative plus Alternative 2 conditions (**Impact C-TR-16: reduced for intersection #14, Howard and Second streets**).

Overall, Alternative 2 would eliminate significant and unavoidable cumulative traffic impacts at two intersections compared to the proposed project and at one intersection compared to the project variant. However, compared to the proposed project or project variant conditions, Alternative 2 would relatively improve or deteriorate traffic operations at five intersections, as discussed above (**Impact C-TR2, C-TR-3, C-TR-4, C-TR-5, C-TR-6, C-TR-7, C-TR-8, and C-TR-.10, C-TR-14, and C-TR-15: similar**; **Impact C-TR-9 and C-TR-11: greater; Impact C-TR-12 and C-TR-13: eliminated, C-TR-16, and C-TR-17: reduced**).

Transit Impacts under Alternative 2

The proposed improvements under Alternative 2 would not generate transit trips and would maintain Muni routes 10 and 12 transit service along Second Street. Compared to existing conditions, implementing Alternative 2 would decrease Muni Route 10 delays by 3 minutes and 39 seconds in the inbound direction and would increase delays by 3 minutes and 10 seconds in the outbound direction (see Table 6-5). Therefore, the sum of the delays for Muni Route 10 in both directions would decrease by 29 seconds under Alternative 2 conditions. As such, Alternative 2 would improve Muni Route 10 transit travel time. Therefore, the impact of Alternative 2 on Muni Route 10 would be ***less than significant***.

Table 6-5: Transit Delay: Existing, Existing Plus Alternative 2, and Existing Plus Project Conditions – Weekday P.M. Peak-Hour

Headway (Minutes)	Total Transit Delay (Minutes:Seconds)				
	Existing Baseline Conditions	Existing Plus Alternative 2	Alternative 2 Contribution	Existing Plus Proposed Project or Variant	Proposed Project or Variant Contributions
10 Townsend (Sansome)					
Inbound 20	7:20	3:41	-3:39	6:18	-1:02
Outbound 20	3:25	6:36	3:10	5:54	2:29
12 Folsom-Pacific/11 Downtown Connector					
Inbound 20	6:38	2:37	-4:00	2:31	-4:07
Outbound 20	1:22	1:29	0:07	5:19	3:57

Note: The total transit delays presented in the table do not include boarding delays because no transit trips would be added as a result of the proposed project, project variant, or Alternative 2.

Source: CHS Consulting Group, 2014. (The TIS is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E.)

As shown in Table 6-5, compared to existing conditions, Alternative 2 would decrease Muni Route 12 delays by 4 minutes in the inbound direction and would increase delays by 7 seconds in the outbound direction. Therefore, the sum of the delays for Muni Route 12 in both directions would decrease by 3 minutes and 53 seconds. As such, Alternative 2 would improve Muni Route 12 transit travel time, compared to existing conditions, so the impact of Alternative 2 on Muni Route 12 would be ***less than significant***.

As discussed in the approach to traffic analysis, Alternative 2 would result in similar traffic diversion as the proposed project or project variant. Traffic would be diverted to the surrounding streets in the project vicinity, so transit impacts from Alternative 2 on transit operations on Third, First, and Mission streets would be negligible. As such, the transit impact of Alternative 2 on other transit in the project vicinity would be ***less than significant.***

Comparison of Transit Impacts of Alternative 2 and the Proposed Project or Its Variant

Similar to the proposed project and its variant, Alternative 2 would have less-than-significant impacts on Muni Routes 10 and 12. However, Alternative 2 would slightly improve transit travel time along both routes, compared to the proposed project or its variant, although

Alternative 2 would provide bus bulbs at all stops except the Townsend outbound stop. The proposed project or its variant would provide bus boarding islands at approximately the same locations. Transit boarding islands and transit bulbs can reduce transit travel times on bus routes by eliminating the need for buses to exit and re-enter the flow of traffic to access curbside transit stops.

Under Alternative 2, transit travel time would be reduced by approximately 29 seconds for Muni Route 10 and by approximately 4 minutes for Muni Route 12 and therefore would improve transit travel time along Second Street. However, the proposed project or its variant would result in an increased delay of 1 minute and 27 seconds for Muni Route 10 and a reduced delay of Muni Route 12 by 10 seconds. Unlike under the proposed project or its variant, Alternative 2 would maintain the 60-second traffic signal cycle length at intersections along Second Street and would not include a separate bicyclist/pedestrian signal phase. Transit travel time would especially improve under Alternative 2 at the northbound through movement at Bryant and Second streets (Intersection #17) and the southbound right turn at Harrison and Second streets (Intersection #16). As described under the traffic impact analysis above, both of these intersections would perform better under Alternative 2 than under the proposed project or its variant. The two intersections would have significant unavoidable traffic impacts under the proposed project or its variant. Alternative 2 would result in significant unavoidable traffic impacts at Harrison and Second streets (Intersection #16) but at a reduced level, compared to the proposed project or its variant. Traffic impacts under Alternative 2 at Intersection #17 would be less than significant.

Under Alternative 2, the impacts on transit routes along parallel and cross streets would be negligible, similar to the proposed project and its variant.

Overall, the less-than-significant transit impacts under Alternative 2 would be reduced, compared to the less-than-significant transit impacts of the proposed project and its variant (**Impact TR-16: reduced**).

Cumulative Transit Impacts under Alternative 2

Under 2040 cumulative baseline conditions, the sum of the delay (both directions) of Muni Route 10 would be 24 minutes and 56 seconds. The sum of the delay of Muni Route 12 under 2040 cumulative baseline conditions would be 11 minutes and 52 seconds.

Cumulative plus Alternative 2 conditions would have less-than-significant impacts on Muni Routes 10 and 12. Impacts on transit routes along parallel and cross streets would be negligible. Under cumulative plus Alternative 2 conditions, Muni Route 10 delays would decrease by 36 seconds in the inbound direction and would increase by 4 seconds in the outbound direction compared to 2040 cumulative baseline conditions. Therefore, the sum of the delays for Muni Route 10 in both directions would decrease by 32 seconds. This is compared to 2040 cumulative baseline conditions, which have a sum of delay in both direction for Muni Route 10 of 24 minutes and 56 seconds. As such, under cumulative plus Alternative 2 conditions, Muni Route 10 travel time would improve.

Compared to 2040 cumulative baseline conditions, delays for Muni Route 12 under cumulative plus Alternative 2 conditions would decrease by 12 seconds in the inbound direction and by 3 minutes and 18 seconds in the outbound direction. Therefore, the sum of the delays for Muni Route 12 in both directions would decrease by 3 minutes and 30 seconds, compared to 2040 cumulative baseline conditions, which would a have a sum of delay in both directions for Muni Route 12 of 11 minutes and 52 seconds. As such, under cumulative plus Alternative 2 conditions, Muni Route 12 transit travel time would improve. Therefore, Alternative 2 would not contribute considerably to cumulative impacts from additional future demand on transit serving the area, from conflicts with transit operations, from delay to transit operations, or from access to transit.

Therefore, the cumulative transit impact of Alternative 2 on Muni Routes 10 and 12 and other transit routes in the project area would be ***less than significant*** under Alternative 2 cumulative conditions.

Comparison of Cumulative Transit Impacts of Alternative 2 with the Proposed Project

Cumulative transit delay time for Muni Route 10 under Alternative 2 would be less improved than under the proposed project or its variant. Compared to 2040 cumulative baseline conditions, under cumulative plus proposed project conditions the sum of delay in both directions would be reduced by 6 minutes and 22 seconds for Muni Route 10 and by 4 minutes for Muni Route 12. Under cumulative plus Alternative 2 conditions, there would be less transit travel time reduction (particularly for Inbound Muni Route 10) compared to cumulative plus proposed project conditions. The main difference in the delay time for Muni Route 10 is in the inbound direction, with 16 minutes and 25 seconds delay under cumulative plus Alternative 2 conditions and 5 minutes and 25 seconds delay under cumulative plus proposed project or its variant conditions. The longer inbound Muni Route 10 delay time under cumulative plus Alternative 2 conditions can be attributed to the traffic signal operations at Second and Harrison streets. More green time for traffic would be provided at the congested eastbound movement under cumulative plus Alternative 2 conditions than under cumulative plus proposed project conditions. This would cause the overall Harrison and Second streets intersection performance to improve, compared to cumulative plus proposed project conditions. However, more green time in the eastbound movement would result in less green time in the northbound movement at this intersection, which would increase the northbound transit delay under Alternative 2. Further, the bus boarding islands under cumulative plus proposed project conditions would result in less re-entry delay and faster transit service than with the bus bulbs that would be provided under cumulative plus Alternative 2 conditions.

Cumulative transit delay would improve for Muni Route 12 compared to cumulative transit under the proposed project conditions. The sum of the delay under cumulative plus Alternative 2 conditions would decrease by 3 minutes and 30 seconds for Muni Route 12. The decrease in the sum of delay for Muni Route 12 under cumulative plus proposed project conditions would be 10 seconds.

Similar to cumulative plus proposed project conditions, cumulative transit delay of other transit routes near the project site under Alternative 2 would be negligible. Overall cumulative transit impacts under Alternative 2 would be greater than those under the proposed project (**C-TR-19: greater**).

Comparison of Cumulative Transit Impacts with the Project Variant

Compared to 2040 cumulative baseline conditions, under cumulative plus project variant conditions the sum of delay in both directions would be reduced by 5 minutes and 44 seconds for Muni Route 10 and 3 minutes and 41 seconds for Muni Route 12. As noted above, the sum of the delay under cumulative plus Alternative 2 condition would decrease by 32 seconds for Muni Route 10 and 3 minutes and 30 seconds for Muni Route 12. Therefore, cumulative plus Alternative 2 conditions would result in less transit travel time reduction than cumulative plus variant conditions (**C-TR-19: greater**).

Pedestrians Impacts under Alternative 2

Second Street is a major pedestrian street along both east and west sidewalks. Consequently, right-turning and left-turning drivers conflict with pedestrians and contribute to vehicular backups. Those conducting field observations noted several instances of vehicles blocking crosswalks and impeding pedestrian flow along Second Street at Folsom, Harrison, and Bryant streets, often resulting in pedestrians interweaving between vehicles in order to cross the street and increasing the risk of conflicts between pedestrians and vehicles.

Improvements to pedestrian facilities under Alternative 2 would include the installation of widened sidewalks on the west side of Second Street between Harrison and Townsend streets, bus bulbs at most bus stops, raised crosswalks at alleys, crosswalks with high-visibility markings, and new benches and pedestrian-scale light fixtures. Compared to existing conditions, these improvements would increase pedestrian safety along Second Street, and Alternative 2 would result in ***less-than-significant*** impacts on pedestrians.

Comparison of Pedestrians Impacts of Alternative 2 and the Proposed Project or its Variant

Although Alternative 2 would improve pedestrian safety along Second Street compared to existing conditions, these improvements would not be to the same degree as those under the proposed project or its variant.

Unlike the proposed project and its variant, Alternative 2 would not provide a bicyclist/pedestrian signal phase separate from the signal for vehicular traffic. Also, unlike the proposed project or its variant, Alternative 2 would allow right turns without an exclusive signal phase from all intersections on Second street, and would allow left turns at two additional locations along Second Street, as compared to the proposed project and its variant (northbound at Harrison Street and at Brannan Street). The project variant would include an additional southbound left turn at Brannan. Therefore, Alternative 2 would result in additional conflicts between turning motorists and pedestrians, thus reducing pedestrian safety, compared to the proposed project or its variant.

Transit boarding islands under the proposed project or its variant would provide dedicated space for pedestrians to queue, board, and off-board buses along Second Street. These islands would be separated from the sidewalk by the cycle track, and pedestrians would be expected to access these islands from the crosswalk. However, there is potential for pedestrians to cross the cycle track from the sidewalk to access the bus boarding island, thereby increasing bicyclist and pedestrian conflicts. This circumstance would not occur with bus bulbs under Alternative 2 because the bulbs extend from the sidewalk. Therefore, these potential conflicts between pedestrians and bicyclists at these locations would be reduced under Alternative 2 because pedestrians would not cross bicycle lanes to board the buses.

Overall, compared to existing conditions, Alternative 2 would improve pedestrian circulation and safety, and impacts on pedestrians would be less than significant; however, Alternative 2 would not improve pedestrian safety to the same degree as the proposed project or its variant (**Impact TR-18: greater**).

Cumulative Impacts on Pedestrians under Alternative 2

Under 2040 conditions, there would be a projected increase in background vehicle traffic. This could increase the potential for vehicle-pedestrian conflicts at intersections along Second Street.

Cumulative plus Alternative 2 conditions would not add pedestrian trips and would improve pedestrian facilities along the Second Street corridor. Therefore, Alternative 2 would not contribute considerably to cumulative pedestrian impacts, and cumulative pedestrian impacts would be ***less than significant***. Under cumulative plus Alternative 2 conditions, pedestrian circulation in and around the project site would improve due to implementing streetscape design elements, such as widening the sidewalk on the west side between Harrison and Townsend streets, raising the crosswalks at alleys, upgrading crosswalks with high visibility markings, and installing new pedestrian-scale light fixtures to create a more comfortable walking environment, similar to cumulative plus proposed project and project variant conditions.

Comparison of Cumulative Pedestrians Impacts with the Proposed Project and Project Variant

Cumulative plus Alternative 2 conditions would result in additional conflicts between turning motorists and pedestrians, thus reducing pedestrian safety, compared to cumulative plus proposed project or its variant conditions. In addition, unlike cumulative plus proposed project or project variant conditions, cumulative plus Alternative 2 conditions would not include widened sidewalks on the east side of Second Street between Harrison and Townsend streets, so there would be less improvement for pedestrian conditions, as compared to cumulative plus proposed project and project variant conditions.

The transit boarding islands under cumulative plus proposed project or project variant conditions would provide dedicated space for pedestrians to queue, board, and off-board buses along Second Street. These boarding islands would be separated from the sidewalk by the cycle track. Pedestrians would be expected to access the bus boarding islands from the crosswalk under proposed project or project variant conditions at the intersections or via a marked accessible path across the cycle track for midblock bus boarding islands. Therefore, pedestrians may cross the cycle track, yielding to cyclists, in order to access the boarding islands. This would increase the potential for bicyclist and pedestrian conflicts. The bus bulbs under cumulative plus Alternative 2 conditions would reduce these potential conflicts between pedestrians and bicyclists because bus bulbs extend from the sidewalk, and pedestrians would not cross bicycle lanes to board the buses.

Overall, both cumulative plus proposed project or project variant and cumulative plus Alternative 2 conditions would have less-than-significant impacts related to pedestrians. However, cumulative plus Alternative 2 conditions would not improve pedestrian conditions as much as the cumulative plus proposed project or project variant conditions (**Impact C-TR-20: greater**).

Bicycle Impacts under Alternative 2

The existing bicycle route along Second Street is Bicycle Route 11, a Class III facility, defined as a bicycle route where bicyclists share travel lanes with vehicles. Based on field observations, bicycle volumes are generally low along Second Street, in areas of heavy traffic congestion and vehicle queuing (e.g., at Folsom and Bryant Streets). Bicyclists are required to slow down or stop (or both) to maneuver or detour around these queued vehicles in order to continue along Second Street. As a result, these congested areas become an obstructed and uncomfortable environment for bicyclists traveling along the roadway and create a greater potential for conflicts between vehicles and bicycles.

Alternative 2 would install bicycle facilities along Second Street, including bicycle lanes and sidewalk bicycle racks. Class II bicycle lanes would be installed on both sides of Second Street between Market and Townsend streets, providing designated space for cyclists within the right-of-way; in addition, up to 42 new sidewalk bicycle racks would be installed along the length of Second Street. Bicycle impacts from Alternative 2 would be ***less than significant***.

Comparison of Bicycles Impacts of Alternative 2 and the Proposed Project or its Variant

Similar to the proposed project and its variant, Alternative 2 would install bicycle facilities along Second Street, including bicycle lanes and sidewalk bicycle racks. Compared to existing conditions, the bicycle infrastructure and left-turn restrictions at most intersections along Second Street under Alternative 2 would improve conditions for bicyclists by providing a dedicated space for cyclists within the right-of-way. These measures also would reduce the number of conflicts between bicyclists and vehicles, including buses. However, unlike the proposed project or its variant, Alternative 2 would retain the existing 60-second signal cycle lengths at all locations and would not include a bicyclist/pedestrian signal phase separate from the traffic signal along Second Street. Alternative 2 would not include two-stage left-turn bicycle queue boxes.

The bus bulbs installed under Alternative 2 would extend from the sidewalks. Bus operators would have to cross the bicycle lanes to allow passengers to board and alight at the bus bulb. The bicycle lane would be dashed next to the bus bulbs to indicate to cyclists that vehicles (in this case buses) may enter the bicycle lane to serve stops. This configuration has the potential to cause conflicts between transit vehicles and bicyclists. Therefore, Alternative 2 would not improve safety for bicyclists to as great a degree as the proposed project or its variant.

Similar to the proposed project and its variant, bicycle impacts under Alternative 2 would be less than significant relative to existing conditions. However, Alternative 2 would have somewhat greater bicycle impacts than the proposed project or its variant because it would not achieve the same degree of bicycle safety (**Impact TR-19: greater**) as would the project's or variant's cycle tracks, two-stage left-turn bicycle queue boxes, and separate bicycle/pedestrian signal phases at the Second Street intersections.

Cumulative Impacts on Bicycle Facilities under Alternative 2

Under 2040 cumulative (no project) conditions, there would be a projected increase in vehicles at intersections along Second Street, which may increase driver/bicyclist conflicts at intersections in the study area.

Alternative 2 is an infrastructure project that would add dedicated bicycle facilities on both sides of Second Street and that would not add bicycle trips to the project vicinity and would not result in cumulative bicycle impacts associated with creating potential hazardous conditions for bicyclists, nor would it interfere with bicycle accessibility. Therefore, Alternative 2 would result in ***less-than-significant*** cumulative impacts related to bicycle facilities.

Comparison of Cumulative Bicycles Impacts with the Proposed Project and Project Variant

Similar to the proposed project and its variant, Alternative 2 would install bicycle facilities along Second Street, including bicycle lanes and sidewalk bicycle racks. This alternative would continue to provide adequate bicycle accessibility along Second Street, similar to the proposed project and its variant. Additionally, Alternative 2, in combination with existing and planned bicycle facilities under other projects, would be able to accommodate potential increases in bicycling trips over time. However, as described in Section 4.4, under 2040 cumulative (no project) conditions, there would be a projected increase in vehicles at intersections along Second Street due to regional background growth and anticipated development. In addition, cumulative plus Alternative 2 conditions would not include a separate bicyclist/pedestrian signal phase along Second Street, unlike the proposed project and its variant. This would increase driver-bicyclist conflicts at the intersections along Second Street under cumulative plus Alternative 2 conditions. Further, cycle tracks along the Second Street corridor under cumulative plus proposed project or project variant conditions would be raised by 2 inches from the level of either the parking lane or the vehicle travel lane and would be marked by a painted buffer strip; in addition, the project or project variant would implement two-stage left-turn bicycle queue boxes at many intersections along the Second Street corridor; therefore, the project or project variant would provide safer conditions for bicyclists than the bicycle lanes implemented under cumulative plus Alternative 2 conditions.

Overall, both cumulative plus proposed project or project variant and cumulative plus Alternative 2 conditions would have less-than-significant impacts related to bicycle facilities. However, cumulative plus Alternative 2 conditions would not improve bicyclist conditions as much as cumulative plus proposed project or project variant conditions (**Impact C-TR-21: greater**).

Emergency Vehicle Access under Alternative 2

Second Street is currently designed to accommodate all vehicle types, including fire engines/trucks, ambulances, and police vehicles. In the event of an emergency, drivers are required to comply with standard driving laws and yield the right-of-way to any emergency vehicle that is using a siren or flashing red lights. Drivers are required to maneuver to the right edge of the road and stop until emergency vehicles have passed. The current roadway capacity and lane configuration along Second Street allow for safe maneuvering of vehicles and the passage of emergency vehicles.

Alternative 2 would reduce the number of travel lanes on Second Street in each direction from two lanes to one lane. However, Alternative 2 would not adversely affect the access of emergency vehicles or other users of the roadway and would provide a minimum width of 24 feet and would comply with the fire code street minimum width requirement of 20 feet. Drivers would be able to pull over and into the bicycle lane, if necessary; therefore, Alternative 2 would result in ***less-than-significant*** impacts related to emergency vehicle access.

Comparison of Emergency Vehicle Access Impacts of Alternative 2 and the Proposed Project or its Variant

Similar to the proposed project and its variant, Alternative 2 would result in physical changes to the roadway and lane configurations along Second Street. Also, similar to the proposed project and its variant, this alternative would not introduce design features that would reduce or eliminate vertical clearance and sight distances, and would not adversely affect the access of emergency vehicles or other users of the roadway. Similar to the proposed project and its variant, the combined northbound and southbound travel lanes under Alternative 2 would provide a minimum width of 24 feet and would comply with the fire code street minimum width requirement of 20 feet.

Under the proposed project or its variant, in the event of an emergency, vehicle operators traveling along Second Street would be able to pull over onto the ramped, concrete painted buffer or the cycle track itself to allow emergency vehicles to pass. Although the bicycle lanes under Alternative 2 would not include a concrete buffer area, their 6-foot width would allow the vehicles to pull over in the event of an emergency. Unlike the proposed project or its variant, Alternative 2 would include bus bulbs instead of bus boarding islands. Therefore, in the event of an emergency, the bicycle lanes under Alternative 2 would be more accessible for vehicles to pull over than under the proposed project or its variant. Overall, Alternative 2 would provide adequate widths, clearance, and capacity for emergency vehicle access, and impacts would be less than significant, similar to the proposed project and its variant (**Impact TR-20: reduced**).

Cumulative Emergency Vehicle Access Impacts under Alternative 2

Second Street is currently designed to accommodate all vehicle types, including fire engines/trucks, ambulances, and police vehicles. In the event of an emergency, drivers are required to comply with standard driving laws and yield the right-of-way to any emergency vehicle that is using a siren or flashing red lights. Drivers are required to maneuver to the right edge of the road and stop until emergency vehicles have passed. The current roadway capacity and lane configuration along Second Street allow for safe maneuvering of vehicles and the passage of emergency vehicles. Future streetscape proposals for other streets in the vicinity would need to identify measures that address emergency vehicle response times for those streets, as part of the environmental review and approval for those projects. This will ensure that the existing network of downtown streets that accommodate emergency vehicles would be maintained under cumulative (no project) conditions. Under cumulative plus Alternative 2 conditions, Alternative 2 would not contribute considerably to cumulative impacts on emergency vehicle access and the impact would be ***less than significant***.

Comparison of Cumulative Emergency Vehicle Access Impacts with the Proposed Project and Project Variant

Similar to the proposed project and its variant, and as discussed under project level impacts for Alternative 2, this alternative would not impede emergency vehicle access along Second Street. Future proposals within the Second Street right-of-way or for other streets in the project vicinity would also need to maintain emergency vehicle response times for those streets. This would be confirmed as part of the City review process, including environmental review and review for approval of those projects. This would ensure that emergency vehicle access would be maintained.

As discussed at the alternative-specific impact analysis above, both bicycle lanes under Alternative 2 and cycle tracks under the proposed project or its variant would allow vehicles travelling along Second Street to pull over in the event of an emergency. However, Alternative 2 would include bus bulbs instead of bus boarding islands, which would provide easier access for vehicles to pull over. Therefore, Alternative 2, in combination with future cumulative projects in the area, would continue to support emergency response vehicles and would provide slightly better conditions than the proposed project or its variant in the event of an emergency (**Impact C-TR-22: reduced**).

Loading Impacts under Alternative 2

There are 41 commercial loading stalls and approximately 39 designated passenger loading zones along the Second Street corridor between Market and King streets. Alternative 2 would remove two passenger loading zones between Mission and Howard streets. Each of the zones could be relocated within 150 feet of their existing location. Therefore, Alternative 2 would result in ***less-than-significant*** impacts related to passenger loading zones.

Alternative 2 would remove 13 of the 41 commercial loading stalls on Second Street; five of these stalls would be relocated, resulting in a net loss of eight commercial loading stalls, which are currently not fully utilized. The smaller number of loading stalls that would be removed would result in less-than-significant commercial loading impacts under this alternative, and no mitigation would be required. Therefore, Alternative 2 would not result in substantial loss of commercial loading stalls. As such, impacts related to commercial loading stalls under Alternative 2 would be ***less than significant***.

Comparison of Loading Impacts of Alternative 2 and the Proposed Project or its Variant

Similar to the proposed project and its variant, Alternative 2 would have less-than-significant impacts on passenger loading relative to existing conditions. However, Alternative 2 would require relocating or removing only two passenger loading zones, compared to the net loss of six passenger loading zones under the proposed project or its variant. Therefore, Alternative 2 would have reduced passenger loading impacts compared to the proposed project's less-than-significant passenger loading impacts (**Impact TR-21: reduced**).

Unlike the proposed project or its variant, Alternative 2 would not have a significant unavoidable impact on commercial loading. Alternative 2 would remove 13 of the 41 commercial loading stalls on Second Street; five of these stalls would be relocated, resulting in a net loss of eight commercial loading stalls, which are currently not fully used. The proposed project or its variant would remove approximately 25 commercial loading stalls on Second Street and would relocate approximately four of these commercial loading stalls nearby, and an additional two new commercial loading stalls could be created. Compared to the proposed project and its variant, which would result in a significant and unavoidable commercial loading impact, Alternative 2 would not result in a substantial loss of commercial zones and would have a less-than-significant impact on commercial loading (**Impact TR-22: eliminated**).

Cumulative Loading Impacts under Alternative 2

As previously discussed, Alternative 2 would not result in substantial loss of passengers loading zones (two zones). Therefore, in combination with past, present, and reasonably foreseeable developments in San Francisco, Alternative 2 would result in ***less-than-significant*** cumulative passenger loading impacts.

Comparison of Cumulative loading Impacts with the Proposed Project and Project Variant

Similar to cumulative plus proposed project or project variant conditions, cumulative plus Alternative 2 conditions would not result in substantial loss of passenger loading zones and would not contribute considerably to cumulative passenger loading impacts. However, cumulative plus Alternative 2 conditions would not remove as many passenger loading zones as the proposed project or its variant, which would result in the removal of six passenger loading zones. Therefore, cumulative plus Alternative 2 conditions would have fewer impacts on passenger loading than cumulative plus proposed project or variant conditions. As such, the less-than-significant cumulative passenger loading impacts of the proposed project or its variant would be reduced under Alternative 2 (**Impact C-TR-23: reduced**).

As discussed previously, Alternative 2 would remove 13 of the 41 commercial loading stalls. Therefore, it would not result in substantial loss of commercial loading stalls. Unlike cumulative plus proposed project or project variant conditions, which would result in the net removal of 21 commercial loading stalls and would contribute to significant commercial loading impacts, cumulative plus Alternative 2 conditions would not contribute considerably to cumulative commercial loading impacts. **Mitigation Measure TR-22: Provision of Replacement Commercial Loading Stalls,** was identified for the proposed project and its variant. This mitigation measure would replace commercial loading stalls wherever it would be feasible. At this time SFMTA has identified feasible locations for commercial loading stall relocation, but would consider other locations during the engineering design phase, should other potential locations be identified. Because no other locations may be feasible, the impact would remain significant and unavoidable with mitigation. The smaller number of loading stalls that would be removed under Alternative 2 would result in less-than-significant cumulative commercial loading impacts under this alternative. Therefore, unlike cumulative plus proposed project or project variant conditions, cumulative plus Alternative 2 conditions would not require the implementation of a mitigation measure to reduce the significant commercial loading impacts (**Impact C-TR-24: eliminated**).

Parking Impacts under Alternative 2

There are approximately 168 standard on-street vehicle parking spaces on Second Street between Market and King streets. These parking spaces include general metered parking and blue ADA-accessible parking spaces. In addition, there are 56 motorcycle parking spaces along this segment of Second Street.

Alternative 2 would remove approximately 28 of the 168 on-street parking spaces and 12 of the 56 motorcycle spaces along Second Street. The decrease in on-street parking under the Alternative 2 is not considered substantial within the context of downtown San Francisco, including the South of Market area, where there are many off-street parking opportunities. In addition, the proposed project or its variant would improve facilities for alternative modes of travel, such as bicycling, taking transit, and walking. Therefore, Alternative 2 would result in less-than-significant parking impacts.

Comparison of Parking Impacts of Alternative 2 and the Proposed Project or its Variant

The proposed project or its variant would result in the net removal of approximately 129 standard on-street parking spaces and 19 motorcycle parking spaces. Similar to Alternative 2 and as described above, the decrease in on-street parking is not considered substantial under the proposed project or its variant. However, Alternative 2 would remove fewer parking spaces than the proposed project or its variant. Therefore, Alternative 2 would result in fewer parking impacts compared to the less-than-significant impacts on parking from the proposed project or its variant (**Impact TR-23: reduced**).

Cumulative Parking Impacts under Alternative 2

Considering cumulative parking conditions, over time, due to the land use development and increased density anticipated within the City, parking demand and competition for on- and off-street parking is likely to increase. However, in the context of downtown San Francisco there are many off-street parking opportunities as well as access to multiple transit options and other alternative modes of transportation. Alternative 2 would remove approximately 28 of the 168 on-street parking spaces and 12 of the 56 motorcycle spaces along Second Street. This would not be considered substantial in the context of downtown San Francisco for the reasons described above, and cumulative plus Alternative 2 conditions' contribution to on-street parking impacts would not be cumulatively considerable. Therefore, the cumulative parking impact as a result of Alternative 2 would be ***less than significant***.

Comparison of Cumulative Parking Impacts with the Proposed Project and Project Variant

Similar to cumulative plus proposed project or its variant conditions, under cumulative plus Alternative 2 conditions, parking impacts would be less than significant. Alternative 2 would remove 28 parking spaces and 12 motorcycle spaces along the Second Street corridor, compared to parking removal (129 parking spaces and 19 motorcycle spaces) under cumulative plus proposed project or project variant conditions. However, because cumulative plus Alternative 2 conditions would result in the loss of fewer parking spaces than cumulative plus proposed project or variant conditions, the less-than-significant cumulative parking impacts of the proposed project or project variant would be reduced under cumulative plus Alternative 2 conditions (**Impact C-TR-25: reduced**).

Conclusion

Overall, Alternative 2 would have slightly **reduced** impacts on transportation and circulation, compared to the proposed project or its variant. Traffic impacts would be slightly reduced because Alternative 2 would eliminate a significant and unavoidable traffic impact at one intersection compared to the proposed project and the project variant; would eliminate a significant and unavoidable traffic impact at one intersection compared to cumulative plus proposed project conditions; and would eliminate a significant and unavoidable traffic impact at two intersections compared to cumulative plus project variant conditions.

Alternative 2 would have less-than-significant impacts on transit, similar to the proposed project and its variant. Impacts on one of the two transit routes (Muni Route 12) within the Second Street corridor would be slightly less, and the impact on the other transit route (Muni Route 10) would be slightly greater under Alternative 2 than under the proposed project or its variant. However, cumulative transit impacts of Alternative 2 would be greater than those of the proposed project or its variant for both transit routes.

Pedestrian and bicycle safety impacts under Alternative 2 would be less than significant, similar to the proposed project and its variant. Even so, impacts would be somewhat greater because Alternative 2 would not achieve the same level of pedestrian and bicycle safety as the proposed project or its variant. Cumulative plus Alternative 2 impacts related to pedestrians and bicyclists would be less than significant, similar to cumulative plus proposed project or project variant conditions. However, cumulative plus Alternative 2 conditions would not improve pedestrian and bicyclist conditions to as great a degree as the cumulative plus proposed project or project variant conditions.

Emergency vehicle access (alternative-specific and cumulative) impacts would be less than significant, similar to the proposed project and its variant. However, these impacts would be reduced under Alternative 2, when compared to the proposed project and its variant.

Passenger and commercial loading impacts would be reduced compared to the proposed project and its variant. This is because both passenger and commercial loading impacts would be less than significant under Alternative 2, whereas the proposed project and its variant would result in significant and unavoidable impacts on commercial loading. Similarly, cumulative commercial loading impacts under Alternative 2 would be reduced to less than significant when compared to significant cumulative commercial loading impacts under the proposed project or its variant.

Parking impacts—alternative-specific and cumulative—would be less than significant under Alternative 2 but would be slightly less than the less-than-significant project and cumulative parking impacts under the proposed project and its variant.

Noise and Vibration under Alternative 2

Under Alternative 2, construction noise and vibration impacts would be similar to those described in Section 4.5 for the proposed project and its variant. Implementation of the improvements along Second Street under Alternative 2 would require similar construction activities, such as street and sidewalk demolition and excavation for the sewer improvements and relocation of overhead utilities underground. However, Alternative 2 would include sidewalk widening only on the west side of Second Street between Harrison and Townsend, while the proposed project or its variant would include sidewalk widening on the east side as well. Further, Alternative 2 would include the construction of bus bulbs instead of bus boarding islands at transit stops. While construction duration and level of excavation of bus bulbs would be similar to that of the bus boarding islands, widening of only one side of the sidewalk would save 1 month of construction when compared to the proposed project or its variant, which would take approximately 1 year to complete. However, similar to the proposed project and its variant, construction activities under Alternative 2 would still require the use of a concrete saw, and could result in significant impacts. Therefore, **Mitigation Measure M-NO-1: Control or Abatement of Concrete Saw Operation Noise**, identified for the proposed project and its variant would be feasible and applicable to Alternative 2. With the implementation **of Mitigation Measure M-NO-1**, noise impacts under Alternative 2 would be reduced to ***less-than-significant*** levels. Further, because the duration of construction under Alternative 2 is 1 month shorter than that under the proposed project or its variant, noise impacts under Alternative 2 would be slightly less than those under the proposed project or its variant (**Impact NO-1: reduced**).

Similar to the proposed project or its variant, during construction Alternative 2 could contribute to cumulative noise impacts within the Second Street corridor. Also, similar to the proposed project or its variant, Alternative 2's contribution to cumulative noise impacts would not be considerable with the implementation of **Mitigation Measures NO-1**. Further, the smaller construction duration under Alternative 2 would contribute less to cumulative noise impacts then the proposed project or its variant (**Impact C-NO-1: reduced**).

Overall, Alternative 2 would have slightly reduced noise impacts on sensitive receptors than the proposed project and its variant (**Impacts NO-1 and C-NO-1: reduced**).

Air Quality under Alternative 2

Similar to the proposed project or its variant, construction activities under Alternative 2 would include installing bicycle, pedestrian, and transit facilities, rehabilitating or replacing sewers, relocating overhead utilities underground, and installing streetscape improvements. However, unlike the proposed project or its variant, as discussed under noise impacts above, the construction duration of Alternative 2 would be approximately 1 month less than that of the proposed project or its variant, which would take approximately 1 year to complete. Similar to the proposed project and its variant, construction activities under Alternative 2 would generate additional short-term air pollution. This would affect nearby sensitive receptors in an area that already experiences poor air quality and would result in significant impacts. Implementation of **Mitigation Measure M-AQ-2: Construction Emissions Minimization**, identified for the proposed project or its variant, would reduce Alternative 2 air quality impacts from exposing sensitive receptors to toxic air contaminants to less-than-significant levels. With the implementation of Mitigation Measure M-AQ-2, impacts under Alternative 2 related to construction emissions would result in ***less than significant with mitigation*** (**Impact AQ-2: reduced**).

Similar to the proposed project or its variant, because Alternative 2 construction would occur in an area identified by the City as an air pollution exposure zone, an area already adversely affected by air pollution, it would result in a considerable contribution to cumulative health risk impacts on sensitive receptors. This would be a significant cumulative impact. The City would be required to implement **Mitigation Measure M-AQ-2**, which would reduce construction period emissions, potentially by as much as 94 percent. Therefore, cumulative impacts under Alternative 2 related to construction emissions would be ***less than significant with Mitigation***. Because the duration of construction under Alternative 2 is 1 month less than that under the proposed project or its variant, the contribution of Alternative 2 to cumulative health risk impacts would be slightly less than that of the proposed project or its variant (**Impact C-AQ-2: reduced**).

Overall, Alternative 2 would have slightly reduced air quality impacts, compared to the proposed project and its variant (**Impacts AQ-2 and C-AQ-2: reduced**).

CONCLUSIONS FOR ALTERNATIVE 2

Overall, Alternative 2 would have slightly reduced impacts on transportation and circulation, compared to the proposed project and its variant. Traffic impacts would be slightly reduced. This is because Alternative 2 would result in significant and unavoidable traffic impacts at one fewer intersection than the proposed project or its variant. Under cumulative conditions, Alternative 2 would result in one less significant cumulative traffic impact than under cumulative plus proposed project conditions, and two fewer significant cumulative traffic impacts than under cumulative plus project variant conditions.

Alternative 2 would have less-than-significant impacts on transit, similar to the proposed project and its variant. Impacts of Alternative 2 on Muni Route 12 along the Second Street corridor would be slightly less than the proposed project or project variant, and on Muni Route 10 would be slightly greater under Alternative 2 than under the proposed project or its variant. Cumulative transit impacts of Alternative 2 would be greater than those of the proposed project or its variant for both transit routes.

Pedestrian and bicycle safety impacts of Alternative 2 would be less than significant, similar to the proposed project and its variant. Even so, these impacts under Alternative 2 would be somewhat greater than under the proposed project and its variant because Alternative 2 would not achieve the same level of pedestrian and bicycle safety as the proposed project and its variant. Alternative 2 would not include separate phases for bicyclists/pedestrians at the signals or cycle tracks, which provide greater protection for bicyclists. Cumulative plus Alternative 2 impacts related to pedestrians and bicyclists would be less than significant, similar to cumulative plus proposed project or project variant conditions. However, cumulative plus Alternative 2 conditions would not improve pedestrian and bicyclist conditions as much as cumulative plus proposed project or project variant conditions.

Emergency vehicle access (alternative-specific and cumulative) impacts under Alternative 2 would be less than significant, similar to the proposed project and its variant. However, these impacts would be reduced under Alternative 2. In case of an emergency, the absence of bus boarding islands under Alternative 2 would allow vehicles to pull over into the bicycle lanes more easily than under the proposed project or its variant.

The less than significant passenger loading impact would also be reduced under Alternative 2, compared to the proposed project and its variant because fewer passenger loading zones would be removed. The significant and unavoidable commercial loading impact of the proposed project or its variant would be reduced to less than significant under Alternative 2. Similarly, there would be no significant cumulative loading impact under Alternative 2, whereas a significant and unavoidable cumulative loading impact was identified under the proposed project or its variant.

Parking impacts (alternative-specific and cumulative) would be less than significant under Alternative 2 and slightly less than the less-than-significant parking impacts under the proposed project or its variant.

Alternative 2 would be constructed within the same ROW as the proposed project and would entail similar construction techniques. Therefore, potential significant impacts related to cultural and paleontological resources would be similar to those under the proposed project or its variant. However, construction duration would be 1 month less than that of the proposed project or its variant. Therefore, potential impacts related to noise and air quality would be slightly reduced compared to the proposed project or its variant.

Alternative 2 would meet some of the project objectives and would improve bicycle and pedestrian safety compared to the existing conditions. However, it would not achieve the same degree of bicycle and pedestrian safety as the proposed project or its variant. Alternative 2 would not fully achieve project objectives related to improved safety and accessibility, prioritization of the needs of people walking, bicycling, and taking transit, reduced conflicts between vehicles and pedestrians and bicycles, and reduced number of vehicles accessing the freeway from Second Street, unlike the proposed project and its variant.

6.2.6 Alternative 3: Center-Turn Lane Alternative

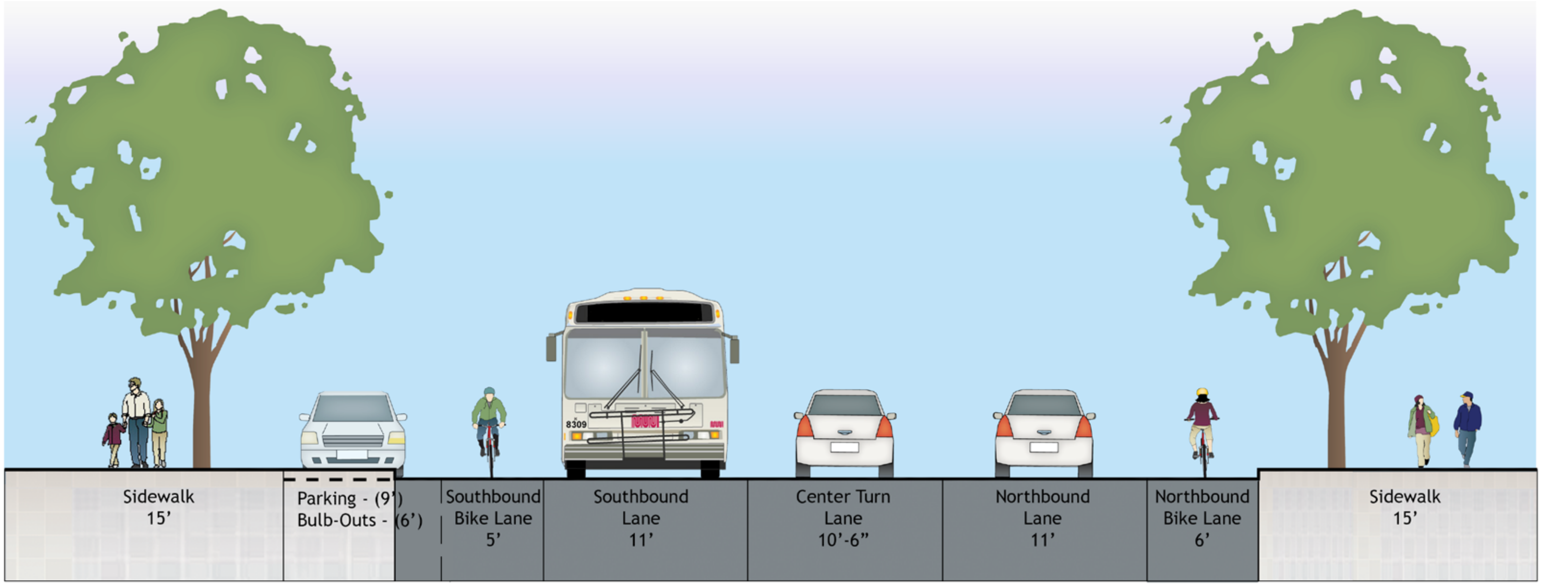
DESCRIPTION

The Second Street corridor streetscape design under Alternative 3 was developed during the public participation community meetings held in 2012 and 2013 by Public Works, SFMTA, and the San Francisco Planning Department. This section describes the improvements that would be implemented along the Second Street corridor under Alternative 3 and provides the key differences between this alternative and the proposed project and its variant. Similar to the proposed project or project variant, Alternative 3 would rehabilitate or replace sewers, would relocate overhead utilities underground between Stillman and Townsend streets, and would provide bicycle, pedestrian, and transit improvements. Alternative 3 would meet basic project objectives to provide a complete street. Table 6-1 on pages 6-7 through 6-9 compares project features among the proposed project, project variant, and alternatives.

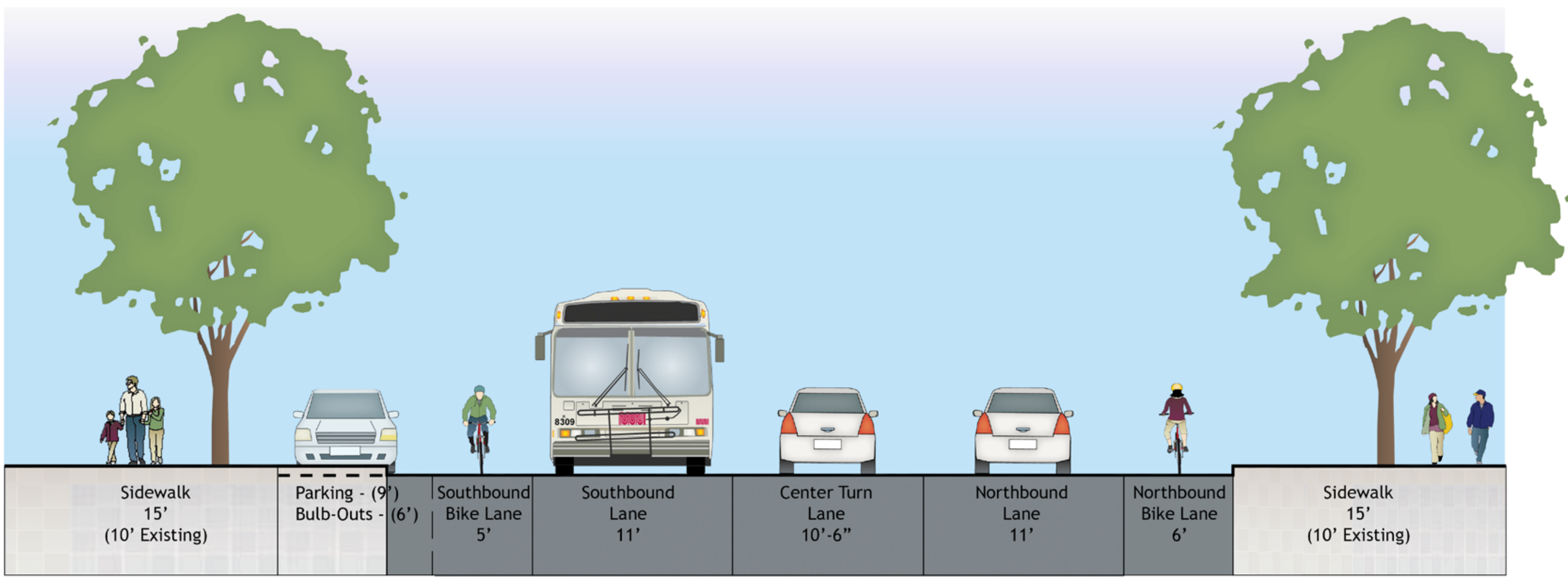
Bicycle Lanes—Alternative 3 (shown in Figure 6-2) would include a northbound and a southbound Class II bicycle facility, from Market to Townsend streets. Between South Park and Townsend streets, the northbound bicycle lane would be next to the curb and would have a 2- to 4-foot-wide striped buffer (painted). Between Townsend and King streets, a northbound bicycle lane would be provided, and bicycle sharrows would be added to the southbound travel lane. The proposed project or its variant would include a grade-separated cycle track (Class IV) on both sides of Second Street. Under both the proposed project and its variant and Alternative 3, these bicycle facilities would be accommodated by removing one travel lane in each direction.

Travel Lanes—To allow left turns at intersections and into the existing alleys and few existing driveways along Second Street, a two-way left-turn center lane would be provided along two sections of Second Street: between Market and Harrison streets and between South Park and Townsend streets. The two-way left-turn lane would transition to an exclusive left-turn lane northbound at Mission, Howard, and Brannan streets and southbound at Mission, Folsom, Harrison, Brannan, Townsend, and King streets (see Table 6-1 on pages 6-7 through 6-9). Additionally, in the northbound direction a shared left-turn and through lane would be provided at Minna, Harrison, Townsend, and South Park streets. While Alternative 3 would retain most left-turn opportunities, under the proposed project or its variant most existing left turns would be eliminated.

Under Alternative 3, no exclusive right-turn lanes or pockets would be provided along Second Street, except for a single northbound right-turn lane at Harrison Street. However, right turns would continue to be permitted at all intersections where shared right turns and through lanes are currently provided. Under Alternative 3, motorists merging into and turning



Market Street to Harrison Street
Center Turn Lanes, Bulb-Outs, Bike Lanes, Parking West Side



Bryant Street to Townsend Street
Center Turn Lanes, Sidewalk Widening, Bulb-Outs, Bike Lanes, Parking West Side

ALTERNATIVE 3 - CENTER-TURN LANE ALTERNATIVE
CROSS SECTIONS

Draft Supplemental Environmental Impact Report
Second Street Improvement Project
San Francisco, California

FIGURE 6-2

Source: Public Works, 2014.

from within the bicycle lane would make right turns. The proposed project or its variant would provide right-turn pockets at nearly all locations where right turns are currently allowed.

The northbound Second Street approach at Harrison Street under Alternative 3 would include a shared through-left lane,[4] an exclusive right-turn lane, and a bicycle lane between these two lanes under Alternative 3. This northbound approach under the proposed project or its variant would include a through lane and an exclusive right-turn lane, with a curbside grade-separated cycle track. Similar to the proposed project or its variant, the northbound right-turn capacity at the intersection of Harrison and Second streets, would be reduced from two lanes to one and the movement would be signalized.

Similar to the proposed project or its variant, Alternative 3 would include only one eastbound left-turn lane on Bryant Street at the Second Street intersection.

The southbound Second Street approach at Townsend Street would include a left-turn bay and a shared through-right lane under Alternative 3. Under the proposed project or its variant, the southbound approach would include a right-turn bay and a shared through-left lane.

Similar to the project variant, Alternative 3 would allow southbound left turns at Brannan and Second streets.

Traffic Signals—Alternative 3 would retain the signal cycle lengths of 60 seconds at all intersections along the Second Street corridor, except at the intersections of Howard, Folsom, and Harrison streets. To improve traffic capacity at these three intersections, the cycle length would be increased from 60 to 90 seconds under Alternative 3. Traffic signal timing for the intersections along Second Street would be adjusted under this alternative to minimize traffic delay and facilitate smooth and coordinated flow of traffic along Second Street. However, under the 2040 cumulative conditions, signal cycle length at all the intersections along the Second Street corridor would be increased from 60 to 90 seconds because of another project that would be implemented by that time. Further, the Second Street intersections would not include a separate bicycle phase under Alternative 3. Under the proposed project or its variant, the traffic signal cycle lengths along Second Street would be increased to 90 seconds to accommodate a separate bicycle signal phase; to increase pedestrian and bicycle safety, no turns would be permitted during the pedestrian/bicyclist phase under the proposed project or its variant.

[4] A shared through-left lane means that cars in the travel lane may turn left, provided there is a break in oncoming traffic or proceed straight through the intersection.

Similar to the proposed project or its variant, Alternative 3 would include a new traffic signal at the intersection of Second and South Park streets.

Transit—Similar to the proposed project or its variant, Alternative 3 would consolidate bus stops along Second Street from 13 to 10; this includes the existing outbound flag stop[5] at Townsend Street, which would be relocated around the corner to a new bus zone on the north side of the street. Alternative 3 would optimize or adjust the placement of the remaining bus stops, in accordance with SFMTA's Stop Spacing Guidelines, similar to the proposed project or its variant. Alternative 3 would provide a combination of bus bulbs and bus zones at all Second Street stops except the Townsend outbound stop. Due to the curbside bicycle lane, Alternative 3 would provide bus zones at all Second Street stops on the east side of the street, as well as the Townsend outbound stop, and would provide bus bulbs at all bus stops on the west side of the street. In contrast, the proposed project would implement bus boarding islands at most transit stops, except at the Townsend Street outbound stop, which would be a transit zone.

Pedestrian Facilities—Similar to the proposed project or its variant, sidewalks on Second Street between Harrison and Townsend streets would be widened on both sides from 10 feet to 15 feet under Alternative 3, crosswalks across the alleys would be raised, and all crosswalks would be upgraded with high-visibility markings. As noted above, to improve pedestrian safety at Second and Harrison streets, the southeast corner would be reconfigured to eliminate the two existing uncontrolled (channelized) northbound right-turn lanes; drivers would be required to make turns from the single right-turn lane at the intersection to reduce conflicts between pedestrians and right-turning vehicles.

Parking and Loading—Alternative 3 would result in a net loss of 9 passenger loading zones, 24 commercial loading stalls, 91 parking spaces, and 32 motorcycle spaces. Between Market and Townsend streets, on-street curbside parking and loading would be provided only on the west side of Second Street under Alternative 3. Between Townsend and King streets, parking and loading would remain on both sides of the street. The proposed project or its variant would remove 129 on-street parking spaces and 19 motorcycle parking spaces.

Streetscape—Similar to the proposed project and its variant, streetscape improvements implemented as part of Alternative 3 would include new trash receptacles, benches, pedestrian-scale lighting, and bicycle racks installed on the sidewalk. However, unlike the proposed project or its variant, Alternative 3 would not include planted medians.

---

[5] A flag stop is a transit stop without a bus zone where the bus stops in the travel lane and transit riders step into the street to board the bus. Similarly, riders step off the bus into the street and cross the parking lane to the curb.

Sewer and Utilities—Similar to the proposed project and its variant, streetscape improvements under Alternative 3 would be coordinated with the rehabilitation and replacement of portions of the City's underground sewer infrastructure along the Second Street corridor between Market and King streets. In addition, overhead electrical and telecommunication utilities between Stillman and Townsend streets would be relocated underground.

SIGNIFICANT IMPACTS UNDER ALTERNATIVE 3

The following discussion examines whether this alternative would substantially lessen or avoid significant environmental impacts identified for the proposed project and listed above in Section 6.2.2. See Table 6-3 on pages 6-18 through 6-24, Comparison of the Environmental Impacts of the Alternatives, for a summary of the information below.

Cultural and Paleontological Resources under Alternative 3

Construction and excavation activities under this alternative would be similar to those described under the proposed project or its variant. Implementation of Alternative 3 would be within the same ROW as the proposed project or its variant.

In addition, the depth of excavation for the repair and replacement of the sewer system, as well as undergrounding of overhead utilities, would be similar to that of the proposed project. As such, potential impacts on archaeological and paleontological deposits would be significant and similar to those of the proposed project and its variant, described in Section 4.3. Therefore, **Mitigation Measure M-CP-2: Archeological Monitoring** and **Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery** would also be applicable to this alternative. These mitigation measures would ensure that, similar to the proposed project, potential impacts of Alternative 3 on any archeological and paleontological resources in the Second Street corridor would be less than significant with mitigation incorporated (**Impact CP-2 and Impact CP-3: similar**).

Also, there would be a significant cumulative impact on archaeological and paleontological resources under this alternative. However, with the implementation of **Mitigation Measures M-CP-2 and M-CP-3**, the contribution of Alternative 3 to significant cumulative impacts on archaeological and paleontological resources would no longer be cumulatively considerable, similar to the proposed project or its variant (**Impact C-CP-1: similar**).

Overall, Alternative 3 would have similar impacts on cultural and paleontological resources as those identified for the proposed project or its variant in Section 4.3.

Transportation and Circulation under Alternative 3

The approach used for the traffic analysis for project alternatives is similar to that used for the proposed project and described in Section 4.4 and under Alternative 2 above. Information in this section is based on the transportation consultant's technical memorandum for the proposed project alternatives' transportation impacts.[6]

As noted under Alternative 2, this alternative also would not generate any new vehicles trips. However, changes to the street, such as reducing roadway capacity and reconfiguring lane geometries, may alter travel patterns in and around Second Street. Due to the provision of the center-turn lane as part of this alternative, traffic diversion would not be as great under Alternative 3 as under the proposed project, project variant, or Alternative 2. This section describes operations-related impacts for traffic, transit, pedestrians, bicycles, emergency vehicle access, loading, and parking. Cumulative impacts under Alternative 3 are then described for each of the above-listed topics.

Traffic Impacts under Alternative 3

Before mitigation, Alternative 3 would have significant project-level impacts at five intersections (#6 Harrison and Hawthorne streets, #10 King and Third streets, #16 Harrison Street and Second streets, #17 Bryant and Second streets, and #29 Fifth Street, Bryant Street, and the I-80 eastbound on-ramp). No feasible mitigation measures have been identified at these intersections because of right-of-way constraints. In San Francisco, the range of feasible traffic mitigation measures is limited due to physical constraints and competing priorities for the use of the available rights-of-way, such as to provide pedestrian, transit, and bicycle facilities, as under this alternative. Additional travel lanes cannot be created because that would require narrowing or removing sidewalks or demolishing structures. While curbside parking and loading lanes can sometimes be converted to travel lanes during peak periods (also known as tow-away lanes), in downtown San Francisco providing on-street loading is critical, and the street network in the project vicinity has already been optimized to balance downtown loading needs versus traffic flow. Therefore, Alternative 3 traffic impacts at these five intersections would be ***significant and unavoidable***. Traffic impacts would be ***less than significant*** at the remaining 24 intersections within the study area under Alternative 3 (see Table 6-6).

[6] CHS Consulting Group. 2014. Final Supplemental Transportation Technical Memorandum for Transportation Impact Assessment of Project Alternatives. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

Table 6-6: Comparison of Traffic Impacts – Proposed Project and Alternative 3

Intersection (#/Name)	Project/Alternative-Specific Impacts				Cumulative Impacts			
	Impact Number	Existing Baseline Conditions	Existing Plus Proposed Project/ Variant	Existing Plus Alternative 3	Impact Number	Cumulative Baseline Conditions	Cumulative Plus Proposed Project/ Variant	Cumulative Plus Alternative 3
1. Market and Montgomery streets	TR-2	–	SU/SU	LS	C-TR-2	O	SU/SU	LS
2. Mission and New Montgomery streets	TR-3	O	SU/SU	LS	C-TR-3	O	SU/SU	LS
3. Howard and New Montgomery streets	TR-10	–	LSM/LSM	LS	C-TR-4	–	SU/SU	LS
4. Howard and Hawthorne streets	TR-11	–	LSM/LSM	LS	C-TR-5	–	SU/SU	LS
5. Folsom and Hawthorne streets	TR-12	O	LSM/LSM	LS	C-TR-16	O	LS/LS	LS
6. Harrison and Hawthorne streets	TR-4	–	SU/SU	SU	C-TR-6	–	SU/SU	SU
7. Bryant and Third streets	TR-14	–	LS/LS	LS	C-TR-7	O	SU/SU	SU
8. Brannan and Third streets	TR-14	–	LS/LS	LS	C-TR-8	O	SU/SU	SU
9. Townsend and Third streets	TR-14	–	LS/LS	LS	C-TR-9	O	SU/SU	SU
10. King and Third streets	TR-5	O	SU/SU	SU	C-TR-10	O	SU/SU	SU
14. Howard and Second streets	TR-14	–	LS/LS	LS	C-TR-16	O	LS/LS	SU
15. Folsom and Second streets	TR-14	O	LS/LS	LS (>)	C-TR-16	O	LS/LS	SU
16. Harrison and Second streets	TR-6	–	SU/SU	SU (<)	C-TR-11	O	SU/SU	SU (>)
17. Bryant and Second streets	TR-7	O	SU/SU	SU (>)	C-TR-12	O	SU/SU	SU (>)
20. Townsend and Second streets	TR-14	–	LS/LS	LS	C-TR-13/C-TR-17	O	SU/LS	LSM
28. Harrison and First streets	TR-8	O	SU/SU	LS	C-TR-14	O	SU/SU	LS
29. Fifth and Bryant streets and the I-80 on-ramp	TR-9	O	SU/SU	SU	C-TR-15	O	SU/SU	SU

Notes:
– = Intersection performs acceptably (LOS D or better) under the respective scenario.
O = Intersection performs at LOS E or LOS F under existing or cumulative (baseline) conditions.
LS = Less-than-significant project/alternative-specific impact or cumulative impact. Project traffic would not contribute significantly to intersections operating at the same LOS E or LOS F under (i) existing conditions or (ii) cumulative (baseline) conditions.
LSM = Significant Project/Alternative-Specific or Cumulative Impact. Project traffic would contribute significantly to the decline of intersection operations. Feasible mitigation measures would reduce the impact to less than significant.
SU = Significant and unavoidable project/alternative-specific or cumulative impact. Project traffic would contribute significantly to the decline of intersection operations. No mitigation measures are feasible.
< = Reduced level of impact
> = Greater level of impact
Source: CHS Consulting Group 2014.

Comparison of Traffic Impacts of Alternative 3 and the Proposed Project or its Variant

Before mitigation, under Alternative 3 there would be significant traffic impacts at five of the 29 intersections. The proposed project or its variant would cause significant traffic impacts at the same five intersections as Alternative 3 and at six additional intersections: #1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, #5 Folsom and Hawthorne streets, and #28 Harrison and First streets.

No mitigation measures are feasible under Alternative 3; therefore, the traffic impacts at all five intersections would be significant and unavoidable under existing plus Alternative 3 conditions. Traffic impacts resulting from the proposed project or its variant would be mitigated to less-than-significant levels at three intersections: #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, and #5 Folsom and Hawthorne streets. Therefore, the traffic impacts at eight intersections under the proposed project or project variant conditions would be significant and unavoidable. For these reasons, Alternative 3 would cause significant and unavoidable traffic impacts at three fewer intersections than the proposed project or its variant (**Impact TR-2, TR-3, and TR-8: eliminated**). Although traffic impacts at five intersections would be significant and unavoidable under the proposed project or its variant and under Alternative 3, the degree of impacts would be the same at three of these intersections (**Impact TR-4, TR-5, and TR-9: similar**).

The severity of the significant unavoidable traffic impacts for the remaining two intersections would be reduced for one intersection under Alternative 3, compared with the proposed project or its variant (**Impact TR-6: reduced**); the severity of the significant unavoidable traffic impacts would be increased for the other intersection under Alternative 3, compared with the proposed project or its variant (**Impact TR-7: greater**), as described below.

Alternative 3 would result in fewer significantly impacted intersections, compared to the proposed project or its variant, because Alternative 3 would retain all the existing left-turn opportunities along Second Street. Limited traffic diversion from Second Street to adjacent streets in the study area under Alternative 3 would improve intersection levels of service, delays, and v/c ratios at the intersections along the Second Street corridor, when compared to the proposed project and its variant; in fact, they would closely match the existing conditions. However, allowing left turns along Second Street under Alternative 3 would cause conflicts between turning motorists and bicyclists and between turning motorists and pedestrians, thereby reducing bicyclist and pedestrian safety, compared to the proposed project and its variant.

As shown in Table 6-6, the intersection operations at several acceptably operating Second Street intersections under Alternative 3 would also improve when compared to the proposed project or its variant. This is mainly due to the difference in traffic signal timing along the Second Street corridor. Under the proposed project or its variant, the traffic signals along Second Street would have a 90-second cycle length to accommodate a separate pedestrian/bicyclist signal phase implemented to address turning movement conflicts between right-turning motorists and bicyclists and pedestrians. The longer signal cycle lengths would increase delays at Second Street intersections that are uncongested under existing conditions. However, this would improve bicyclist and pedestrian safety.

Under Alternative 3, signal cycle length along Second Street would remain at the existing 60 seconds at intersections that are currently uncongested; Alternative 3 would not include a separate bicyclist/pedestrian phase. The shorter cycle length under Alternative 3 would mean greater signal capacity to clear traffic through acceptably operating intersections within the peak hour, thus improving intersections operation. However, the lack of a bicyclist/pedestrian signal phase under Alternative 3 would likely cause conflicts between turning motorists and bicyclists and between turning motorists and pedestrians, thereby reducing bicyclist and pedestrian safety.

For two of the intersections along Second Street, where Alternative 3 and the proposed project or project variant would result in significant traffic impacts, the traffic operations would differ as follows:

- **#16 Harrison and Second streets—**This intersection performs at LOS D under existing conditions. Although this intersection would perform at LOS F under the proposed project or its variant and under Alternative 3 conditions, resulting in significant traffic impacts, the v/c ratio under Alternative 3 would be 1.53, compared to 2.0 under the proposed project or its variant. Under the proposed project or its variant, this intersection would include a grade-separated cycle track along northbound and southbound Second Street and a 90-second signal cycle with a separate bicyclist/pedestrian signal phase to eliminate turning movement conflicts. Under Alternative 3, this intersection would also operate at a 90-second cycle but would not include a separate bicyclist/pedestrian phase. The lack of a bicyclist/pedestrian phase would increase the availability of green time for congested traffic at this intersection. Therefore, traffic signal operations would improve under Alternative 3 conditions, compared to the proposed project or its variant (**Impact TR-6: reduced**).

- **#17 Bryant and Second streets—**This intersection performs at LOS F under existing conditions. Although this intersection would continue to perform at LOS F under the proposed project or its variant and under Alternative 3 conditions, the v/c ratio under Alternative 3 would be more severe, compared to the proposed project or its variant.

At this intersection, both the proposed project or its variant and Alternative 3 would have reduced eastbound left-turn capacity (from two lanes to one), compared to existing conditions. This reduction in capacity would cause the v/c ratio at this intersection to increase, compared to the existing condition for both scenarios. However, availability of left-turn opportunities along Second Street under Alternative 3 would cause less traffic to divert from Second Street, compared to the proposed project or its variant. Therefore, the #17 Bryant and Second streets intersection would serve more traffic under Alternative 3; the v/c ratio would be less, 1.53, under the proposed project or its variant, compared to 1.74 under Alternative 3. Therefore, the significant unavoidable traffic impact would be more severe under Alternative 3 than under the proposed project or project variant (**Impact TR-7: greater**).

The #15 Folsom and Second streets intersection would have less-than-significant impacts under the proposed project or its variant and under Alternative 3 conditions. However, the intersection would perform significantly worse at LOS E under Alternative 3, compared to LOS C under the proposed project or its variant. Under the proposed project, the high-volume (240 vehicles), southbound left-turn opportunity would be eliminated, and the northbound and southbound through traffic would be reduced due to estimated traffic diversion. This, along with signal timing improvements, would cause the intersection performance to improve from LOS E under existing condition to LOS C under the proposed project or its variant. Under Alternative 3, this intersection would include the southbound left-turn opportunity, and it would experience very limited traffic diversion. Therefore, the intersection performance under Alternative 3 would remain unchanged from the existing LOS E (**Impact TR-14: greater for #15 Folsom and Second streets**) and would be more severe than under the proposed project or project variant.

Overall, Alternative 3 would result in three fewer significant and unavoidable traffic impacts than the proposed project or its variant (**Impact TR-2, Market and Montgomery streets**; **TR-3, Mission and New Montgomery streets**; and **TR-8, Harrison and First streets**). In addition, at two intersections, where the traffic impact would be significant and unavoidable under the proposed project or its variant, the impact would be less severe under Alternative 3 for one of the intersections (**Impact TR-6, Second and Harrison streets)** and would be greater under Alternative 3 at the other (**Impact TR-7, Second and Bryant streets**), compared to the impact under the proposed project or its variant.

Cumulative Traffic Impacts under Alternative 3

Under 2040 cumulative (no project) conditions, as shown in Table 6-6, 20 of the 29 study intersections would operate at unacceptable LOS conditions (LOS E or F). Before mitigation, Alternative 3 would result in significant cumulative traffic impacts at 11 of the 29 intersections within the study area (#6 Harrison and Hawthorne streets, #7 Bryant and Third streets, #8

Brannan and Third streets, #9 Townsend and Third streets, #10 King and Third streets, #14 Second and Howard streets, #15 Folsom and Second streets, #16 Harrison and Second streets, #17 Bryant and Second streets, #20 Townsend and Second streets, and #29 Fifth Street, Bryant Street, and the I-80 eastbound on-ramp). The alternative analysis identified the mitigation measure below for intersection #20 Townsend and Second streets.

Mitigation Measure, M-TR-ALT-3: Reconfiguring the Southbound Movements—At the #20 Townsend and Second streets intersection, the southbound Second Street approach under Alternative 3 would include a southbound exclusive left-turn pocket and a southbound shared lane, serving both the southbound-through and southbound-right movements. As a mitigation measure, the restriping of the southbound left-turn pocket to a shared through-left movement and the adjacent shared southbound through-right lane to an exclusive right-turn lane would improve the intersection's LOS F to the LOS E.

With implementation of the above mitigation measure, the intersection would perform at LOS E under cumulative plus Alternative 3 with mitigation conditions. The v/c ratio would improve from 1.2 under cumulative conditions to 1.17 under cumulative plus Alternative 3 with mitigation conditions. Since the v/c ratio would be lower than under cumulative (no project) conditions, the Alternative 3 contribution would not be considerable, and the cumulative traffic impact at this intersection would be ***less than significant with mitigation*** under Alternative 3.

No feasible mitigation measures have been identified under cumulative plus Alternative 3 conditions for the remaining 10 intersections that would have significant cumulative traffic impacts under Alternative 3. This is due to right-of-way constraints. In general, the existing right-of-way within San Francisco cannot be expanded. Trade-offs need to be made when the goal of a project is to improve facilities to accommodate alternative modes of travel, such as pedestrians, bicycles, and transit, within the existing right-of-way, as proposed under Alternative 3 or the proposed project. In a constrained environment, such as the right-of-way in San Francisco, mitigation measures that would preclude implementation of facilities for other modes may not be possible. Therefore, cumulative traffic impacts for the 10 intersections ((#6 Harrison and Hawthorne streets, #7 Bryant and Third streets, #8 Brannan and Third streets, #9 Townsend and Third streets, #10 King and Third streets, #14 Second and Howard streets, #15 Folsom and Second streets, #16 Harrison and Second streets, #17 Bryant and Second streets, and #29 Fifth Street, Bryant Street, and the I-80 eastbound on-ramp) would remain ***significant and unavoidable***.

As shown in Table 6-6, Alternative 3's cumulative traffic impacts at the remaining 18 intersections in the study area (#1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, #5 Folsom and Hawthorne streets, #11 Second and Market streets, #12 Second and

Mission streets, #13 Second and Minna streets, #18 Second and South Park streets, #19 Second and Brannan streets, #21 King and Second streets, #22 Folsom and Essex streets, #23 Harrison and Essex streets, #24 First and Market streets, #25 First and Mission streets, #26 Howard and First streets, #27 Folsom and First streets, and #28 Harrison and First streets) would be ***less than significant***.

Comparison of Cumulative Traffic Impacts of Alternative 3 and the Proposed Project or its Variant

The proposed project would result in significant cumulative traffic impacts at 14 intersections before mitigation, nine of which would be the same significant traffic impacts as those identified under the cumulative plus Alternative 3 conditions. These nine intersections are: #6 Harrison and Hawthorne streets, #7 Bryant and Third streets, #8 Brannan and Third streets, #9 Townsend and Third streets, #10 King and Third streets, #16 Harrison and Second streets, #17 Bryant and Second streets, # 20 Townsend and Second streets, and #29 Fifth Street, Bryant Street, and the I-80 eastbound on-ramp. Alternative 3 would eliminate the proposed project's significant and unavoidable cumulative traffic impacts at the following five intersections: #1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, and #28 Harrison and First streets, and would result in less-than-significant cumulative traffic impacts at these intersections.

The project variant would result in significant cumulative traffic impacts at 13 intersections before mitigation, eight of which would be the same as those identified under cumulative plus Alternative 3 conditions. Unlike the proposed project and Alternative 3 cumulative conditions, the project variant would have less-than-significant traffic impacts at intersection #20 Townsend and Second streets. Alternative 3 would eliminate the project variant's significant and unavoidable cumulative traffic impacts at the following four intersections: #1 Market and Montgomery streets, #2 Mission and New Montgomery streets, #3 Howard and New Montgomery streets, #4 Howard and Hawthorne streets, and #28 Harrison and First streets. At these intersections, Alternative 3 would result in ***less-than-significant*** cumulative traffic impacts.

Alternative 3 impacts at the #20 Townsend and Second streets intersection would be mitigated to less-than-significant levels; thus, the traffic impacts at 10 intersections would be significant and unavoidable under cumulative plus Alternative 3 conditions. For the proposed project and the project variant under cumulative conditions, no feasible mitigation measures were identified; thus, the cumulative traffic impacts at all 14 intersections under cumulative plus proposed project condition and at 13 intersections under cumulative plus project variant conditions would be significant and unavoidable. Therefore, Alternative 3 would result in significant and unavoidable cumulative traffic impacts at four fewer intersections compared to the proposed project and at three fewer intersections compared to the project variant

As shown in Table 6-6, for some significantly impacted intersections, Alternative 3 would improve traffic operations compared to the proposed project or project variant, even if the significant cumulative traffic impact is not eliminated by Alternative 3. At other significantly impacted intersections, Alternative 3 may cause the intersection to deteriorate compared with the proposed project or project variant, as discussed below.

- **#14 Second and Howard streets—**This intersection would perform unacceptably at LOS F under cumulative (no project) conditions and the v/c ratio would be 1.20. It would continue to perform at LOS F under cumulative plus proposed project or project variant conditions and under cumulative plus Alternative 3 conditions. However, the v/c ratio under cumulative plus Alternative 3 conditions would deteriorate to 1.76 from 1.20 under cumulative no project conditions, and would result in a significant cumulative traffic impact under cumulative plus Alternative 3 conditions. However, under the cumulative plus project conditions, the v/c would improve to 1.03, which would be considered less-than-significant cumulative traffic impact. While through capacity on Second Street under the proposed project or its variant would be reduced in a way similar to cumulative plus Alternative 3 conditions, under proposed project or project variant conditions traffic also would be reduced at this intersection due to traffic diversions off Second Street. Therefore, the cumulative traffic impact of Alternative 3 at this intersection would be significant. However, the proposed project or its variant would cause less-than-significant cumulative traffic impacts at this intersection (**Impact C-TR-16: greater**).

- **#15 Second and Folsom streets—**This intersection would perform unacceptably at LOS F under cumulative (no project) conditions and the v/c ratio would be 1.62. Under cumulative plus proposed project or project variant conditions and cumulative plus Alternative 3 conditions, it would continue to perform at LOS F. Further, the v/c ratio under cumulative plus Alternative 3 (1.94) would be worse, compared to v/c ratio of cumulative plus proposed project or its variant (1.72). Alternative 3 would not add any traffic to this intersection. However, the northbound and southbound through capacity along Second Street would be reduced from two lanes to one lane in each direction. This reduction in capacity would cause the intersection v/c ratio to increase from 1.62 under cumulative (no project) conditions to 1.94 under cumulative plus Alternative 3 conditions. This increase in v/c of 20 percent would be more than the significance threshold of a 10 percent increase. Therefore, the cumulative traffic impact of Alternative 3 at this intersection would be significant and no feasible mitigation measures have been identified. Under cumulative plus proposed project or its variant conditions, this intersection would continue to perform at LOS F, and the through capacity on Second Street would be reduced in a way similar to Alternative 3. Even though traffic would be reduced at this intersection under the cumulative plus proposed project or variant conditions due to traffic diversions, the reduction in through capacity would cause the v/c ratio to increase from 1.62 under cumulative no project conditions to 1.72 under the cumulative plus proposed project or variant conditions. This increase in v/c ratio of 6 percent would be lower than the significance threshold of a 10 percent increase in the v/c ratio. Therefore, cumulative traffic impacts of the proposed project or its variant would be less than significant. However, cumulative plus Alternative 3 conditions would be significant and unavoidable (**Impact C-TR-16: greater**).

- **#16 Harrison and Second streets—**This intersection would perform at LOS F under cumulative (no project) conditions and would have a v/c ratio of 2.58. It would continue to perform unacceptably at LOS F under the cumulative plus proposed project or its variant and under cumulative plus Alternative 3 conditions. Based on the change in v/c ratios, significant cumulative traffic impacts were identified for cumulative plus Alternative 3 as well as for cumulative plus proposed project or project variant conditions. However, the v/c ratio (3.63) under cumulative plus Alternative 3 conditions would be greater, compared to the v/c ratio under cumulative plus proposed project or its variant's (3.39) conditions. The significant traffic impacts would be due to the reduction in Second Street northbound right-turn capacity at Harrison Street under both scenarios. However, unlike the cumulative plus proposed project or project variant conditions, left turns would be allowed from Second Street in both directions under cumulative plus Alternative 3 conditions resulting in lower traffic diversion and greater traffic volumes compared to cumulative plus project or project variant conditions. Therefore, although both scenarios would result in significant unavoidable cumulative traffic impacts at this intersection, traffic conditions would be worse under cumulative plus Alternative 3 conditions than under cumulative plus proposed project or project variant conditions (**C-TR-11: greater**).

- **#17 Bryant and Second streets—**This intersection would perform at LOS F under cumulative (no project) conditions and would have a v/c ratio of 2.26. Although this intersection would continue to perform at LOS F under the cumulative plus proposed project and its variant and cumulative plus Alternative 3 conditions, the v/c ratio of 2.92 under cumulative plus Alternative 3 conditions would be worse, compared to the cumulative plus proposed project's or variant's v/c ratio of 2.56. At this intersection, both the proposed project or its variant and Alternative 3 would have reduced eastbound left-turn capacity (from two lanes to one lane) compared to the cumulative (no project) condition, which would cause the intersection v/c ratio to increase compared to cumulative (no project) condition under both scenarios. However, availability of left-turn opportunities along Second Street under Alternative 3 would cause less traffic to divert from Second Street compared to the proposed project or its variant under cumulative conditions. Therefore, the #17 Bryant and Second streets intersection would experience greater traffic volumes under cumulative plus Alternative 3 conditions than under the cumulative plus proposed project or its variant conditions. Although cumulative traffic impacts would be significant and unavoidable under both cumulative plus proposed project or its variant and cumulative plus Alternative 3 conditions, traffic conditions at this intersection would deteriorate more under cumulative plus Alternative 3 conditions than under cumulative plus project or project variant conditions (**Impact C-TR-12: greater**).

- **#20 Townsend and Second streets—**This intersection would perform at LOS E under cumulative (no project) conditions and the v/c ratio would be 1.20. The intersection performance would further deteriorate to LOS F under the cumulative plus proposed project conditions and cumulative plus Alternative 3 conditions. The v/c ratio would deteriorate from 1.20 under cumulative no project conditions to 1.34 under cumulative plus proposed project conditions and to 1.49 under cumulative plus Alternative 3 conditions. The proposed project would include an exclusive southbound right-turn lane serving 438 vehicles. Alternative 3 would serve the same traffic volume from a shared southbound through-right lane resulting in a greater v/c ratio. However, as discussed above, the implementation of **Mitigation Measure, M-TR-ALT-3: Reconfiguring the Southbound Movements** under Alternative 3 would reduce this impact to a less-than-significant level. This mitigation measure would not be possible under cumulative plus proposed project conditions because the proposed improvements under the proposed project would already include the southbound movement reconfiguration as identified in this mitigation measure. Therefore, cumulative traffic impacts at this intersection under the proposed project would be ***significant and unavoidable***, and under cumulative plus Alternative 3 these impacts would be ***less than significant with mitigation*** (**Impact C-TR-13: eliminated**).

Intersection #20 Townsend and Second street is the only intersection with a different cumulative traffic impact significance conclusion under the cumulative plus project variant conditions, when compared to the cumulative proposed project conditions. Permitting southbound left turns at Brannan Street under the project variant and not under the proposed project would reduce the traffic by 20 vehicles diverting to the congested southbound right-turn movement at the Townsend intersection. This would reduce the average vehicular delay and would improve intersection performance under the cumulative plus project variant, compared to the cumulative plus proposed project conditions.

This Second and Townsend Street intersection would continue to perform at LOS E under the cumulative (no project) and cumulative plus project variant conditions. Although changes in traffic patterns and intersection capacity would cause the v/c ratio to increase from 1.20 under cumulative no project conditions to 1.29 under cumulative plus project variant conditions, or by 8 percent, it would not exceed the City threshold. Therefore, the cumulative traffic impact at this intersection would be considered less than significant under the cumulative plus project variant condition. As discussed above, with mitigation the cumulative traffic impact at this intersection would be less-than-significant under cumulative plus Alternative 3 conditions and the v/c ratio would be 1.17 (**Impact C-TR-17: reduced**).

Overall, Alternative 3 would eliminate the significant and unavoidable cumulative traffic impacts that the proposed project or its variant would have at five intersections (**Impact C-TR-2, C-TR-3, C-TR-4, C-TR-5 and C-TR-14: eliminated**). Alternative 3 would result in significant and unavoidable cumulative traffic impacts at two intersections for which the proposed project and the project variant would result in less-than-significant cumulative traffic impacts (**Impacts C-TR-16: greater for intersections #14 Howard and Second streets and #15 Folsom and Second streets).** In addition, Alternative 3 would result in more severe conditions at two intersections for which there would be significant and unavoidable cumulative traffic impacts under cumulative plus Alternative 3 and cumulative plus proposed project or project variant conditions (**Impact C-TR-11 and C-TR-12: greater than the proposed project and the project variant**). Alternative 3 also would have similar significant and unavoidable cumulative traffic impacts as the proposed project and the project variant at six intersections (**Impacts C-TR-6, C-TR-7, C-TR-8, C-TR-9, C-TR-10, C-TR-15: similar to the proposed project and project variant**). At one intersection, Alternative 3 would have less-than-significant cumulative impacts with mitigation while the proposed project would have significant and unavoidable impacts and the project variant would have less-than-significant impacts (**Impact C-TR-13: eliminated compared with the proposed project and Impact C-TR-17: reduced from the project variant**).

Transit Impacts under Alternative 3

As presented in Table 6-7, Alternative 3 would not generate transit trips and would maintain Muni routes 10 and 12 along Second Street. Alternative 3 would include the same stop consolidation as the proposed project or its variant. However, Alternative 3 would provide bus zones for the stops on the east side of Second Street and bus bulbs on the west side of Second Street.

Table 6-7: Transit Delay: Existing, Existing Plus Alternative 3, and Existing Plus Project Conditions—Weekday P.M. Peak-Hour

Headway (Minutes)	Total Transit Delay (Minutes: Seconds)				
	Existing	Existing Plus Alternative 3	Existing Plus Proposed Project or Variant	Alternative 3 Contribution	Proposed Project or Variant Contributions
10 Townsend (Sansome)					
Inbound 20	7:20	12:27	6:18	5:07	-1:02
Outbound 20	3:25	5:07	5:54	1:41	2:29
12 Folsom-Pacific/11 Downtown Connector					
Inbound 20	6:38	3:35	2:31	-3:03	-4:07
Outbound 20	1:22	2:31	5:19	1:09	3:57
Note: The total transit delays presented in the table do not include boarding delays. Source: CHS Consulting Group 2014 (this document is available for public review at the Planning Department, 1650 Mission Street, Suite 400, Case No. 2007.0347E)					

By implementing Alternative 3, the sum of the Alternative 3 contribution to delay increases for Muni Route 10, in both directions along Second Street, would be 6 minutes and 48 seconds. Most of the increase in inbound Muni Route 10 delays can be attributed to the increase in northbound movement delays at Second and Harrison streets. Since the increase in Muni Route 10 transit travel time under Alternative 3 would be higher than the 6-minute threshold, the impact of Alternative 3 on Muni Route 10 would be significant.

Based on the transit delay methodology calculations presented in technical memorandum[7] for the proposed project alternatives' transportation impacts, Alternative 3 is likely to result in significant impacts on transit operations. Based on the transit delay methodology, the Muni Route 10 transit delay impact could be reduced to less-than-significant levels by eliminating the southbound left turns at Second at Folsom streets and Second and Harrison streets, and retiming signals to provide more green time per hour to the heavy demand on the north-south movements. However, eliminating the left turns would conflict with the intent of Alternative 3 to retain all the left-turn opportunities along Second Street. Additionally, the proposed signal retiming would require a substantial reallocation of green time away from traffic on eastbound Folsom and Harrison streets in order to provide more green time to Second Street. The effect of this retiming on Folsom and Harrison streets could result in Second Street becoming a new bottleneck for east-west traffic, especially for eastbound Bay Bridge traffic. The result

[7] CHS Consulting Group. 2014. Final Supplemental Transportation Technical Memorandum for Transportation Impact Assessment of Project Alternatives. This document is available for review at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, as part of Case No. 2007.0347E.

of this new bottleneck would have implications for the downtown roadway network and may render this mitigation measure infeasible.

Providing transit-only lanes or similar treatments along Second Street was also examined as a possible mitigation measure for this transit impact. The transit delay impact could be mitigated with such lanes on Second Street. However, these transit-only lanes could be added only by removing the proposed bicycle facility, which conflicts with the project objective, or by reducing sidewalk widths, which is not feasible. Therefore, no feasible mitigation measure has been identified to reduce the transit delay impact on Muni Route 10 under Alternative 3, and the transit impact would be ***significant and unavoidable***.

Compared to existing conditions, under Alternative 3 the sum of delays for Muni Route 12 in both directions would decrease by 1 minute and 54 seconds. Therefore, Alternative 3 would improve Muni Route 12 transit travel time, and the impact of Alternative 3 on Muni Route 12 would be ***less than significant***.

Alternative 3 would result in limited traffic diversion along Second Street intersections because left-turn access would be maintained, similar to existing conditions. Therefore, Alternative 3 would not significantly increase transit travel time along transit routes in the vicinity of Second Street, and transit impacts in the vicinity of Second Street would be ***less than significant***.

Comparison of Transit Impacts of Alternative 3 and the Proposed Project or its Variant

Unlike the proposed project or its variant, Alternative 3 would result in significant and unavoidable impacts on Muni Route 10. Under Alternative 3, Muni Route 10 travel delay time would increase by approximately 5 minutes and 30 seconds compared to the proposed project or its variant where transit travel delay time would increase by 1 minute and 27 seconds.

Unlike under the proposed project or its variant, Alternative 3 would maintain opportunities at signalized intersections for vehicles traveling northbound and southbound to turn left off Second Street, while the proposed project or its variant would prohibit most of these left-turn movements. Because these left-turn opportunities would remain, Alternative 3 would result in similar traffic volumes along Second Street as under existing conditions. However, these volumes would be higher than under the proposed project or its variant, which would result in traffic diversion off Second Street. The lack of a substantial reduction in northbound and southbound traffic volumes, in combination with the reduction in northbound and southbound traffic capacity (from two lanes to one in each direction), would increase travel times along northbound and southbound Second Street under Alternative 3. These increases in travel times under Alternative 3 conditions would substantially increase Muni Route 10 round trip travel time, resulting in the significant transit impact (**Impact TR-16: greater on Muni Route 10**).

Similar to the proposed project or its variant, Alternative 3 would have less-than-significant impacts on Muni Route 12. However, Alternative 3 would result in less travel delay than the proposed project or its variant. Under Alternative 3, the sum of delays for Muni Route 12 in both directions would decrease by 1 minute and 54 seconds, while these delays would decrease by only 10 seconds under the proposed project or its variant. This relative improvement in travel time under Alternative 3 can be attributed to improved performance of turn movements from Second Street, due to the lack of a separate bicyclist/pedestrian phase, especially at the southbound right-turn at Second and Harrison streets (**Impact TR-16: reduced on Muni Route 12**).

Also, similar to the proposed project, impacts on transit routes along parallel and cross streets would be negligible under Alternative 3. However, because Alternative 3 would result in limited traffic diversions when compared to the proposed project or its variant, transit impacts on the streets near the Second Street corridor would be less than those of the proposed project or its variant (**Impact TR-16: reduced on other transit routes**).

Cumulative Transit Impacts under Alternative 3

Under 2040 cumulative (no project) conditions, the sum of the delay (both directions) of Muni Route 10 would be 33 minutes and 11 seconds. The sum of the delay of Muni Route 12 under 2040 cumulative (no project) conditions would be 11 minutes and 53 seconds.

Under cumulative plus Alternative 3 conditions, compared to 2040 cumulative baseline conditions, delays would increase by 4 minutes and 46 seconds in the inbound direction and would increase by 2 minutes and 9 seconds in the outbound direction. Therefore, the sum of the delays for Muni Route 10 in both directions would increase by 6 minutes and 56 seconds, compared to 2040 cumulative baseline conditions. Most of the increase in inbound Muni 10 delays can be attributed to the increase in northbound movement delays along Second Street at Folsom and Harrison streets, resulting from the reduction in through-lane capacity along Second Street from two lanes to one lane. The availability of left turns from southbound Folsom Street and northbound Harrison Street would cause long delays to the through movements, especially when left-turn volumes would spill out of the left-turn pockets and block through traffic. Therefore, cumulative transit impacts on Muni Route 10 under Alternative 3 would be significant. A number of mitigation measures such as the provision of transit-only lanes or similar treatments along Second Street were examined as possible mitigation measures. The transit delay impact could be mitigated with such lanes on Second Street. However, due to the limited right-of-way and the interconnectedness of the transportation system, these transit-only lanes could be added only by removing the proposed bicycle facility, which conflicts with a key project objective, or by reducing sidewalk widths, which is not feasible. These mitigation measures would have secondary impacts on bicyclists and pedestrians. Therefore, no feasible mitigation measure has been identified to reduce the transit delay impact under Alternative 3 on Muni Route 10. Therefore, cumulative transit impacts on Muni Route 10 under Alternative 3 would be significant and unavoidable.

Compared to 2040 cumulative baseline conditions, delays for Muni Route 12 under cumulative plus Alternative 3 conditions would decrease by 49 seconds in the inbound direction and by 1 minute and 1 second in the outbound direction. Therefore, the sum of the delays for Muni Route 12 in both directions would decrease by 1 minute and 50 seconds compared to 2040 cumulative baseline conditions, which would a have a sum of delay in both directions for Muni Route 12 of 11 minutes and 52 seconds. As such, under cumulative plus Alternative 3 conditions, Muni Route 12 transit travel time would improve. Therefore, Alternative 3 would not contribute considerably to cumulative impacts from additional future demand on transit serving the area; conflicts with transit operations; delay to transit operations; or access to transit.

Therefore, cumulative plus Alternative 3 conditions would have significant and unavoidable transit impact on Muni Routes 10 and a less-than-significant transit impact on Muni Route 12. Impacts on transit routes along parallel and cross streets would be negligible under Alternative 3. Traffic diversion from Second Street would be more limited under Alternative 3 than under the proposed project or its variant due to the retention of left-turn opportunities under this alternative. Therefore, Alternative 3 would not contribute considerably to transit impacts along parallel and cross streets and these impacts would be less than those of the proposed project or project variant and would be ***less than significant***.

Therefore, the cumulative transit impact of Alternative 3 on Muni Routes 10 and 12 and other transit routes in the project area would be less than significant under Alternative 3 cumulative conditions.

Comparison of Cumulative Transit Impacts of Alternative 3 and the Proposed Project or its Variant

Unlike cumulative plus proposed project or its variant conditions, cumulative plus Alternative 3 conditions would result in significant and unavoidable cumulative transit impacts on Muni Route 10. While the proposed project or its variant would reduce Muni Route 10 travel time under cumulative conditions, Muni 10 travel time would increase under cumulative plus Alternative 3 conditions. Compared to the proposed project or its variant, Muni Route 10 travel time would increase by approximately 13 minutes and 15 seconds under cumulative plus Alternative 3 conditions.

Unlike under the proposed project or its variant, Alternative 3 would maintain opportunities at signalized intersections for vehicles traveling northbound and southbound to turn left off Second Street while the proposed project or its variant would prohibit most of these left-turn movements. Because these left-turn opportunities would remain under Alternative 3 conditions, Alternative 3 would result in similar traffic volumes along Second Street as under cumulative baseline conditions. However, these traffic volumes would be higher under Alternative 3 than under the proposed project or its variant, which would result in traffic diversion off Second Street. The lack of a substantial reduction in northbound and southbound traffic volumes, in combination with the reduction in northbound and southbound traffic capacity (from two lanes to one in each direction), would result in increased travel times along northbound and southbound Second Street under Alternative 3 (**Impact C-TR-19: greater for Muni Route 10**).

Similar to cumulative plus proposed project or project variant conditions, Muni Route 12 transit travel time would decrease under cumulative plus Alternative 3 conditions compared to cumulative (no project) conditions. The proposed project would result in a decrease in Muni Route 12 travel time by approximately 4 minutes under cumulative conditions. The project variant would decrease Muni Route 12 travel time by approximately 3 minutes and 41 seconds.

However, cumulative plus Alternative 3 conditions would result in less travel time reduction than cumulative plus proposed project or project variant conditions (1 minute and 54 seconds). The longer Muni Route 12 travel time under cumulative plus Alternative 3 conditions compared to cumulative plus proposed project conditions can be attributed to fewer vehicles being diverted from Second Street. This would increase vehicular delay and Muni travel time along the north-south movements when compared to the proposed project under cumulative conditions.

Overall, the cumulative plus Alternative 3's contribution to a cumulative transit impact on Muni Route 10 would be cumulatively considerable and result in a significant transit impact. Therefore, the cumulative transit impact under cumulative plus Alternative 3 conditions would be greater than that under cumulative plus proposed project or project variant conditions. Alternative 3's contribution to cumulative impacts on Muni Route 12 would be less than significant. However, Alternative 3 would result in less travel time reduction than cumulative plus proposed project or project variant conditions (**C-TR-19: greater**).

Pedestrians Impacts under Alternative 3

Second Street has become a major pedestrian street along both east and west sidewalks. Consequently, right-turn and left-turn drivers conflict with pedestrian movements and become the source of backups. Those conducting field observations noted several instances of vehicles blocking crosswalks and impeding pedestrian flow along Second Street at Folsom, Harrison, and Bryant Streets and often resulting in pedestrians interweaving between vehicles in order to cross the street, increasing the risk of conflicts between pedestrians and drivers.

Improvements to pedestrian facilities under Alternative 3 include sidewalk widening on both sides of Second Street between Harrison and Townsend streets; a combination of bus bulbs and bus zones for the bus stops; raised crosswalks at the alleys; crosswalks marked with high visibility markings; and new benches and pedestrian-scale lighting. Compared to the existing conditions, these improvements would increase pedestrian safety along Second Street and would result in ***less-than-significant*** impacts related to pedestrians.

Comparison of Pedestrian Impacts of Alternative 3 and the Proposed Project or its Variant

Although Alternative 3 would improve pedestrian safety along Second Street, compared to existing conditions, these improvements would not be to the same degree as those under the proposed project or its variant. Unlike the proposed project or its variant, Alternative 3 would not include a separate bicyclist/pedestrian signal phase, separate from the signal for vehicular traffic. Also, unlike the proposed project or its variant, Alternative 3 would allow left turns at all intersections, and would have permitted right turns. Therefore, compared to the proposed project or its variant, Alternative 3 would result in additional conflicts between turning motorists and pedestrians, thus reducing pedestrian safety.

The transit boarding islands under the proposed project or its variant would provide dedicated space for pedestrians to queue, board, and off-board buses along Second Street, and these islands would be separated from the sidewalks by the cycle tracks. Pedestrians would access bus boarding islands at intersections via a crosswalk. For midblock bus boarding islands, a marked accessible path would be provided. There is potential that some pedestrians may cross the cycle track to access the boarding island under the proposed project or project variant conditions. This may increase bicyclist and pedestrian conflicts, when compared to existing conditions and to Alternative 3. Under Alternative 3, bus bulbs would be installed at the bus stops on the west side of Second Street, and the other stops would be bus zones. These transit facilities under Alternative 3 would likely reduce conflicts between pedestrians and bicyclists because pedestrians would not cross bicycle lanes to board the buses.

Overall, Alternative 3 would improve pedestrian circulation and safety, compared to existing conditions, and impacts on pedestrians would be less than significant. However, Alternative 3 would not improve pedestrian safety as much as the proposed project. This is because a separate signal phase for bicycles and pedestrians that would be provided under the project or variant would not be provided under Alternative 3 (**Impact TR-18: greater**).

Cumulative Pedestrian Impacts under Alternative 3

Under future (2040) conditions, there would be a projected increase in background vehicle traffic. This could result in an increase in the potential for vehicle-pedestrian conflicts at intersections along Second Street. As an infrastructure project, there would be no increase in pedestrian trips under Alternative 3 conditions. Under cumulative plus Alternative 3 conditions, pedestrian circulation in and around the project site would improve compared to existing conditions due to implementation of streetscape design elements such as widening of the sidewalk on both sides of Second Street between Harrison and Townsend streets, raising the crosswalks at alleys, upgrading crosswalks with high visibility markings, and installing new pedestrian-scale lighting to create a more comfortable walking environment. Therefore, Alternative 3 would result in ***less-than-significant*** cumulative pedestrian impacts.

Comparison of Cumulative Pedestrian Impacts of Alternative 3 and the Proposed Project or its Variant

Unlike cumulative plus proposed project or project variant conditions, cumulative plus Alternative 3 conditions would not include a separate bicyclist/pedestrian signal phase and would allow right turns without an exclusive signal phase from all intersections on Second street and left turns at all intersections along Second Street. Therefore, cumulative plus Alternative 3 conditions would result in additional conflicts between turning motorists and pedestrians, thus reducing pedestrian safety, compared to cumulative plus proposed project or its variant conditions.

The transit boarding islands under cumulative plus proposed project or project variant conditions would provide dedicated space for pedestrians to queue, board, and off-board buses along Second Street. However, these bus boarding islands would be separated from the sidewalk by the cycle track and pedestrians would access the boarding island from the crosswalk or from marked accessible paths (for midblock bus boarding islands). However, under the proposed project or project variant conditions, some pedestrians may cross the cycle track to access the bus boarding islands; this would increase the potential for bicyclist and pedestrian conflicts. The bus bulbs at some bus stops on the west side of Second Street under cumulative plus Alternative 3 conditions would reduce conflicts between pedestrians and bicyclists compared to cumulative plus proposed project or its variant conditions, because pedestrians would not cross the bicycle lanes to board the buses. Instead, pedestrians would access transit via bus bulbs that would extend from the sidewalk on the west side of Second Street or at curbside bus zones at the transit stops on the east side of Second Street.

Overall, both cumulative plus proposed project or project variant and cumulative plus Alternative 3 conditions would have less-than-significant pedestrian impacts. However, cumulative plus Alternative 3 conditions would not improve pedestrians conditions as much as cumulative plus proposed project or project variant conditions. In particular, Alternative 3 would not reduce pedestrian and vehicular conflicts that would be reduced by the separate bicycle and pedestrian signal phase that would be included as part of the proposed project or project variant (**Impact C-TR-20: greater**).

Bicycles Impacts under Alternative 3

Existing bicycle route along Second Street, is Bicycle Route 11, a Class III facility, defined as a bicycle route where bicyclists share travel lanes with vehicles. Based on field observations, bicycle volumes are generally low along Second Street, in areas of heavy traffic congestion and vehicle queuing (e.g., at Folsom and Bryant streets). Bicyclists slow down or stop to maneuver (or detour) around queued vehicles within the narrow lanes in order to continue along Second Street. Thus, these congested areas result in an obstructed and uncomfortable environment for bicyclists traveling along the roadway and create a greater potential for conflicts between drivers and bicyclists.

Alternative 3 would install Class II bicycle facilities (striped lanes) on both sides of Second Street between Market and Townsend streets. Between Townsend and King streets, a northbound bicycle lane would be provided, and bicycle sharrows would be added to the southbound travel lane. Further, Alternative 3 would include up to 42 new sidewalk bicycle racks along the length of Second Street. The proposed bicycle facilities under Alternative 3 would improve conditions for bicyclists along the Second Street corridor, compared to existing conditions, and would result in ***less-than-significant*** impacts related to bicyclists.

Comparison of Bicycle Impacts of Alternative 3 and the Proposed Project

Similar to the proposed project and its variant, Alternative 3 would install dedicated bicycle facilities along Second Street, including bicycle lanes and sidewalk bicycle racks. However, the proposed project or its variant would include grade-separated Class IV cycle track in each direction between Stevenson and Townsend streets. Between Market and Stevenson streets, a Class II[8] bicycle lane would be added in both the northbound and southbound directions under the proposed project or its variant. Between Townsend and King streets, a Class II bicycle lane would be added in the northbound direction, and sharrows (a Class III bicycle facility) would be added in the southbound direction under the proposed project or its variant. In addition, the project and its variant would provide two-stage, left-turn, bicycle queue boxes at several intersections along Second Street. These proposed facilities under Alternative 3 and under the proposed project or its variant would provide dedicated space for bicyclists to travel within the right-of-way and also would reduce the number of conflicts between bicyclists and drivers.

[8] A Class II bicycle facility provides a striped lane for one-way bike travel on a street or highway, as defined by the California Streets and Highway Code Section 890.4.

With respect to bus stops along Second Street, Alternative 3 would implement bus zones on the east side of the street and bus bulbs on the west side of the street. The bus bulbs installed under Alternative 3 would extend from the sidewalks. Bus operators would have to cross the bicycle lanes to allow passengers to board and alight at the bus bulb or to pull into and out of bus zones. The bicycle lane stripe would be dashed next to the bus bulb to indicate to bicyclists that vehicles (in this case buses) may enter the bicycle lane to serve stops. This configuration has the potential to cause conflicts between transit vehicles and bicyclists. Therefore, Alternative 3 would not improve safety for bicyclists to as great a degree as the proposed project or its variant.

Unlike the proposed project or its variant, Alternative 3 would allow left turns at all intersections and would permit right turns, which would increase conflicts between the bicyclists and drivers, compared to the proposed project or its variant. Further, unlike the proposed project or its variant, Alternative 3 would retain the existing 60-second signal cycle lengths at most locations. The exception would be at Second Street intersections with Howard, Folsom, and Harrison streets, where 90-second signal cycle lengths would be provided. It would not include a separate bicyclist/pedestrian signal phase along Second Street to limit conflicts between bicyclists, pedestrians, and right-turning motorists. The proposed project or its variant would include 90-second signal cycle length at all intersections along Second Street and would include a separate bicyclist/pedestrian signal at these intersections. In addition, the project and its variant would provide two-stage left-turn bicycle queue boxes at several intersections along Second Street. These improvements would reduce the number of conflicts between bicyclists and drivers, including buses, and would result in safer conditions for bicyclists, compared to Alternative 3. Therefore, while bicycle impacts would be less than significant with Alternative 3, similar to the proposed project or its variant, Alternative 3 would have somewhat greater impacts because it would not achieve the same degree of safety for bicyclists (**Impact TR-19: greater**).

Cumulative Bicycles Impacts under Alternative 3

Under 2040 cumulative (no project) conditions, there would be a projected increase in vehicles at intersections along Second Street, which may result in an increase in vehicle-bicycle conflicts at intersections in the study area.

Alternative 3 is an infrastructure project that would not add bicycle trips to the project vicinity, and would not result in cumulative bicycle impacts associated with creating potential hazardous conditions for bicyclists nor would it interfere with bicycle accessibility. Alternative 3 would install dedicated bicycle facilities (bicycle lanes) and bicycle racks along the Second Street corridor which would improve conditions for cyclists. Therefore, Alternative 3 would result in ***less-than-significant*** cumulative bicycle impacts.

Comparison of Cumulative Bicycle Impacts of Alternative 3 and the Proposed Project or its Variant

Similar to the proposed project or its variant, Alternative 3 would install dedicated bicycle facilities along Second Street, including bicycle lanes, as well as sidewalk bicycle racks. This alternative would continue to provide adequate access to adjacent land uses, bicycle parking, and other bicycle routes that connect to Second Street, similar to the proposed project or its variant. Additionally, Alternative 3, in combination with existing and planned bicycle facilities under other projects, would be able to accommodate potential increases in bicycling trips over time. However, as described in Section 4.4, under cumulative conditions, there would be a projected increase in vehicles at intersections along Second Street due to regional background growth and anticipated development. Unlike under the proposed project or its variant, under cumulative plus Alternative 3 conditions there would not be a separate bicyclist/pedestrian signal phase along Second Street. This would increase vehicle-bicycle conflicts at intersections along Second Street compared to the cumulative plus proposed project or project variant conditions. Further, cycle tracks along the Second Street corridor under cumulative plus proposed project or project variant conditions would be raised by 2 inches from the level of either the parking lane or the vehicle travel lane and marked by a painted buffer strip. The proposed project or project variant would also provide a two-stage left-turn bicycle queue box at several intersections along Second Street; and therefore, cumulative plus proposed project or project variant conditions would provide safer conditions for bicyclists than bicycle lanes under cumulative plus Alternative 3 conditions.

Overall, both cumulative plus proposed project or project variant and cumulative plus Alternative 3 conditions would have less-than-significant impacts related to bicycle facilities. However, cumulative plus Alternative 3 conditions would not improve bicyclist conditions as much as cumulative plus proposed project or project variant conditions because bicycle safety would increase to a greater degree under the proposed project or project variant conditions compared to Alternative 3 conditions (**Impact C-TR-21: greater**).

Emergency Vehicle Access Impacts under Alternative 3

Second Street is currently designed to accommodate all vehicle types, including fire engines/trucks, ambulances, and police vehicles. In the event of an emergency, drivers are required to comply with standard driving laws and yield the right-of-way to any emergency vehicle that is using a siren or flashing red lights. Drivers are required to maneuver to the right edge of the road and stop until emergency vehicles have passed. The current roadway capacity and lane configuration along Second Street allow for safe maneuvering of vehicles and the passage of emergency vehicles.

Alternative 3 would result in physical changes to the roadway and lane configurations along Second Street. However, it would not introduce design features that would reduce or eliminate vertical clearance and sight distances. It also would not adversely affect the access of emergency vehicles or other users of the roadway, similar to the proposed project and its variant. The combined northbound and southbound travel lanes under Alternative 3 would provide a minimum width of 24 feet and would comply with the fire code street minimum width requirement of 20 feet. In addition, in the event of an emergency, vehicle operators traveling along Second Street would be able to pull over onto the bicycle lane itself to allow emergency vehicles to pass. Therefore, Alternative 3 would result in ***less-than-significant*** impacts related to emergency access vehicles.

Comparison of Emergency Vehicle Access Impacts of Alternative 3 and the Proposed Project or its Variant

Although both Alternative 3 and the proposed project or its variant would result in less-than-significant impacts related to emergency vehicle access, these impacts would be slightly reduced under Alternative 3. Alternative 3 would implement bus bulbs at bus stops on the west side of Second Street and bus zones at bus stops on the east side. Although the bicycle lanes under Alternative 3 would not include a buffer area, as would the proposed project or its variant, the bicycle lanes' width of 6 feet would allow the vehicles to pull over in the event of an emergency. However, unlike the proposed project or its variant, the bus bulbs under Alternative 3 would allow for easier access to the bicycle lanes when compared to the bus boarding islands under the proposed project or its variant. Further, unlike the proposed project or its variant, emergency vehicles could use the center-turn lane under Alternative 3, which could result in faster movement of these vehicles.

Overall Alternative 3 would provide adequate widths, clearance, and capacity for emergency vehicle access, similar to the proposed project or its variant. However, movement of emergency vehicles could be easier under this alternative than under the proposed project or its variant because of the presence of the bus bulbs and bus zones and the center-turn lane (**Impact TR-20: reduced**).

Cumulative Emergency Vehicle Access under Alternative 3

Second Street is currently designed to accommodate all vehicle types, including emergency vehicles (e.g., fire engines/trucks, ambulances, police vehicles). In the event of an emergency, drivers are required to comply with standard driving laws and yield the right-of-way to any emergency vehicle that is using a siren and/or flashing red lights. Drivers are required to maneuver to the right edge of the road and stop until emergency vehicle(s) have passed. The current roadway capacity and lane configuration along Second Street allow for safe maneuvering of vehicles and the passage of emergency vehicles. Future streetscape proposals for other streets in the vicinity would need to identify measures that address emergency vehicle response times for those streets, as part of the environmental review and approval for those projects. This will ensure that the existing network of downtown streets that accommodate emergency vehicles would be maintained under cumulative (no project) conditions. Cumulative plus Alternative 3 conditions would not contribute considerably to cumulative impacts on emergency vehicle access, and impacts would be ***less than significant***.

Comparison of Cumulative Emergency Vehicle Access Impacts of Alternative 3 and the Proposed Project or its Variant

Similar to cumulative plus project/variant conditions, Alternative 3, in combination with future cumulative projects in the area, would continue to support emergency response vehicles.

As discussed in the alternative-specific impact analysis above, both bicycle lanes under Alternative 3 and the cycle tracks under the proposed project or its variant would allow vehicles travelling along Second Street to pull over in the event of an emergency. However, Alternative 3 would include a center-turn lane and bus bulbs at transit stops along the west side of Second Street instead of bus boarding islands which would provide easier access for vehicles to pull over. Therefore, Alternative 3, in combination with future cumulative projects in the area, would continue to support emergency response vehicles and would providing slightly better conditions than the proposed project or its variant in the event of an emergency (**Impact C-TR-22: reduced**).

Loading Impacts under Alternative 3

Under this alternative, all loading on the east side of Second Street would be removed. This would eliminate nine passenger loading zones, including the existing taxi and tour bus loading zones in front of the Marriott Hotel at the northeast corner of Second and Folsom streets. Therefore, impacts on passenger loading zones under Alternative 3 would be significant. With the implementation of **Mitigation Measure TR-ALT-2: Replacing Passenger Loading Zones**, the impact of removing these passenger loading zones could be reduced. Mitigation Measure TR-ALT-2 would create a limited number of new passenger loading zones on the west side of Second Street. However, the deficit of passenger loading space may still create potentially hazardous conditions or significant delays, affecting traffic, transit, bicyclists, and pedestrians. Therefore, no feasible mitigation was identified to reduce this impact, and passenger loading under Alternative 3 would be ***significant and unavoidable***.

Alternative 3 would remove 24 commercial loading stalls, most of which would be on the east side of Second Street and distributed between Market and Bryant streets, where commercial loading demand is highest. Although this alternative would not generate any commercial loading demand, it may remove loading stalls that would result in other loading demand being unmet. This may create potentially hazardous conditions or significant delays, affecting traffic, transit, bicyclists, and pedestrians due to the potential for delivery trucks to be double parked. Mitigation Measure TR-22, identified for the proposed project and its variant, would also apply to this alternative and would reduce the potential significant impact on commercial loading. However, it is uncertain if the removed commercial loading stalls can be replaced within a reasonable distance of the existing locations, and these impacts may not be reduced to less-than-significant levels. Therefore, the impacts of Alternative 3 on commercial loading would be ***significant and unavoidable with mitigation***.

Comparison of Loading Impacts of Alternative 3 and the Proposed Project or its Variant

Unlike the proposed project or its variant, which would have less-than-significant passenger loading impacts, Alternative 3 would have significant and unavoidable impacts on passenger loading. While the proposed project or its variant would eliminate six passenger loading zones, Alternative 3 would eliminate nine passenger loading zones along Second Street. This includes the passenger loading zone in front of a hotel and a taxi stand for that same use, which would be considered a significant impact (**Impact TR-21: greater**).

Alternative 3 would remove 24 commercial loading stalls on Second Street, whereas the proposed project or its variant would result in the net loss of up to 21 commercial loading stalls. Most of the commercial loading stalls removed under Alternative 3 would be on the east side of Second Street and distributed between Market and Bryant streets, where commercial loading demand is highest. Removing loading stalls under the proposed project or its variant would be mostly between Market and Howard streets. Therefore, similar to the proposed project or its variant, the commercial loading impact under Alternative 3 would be significant and unavoidable.

Mitigation measure M-TR-22, requiring the replacement of commercial loading stalls within a reasonable distance of the existing location, would also apply to Alternative 3. However, similar to the proposed project or project variant, the removed commercial loading stalls could not likely be relocated or replaced. Therefore, the commercial loading impact as a result of Alternative 3 would remain significant and unavoidable with mitigation. However, since the number of commercial loading stalls removed would be slightly greater under Alternative 3 than under the proposed project or its variant, the commercial loading impact under Alternative 3 would be more severe than under the proposed project or project variant (**Impact TR-22: greater**).

Cumulative Loading Impacts under Alternative 3

As previously discussed, Alternative 3 would result in substantial loss of passenger loading zones. Alternative 3 would remove nine passenger loading zones. Therefore, in combination with past, present, and reasonably foreseeable developments in San Francisco, Alternative 3 would result in ***significant and unavoidable*** cumulative passenger loading impacts.

As discussed previously, Alternative 3 would remove 24 of the 41 commercial loading stalls along Second Street. Therefore, it would result in substantial loss of commercial loading stalls, and would contribute considerably to cumulative commercial loading impacts. **Mitigation Measure M-TR-22: Provision of Replacement of Commercial Loading Stalls** identified for the proposed project or its variant would be applicable to Alternative 3. However, the feasibility of implementation of this mitigation measure is uncertain because there are limited opportunities to relocate commercial loading stalls within reasonable distance from the existing locations. Therefore, cumulative commercial loading impacts of Alternative 3 would be ***significant and unavoidable with mitigation***.

Comparison of Cumulative Loading Impacts of Alternative 3 and the Proposed Project or its Variant

Cumulative plus proposed project or project variant conditions would remove six passenger loading zones, which would not contribute considerably to cumulative impacts on passenger loading (less than significant). By removing nine passenger loading zones, cumulative plus Alternative 3 conditions would contribute considerably (significant and unavoidable) to cumulative impacts on passenger loading (**Impact C-TR-23: greater**).

As discussed previously, Alternative 3 would remove 24 of the 41 commercial loading stalls along Second Street. Therefore, it would result in substantial loss of commercial loading stalls similar to the cumulative plus proposed project or project variant conditions which would result in the net removal of 21 commercial loading stalls. Both would contribute considerably to cumulative commercial loading impacts. Further, similar to cumulative plus proposed project or project variant conditions, **Mitigation Measure M-TR-22: Provision of Replacement of Commercial Loading Stalls** would be applicable to Alternative 3. However, due to the uncertainty of implementation of this mitigation measure, cumulative commercial loading impacts of Alternative 3 would be ***significant and unavoidable with mitigation***, similar to the cumulative plus proposed project or project variant conditions. Significant impacts under cumulative plus Alternative 3 conditions would be greater than those under cumulative plus proposed project or project variant conditions because it would remove 3 more commercial loading stalls than the proposed project or project variant (**Impact C-TR-24: greater**).

Parking under Alternative 3

Alternative 3 would remove approximately 91 of the 168 existing on-street parking spaces along Second Street and 32 of the 56 existing motorcycle spaces. The decrease in on-street parking under Alternative 3 is not considered substantial within the context of downtown San Francisco, including the South of Market area, where there are many off-street parking opportunities. In addition, Alternative 3 would improve facilities for alternative modes of travel such as bicycling, transit, or walking. Therefore, Alternative 3 would result in ***less-than-significant*** parking impacts.

Comparison of Parking Impacts of Alternative 3 and the Proposed Project or its Variant

The proposed project or its variant would remove 129 standard on-street parking spaces and 19 motorcycle parking spaces. As explained for Alternative 3 above, the loss of these standard and motorcycle parking spaces would not be substantial, and impacts related to parking would be less than significant. In downtown San Francisco, the supply of off-street parking is readily available, and there are multiple options for alternative transportation. Alternative 3 would result in the loss of 35 fewer parking spaces and 37 more motorcycle spaces than would occur under the proposed project or project variant. Because of this, the less-than-significant parking impacts for the proposed project or variant or project alternative would be somewhat reduced under Alternative 3, compared to the proposed project and its variant (**Impact TR-23: reduced**).

Cumulative Parking Impacts under Alternative 3

Considering cumulative parking conditions, over time, due to the land use development and increased density anticipated within the City, parking demand and competition for on- and off-street parking is likely to increase. However, in the context of downtown San Francisco there are many off-street parking opportunities as well as access to multiple transit options and to other alternative modes of transportation. Alternative 3 would remove 91 parking spaces and 32 motorcycle spaces along the Second Street corridor, which would not be considered substantial in the context of downtown San Francisco. There are many off street parking options in the project vicinity and Alternative 3 would improve alternative transportation modes such as taking transit, bicycling, and walking. Under cumulative plus Alternative 3 conditions, Alternative 3 would not contribute considerably to cumulative parking impacts and the cumulative parking impact as a result of Alternative 3 would be ***less than significant***.

Comparison of Cumulative Parking Impacts of Alternative 3 and the Proposed Project or its Variant

Similar to the cumulative plus proposed project or variant conditions, cumulative plus Alternative 3's contribution to on-street parking impacts would not be cumulatively considerable. Cumulative plus Alternative 3 conditions would result in the loss of 34 fewer parking spaces and 13 more motorcycle spaces than would cumulative plus proposed project or variant conditions, which would result in the loss of 129 parking spaces and 19 motorcycle spaces. Therefore, Alternative 3's contribution to less-than-significant cumulative parking impacts would be reduced, compared to the less-than-significant cumulative parking impacts under the proposed project or project variant (**Impact C-TR-25: reduced**).

Conclusion

Overall, traffic impacts would be somewhat reduced under Alternative 3, compared to the proposed project or project variant. This is because Alternative 3 would result in significant and unavoidable traffic impacts at three fewer intersections than under proposed project or its variant conditions and four fewer intersections than under cumulative plus proposed project conditions, with three fewer intersections than under the cumulative plus project variant conditions.

Alternative 3 would increase project and cumulative impacts on transit and would result in significant and unavoidable project and cumulative transit impacts on Muni Route 10 and less-than-significant project and cumulative impacts on Muni Route 12. By contrast, the proposed project or its variant would have less-than-significant project and cumulative impacts on transit for both Route 10 and Route 12. Further, Alternative 3 would have less-than-significant project and cumulative transit impacts on transit routes in the project area, which is similar to the proposed project or its variant.

Project-level and cumulative pedestrian and bicycle safety impacts would be less than significant under Alternative 3, similar to the proposed project or its variant. Nevertheless, pedestrian and bicycle impacts would be somewhat greater because Alternative 3 would not achieve the same level of pedestrian and bicycle safety as the proposed project or its variant.

Project-level and cumulative impacts on both passenger and commercial loading would be significant and avoidable under Alternative 3, whereas the proposed project or its variant would result in significant and unavoidable commercial loading impacts and less-than-significant impacts on passenger loading.

Similar to the proposed project or its variant, project-level and cumulative impacts on emergency vehicle access would be less than significant under Alternative 3 conditions. However, these impacts would be slightly reduced under Alternative 3.

Project-level and cumulative parking impacts would also be less than significant under Alternative 3, similar to the proposed project or its variant. However, these impacts would be slightly greater than under the proposed project or its variant because Alternative 3 would not remove as many parking spaces.

Noise and Vibration Impacts under Alternative 3

Under Alternative 3, construction noise and vibration impacts would be similar to those described in Section 4.5 for the proposed project or its variant. Implementing improvements along Second Street under Alternative 3 would require construction activities of similar duration for such improvements as street and sidewalk demolition and excavation. Further, although Alternative 3 would include the construction of bus bulbs at some bus stops and bus zones at others instead of bus boarding islands, construction activities and duration would be similar to those under the proposed project or its variant. Similar to the proposed project or its variant, construction activities under Alternative 3 would still require the use of a concrete saw, and could result in significant impacts. **Mitigation Measure M-NO-1: Control or Abatement of Concrete Saw Operation Noise** identified for the proposed project or its variant would be feasible and applicable to Alternative 3. With the implementation **of Mitigation Measure M-NO-1** noise impacts under Alternative 3 would be reduced to ***less-than-significant*** levels with mitigation. Therefore, noise impacts under Alternative 3 would be similar to those under the proposed project or its variant (**Impact NO-1: similar**).

Similar to the proposed project or its variant, during construction Alternative 3 could contribute to cumulative noise impacts within the Second Street corridor. Also, similar to the proposed project or its variant, Alternative 3's contribution to cumulative noise impacts would not be considerable with the implementation of **Mitigation Measures NO-1** (**Impact C-NO-1: similar**) and impacts would be ***less than significant with mitigation***.

Overall, Alternative 3 would have similar noise impacts on sensitive receptors as the proposed project or its variant (**Impacts NO-1 and C-NO-1: similar**).

Air Quality under Alternative 3

Similar to the proposed project or its variant, construction activities under Alternative 3 would include rehabilitating or replacing sewers, relocating overhead utilities underground, and implementing bicycle, pedestrian, transit, and streetscape improvements. Further, construction would take approximately 1 year to complete and would generate additional short-term air pollution, similar to the proposed project or its variant. This would affect nearby sensitive receptors in an area that already experiences poor air quality and would result in significant impacts related to air quality. Implementation of **Mitigation Measure M-AQ-2: Construction Emissions Minimization** identified for the proposed project or its variant would reduce potentially hazardous construction emissions and potential exposure of sensitive receptors to toxic air contaminants under Alternative 3 to a ***less-than-significant level with mitigation*** (**Impact AQ-2: similar)**.

Similar to the proposed project or its variant, Alternative 3 construction would occur in an area identified by the City as an air pollution exposure zone, already adversely affected by air pollution. Because of this, it would contribute considerably to the cumulative health risk impacts on sensitive receptors. This would be a significant cumulative impact. The City would be required to implement **Mitigation Measure M-AQ-2,** which would reduce construction emissions and could reduce them by as much as 94 percent. Therefore, the contribution of Alternative 3 to cumulative health risk impacts would be ***less than significant***

with mitigation, similar to that of the proposed project or its variant (**Impact C-AQ-2: similar**).

Overall, Alternative 3 would have similar air quality impacts as the proposed project and its variant **(Impacts AQ-2 and C-AQ-2: similar)**.

CONCLUSIONS FOR ALTERNATIVE 3

Under Alternative 3 - the Center-Turn Lane Alternative - impacts related to construction would generally be similar to the proposed project or project variant. Operational impacts related to traffic would be reduced compared to the proposed project or project variant; however, significant operational impacts related to transit and loading would be greater under Alternative 3 than under the proposed project or project variant. In addition, Alternative 3 would result in less-than-significant project and cumulative impacts related to pedestrians and bicycles. This would be greater than the less-than-significant pedestrian and bicycle impacts of the proposed project or project variant. This is because the features implemented under Alternative 3 would not provide as great a degree of pedestrian and bicycle safety as would the proposed project or project variant.

Because Alternative 3 would be constructed within the same ROW as the proposed project or project variant and would entail similar construction techniques and durations, potentially significant impacts related to cultural resources, noise, and air quality would be similar to those of the proposed project or project variant and mitigation measures identified for the proposed project or project variant would also reduce impacts of Alternative 3 to less-than-significant levels.

Alternative 3 would reduce the severity and intensity of traffic impacts, compared to the proposed project or project variant. Alternative 3 would continue to allow all existing left turns on Second Street, the signal cycle length at most intersections would remain the same as under existing conditions (60-second signal cycle) except for at three intersections where it would be increased to 90 seconds, and a separate bicyclist/pedestrian signal phase would not be installed. Although the signal cycle length would increase to 90-seconds under cumulative plus Alternative 3 conditions, this cumulative plus Alternative 3 scenario would similarly not include a separate bicyclist/pedestrian signal phase. This would increase the intersection capacity for vehicular traffic and generally result in less congested intersections during the peak hour. However, because this alternative would not include a separate bicyclist/pedestrian signal phase, unlike cumulative plus project/variant conditions, it would result in an increased potential for conflicts between turning motorists, bicyclists, and pedestrians, resulting in increased intensity of bicyclist and pedestrian safety impacts, compared to the proposed project or project variant. In addition, Alternative 3 would have increased severity and intensity of loading impacts because it would result in the loss of more loading stalls compared to the proposed project or project variant.

Alternative 3 would meet some of the project objectives and would improve bicycle and pedestrian safety compared to existing conditions. However, it would not achieve the same degree of bicycle and pedestrian safety as the proposed project or project variant. Alternative 3 would not fully achieve project objectives related to improved safety and accessibility, prioritization of the needs of people walking, bicycling, and taking transit, reduced conflicts between vehicles and pedestrians and bicycles, and reduced number of vehicles accessing the freeway from Second Street. In particular, Alternative 3 would result in a significant unavoidable transit impact and significant and an unavoidable passenger loading impact that would not occur with the proposed project or project variant.

6.3 COMPARISON OF ALTERNATIVES

To determine the environmentally superior alternative, Alternatives 2 and 3 were evaluated for their ability to avoid or substantially lessen significant environmental impacts of the proposed project or its variant. Table 6-1 on page 6-7 through 6-9 provides a description of the main components of the proposed project and its variant and the alternatives. The significant environmental impacts from each alternative and the proposed project or its variant were compared. See Table 6-3 for this comparison of the impacts, including the application of feasible mitigation measures identified to reduce the project impacts. Table 6-3 also identifies whether an alternative would have reduced impacts or would eliminate significant impacts compared to the proposed project or its variant with respect to a specific topic area (alternative is preferred); whether an alternative would have greater impacts (project or its variant is preferred); and whether impacts would be similar (no clear environmental preference is apparent).

The proposed project or its variant would result in significant impacts related to transportation and circulation, in particular with respect to traffic and commercial loading.

Both Alternative 2 and Alternative 3 would have significant impacts related to transportation and circulation, as summarized in Table 6-3 and below:

6.3.1 Traffic Impacts (Alternative Specific and Cumulative)

With respect to project level significant and unavoidable traffic impacts, Alternative 2 would eliminate the project's and variant's significant and unavoidable traffic impact at Second and Bryant streets (**Impact TR-7**). In addition, although Alternative 2 would result in a significant and unavoidable traffic impact at Second and Harrison streets, conditions would be slightly improved compared to conditions under the proposed project or its variant (**Impact TR-6**). Under cumulative conditions, Alternative 2 would eliminate two of the significant and unavoidable cumulative traffic impacts compared to conditions under the proposed project (**Impact C-TR-12,** Second and Bryant streets, and **C-TR-13,** Second and Townsend streets), and one fewer significant cumulative traffic impact compared to conditions under the project variant (**Impact C-TR-12,** Second and Bryant streets).

With respect to project level significant and unavoidable traffic impacts, Alternative 3 would eliminate the project's and variant's significant and unavoidable traffic impacts at three intersections: Market and Montgomery streets (#1), Mission and New Montgomery streets (#2), and Harrison and First streets (#28; **Impact TR-2, Impact TR-3, and Impact TR-8;** see Table 6-6 on page 6-59 above). In addition, although Alternative 3 would result in a significant and unavoidable traffic impact at Second and Harrison streets, conditions under Alternative 3 would be slightly improved compared to conditions under the proposed project or variant (**Impact TR-6**).

Under cumulative conditions, Alternative 3 would eliminate five of the significant and unavoidable cumulative traffic impacts at the intersections of Market and Montgomery streets (#1), Mission and New Montgomery streets (#2), Howard and New Montgomery streets (#3), Howard and Hawthorne streets (#4), and Harrison and First streets (#28; **Impact C-TR-2, C-TR-3, C-TR-4, C-TR-5** and **C-TR-14**), compared to conditions under the proposed project and project variant.

At the intersection of Second and Townsend streets (#20), Alternative 3 would result in a significant cumulative traffic impact that could be mitigated to less than significant. Therefore, Alternative 3 with mitigation would eliminate the significant and unavoidable cumulative traffic impact under the proposed project at this intersection (**Impact C-TR-13**). The project variant would not result in a significant cumulative traffic impact at Second and Townsend streets (#20; **Impact C-TR-17**). However, at two intersections, Alternative 3 would result in significant and unavoidable cumulative traffic impacts, while the proposed project or its variant would result in less-than-significant impacts at those two intersections (**Impact C-TR-16:** intersections #14 Howard and Second streets and #15 Folsom and Second streets).

Overall, Alternative 3 would not result in as many significant traffic impacts as Alternative 2 or the proposed project or project variant.

6.3.2 Transit Impacts (Alternative Specific and Cumulative)

Similar to the proposed project and its variant, Alternative 2 would have less-than-significant impacts on Muni Routes 10 and 12. However, Alternative 2 would slightly improve transit travel time along both routes, compared to conditions under the proposed project or its variant due to the existing 60-second cycle length being retained under Alternative 2 for the traffic signals along the Second Street corridor, while under the proposed project or project variant, a 90-second cycle length is being proposed. Cumulative transit delay time for Muni Route 10 under Alternative 2 would be less improved than under the proposed project or its variant. Cumulative transit delay would improve for Muni Route 12 under Alternative 2, compared to cumulative transit under the proposed project or project variant.

Unlike under the proposed project or its variant, Alternative 3 would result in significant and unavoidable impacts on Muni Route 10. Similar to the proposed project or its variant, Alternative 3 would have less-than-significant impacts on Muni Route 12. However, Alternative 3 would result in less travel delay to Route 12 than under the proposed project or its variant. Unlike under cumulative plus proposed project or its variant conditions, cumulative plus Alternative 3 conditions would result in significant and unavoidable cumulative transit impacts on Muni Route 10. Similar to the proposed project and its variant, cumulative plus Alternative 3 conditions would result in less-than-significant impacts on Muni Route 12. In addition, impacts on transit service on other nearby routes under Alternative 3 would be less than significant, similar to those of the proposed project or its variant.

Alternative 2 would result in less-than-significant transit impacts on Muni Routes 10 and 12 and on other transit routes in the project vicinity. Alternative 3 would result in less-than-significant transit impacts on Muni Route 12 and other transit routes in the project vicinity; however, Alternative 3 would result in a significant transit impact on Muni Route 10 at both a project and cumulative level. Therefore, transit impacts under Alternative 3 would be greater than those under Alternative 2.

6.3.3 Pedestrians Impacts (Alternative Specific and Cumulative)

Although both Alternative 2 and Alternative 3 would improve pedestrian safety along Second Street compared to existing conditions, these improvements would not be to the same degree as those under the proposed project or its variant. This is because separate signal phases to reduce pedestrian and bicycle conflicts with turning vehicles would not be implemented.

Both Alternative 2 and Alternative 3 would also improve pedestrian safety at Second and Harrison streets similar to conditions under the proposed project or project variant. Under the alternatives, the southeast corner would be reconfigured to eliminate the two existing uncontrolled (channelized) northbound right-turn lanes; drivers would be required to make turns from the single right-turn lane at the intersection. This would reduce conflicts between pedestrians and right-turning vehicles at this intersection.

Alternative 2 and Alternative 3 would provide other pedestrian improvements similar to the proposed project or project variant. However, Alternative 2 would widen the sidewalk from

10 feet to 15 feet on only one side of Second Street between Harrison and Townsend streets, compared to widening the sidewalk on both sides of the street in that same segment under the proposed project, its variant, and Alternative 3. In addition, Alternative 3 would permit both left and right turns along the corridor, so Alternative 3 would create more opportunities for pedestrian and vehicle conflicts than would occur under Alternative 2 or under the proposed project or project variant. Thus, even though pedestrian impacts would be less than significant as a result of either Alternative 2 or Alternative 3, Alternative 3 would have greater pedestrian impacts.

6.3.4 Bicycle Impacts (Alternative Specific and Cumulative)

Both Alternative 2 and Alternative 3 would improve bicycle facilities along Second Street by providing bicycle lanes and sharrows. The separate bicycle/pedestrian signal phases that would reduce conflicts with turning vehicles and bicyclists and pedestrians under the proposed project or variant would not be implemented under either alternative. Therefore, both of these alternatives would have somewhat greater bicycle impacts than the proposed project or its variant because they would not achieve the same degree of bicycle safety. Because Alternative 3 would permit left and right turns along the corridor, it would create more opportunities for bicycle and vehicle conflicts than Alternative 2. Therefore, Alternative 3 would have greater bicycle impacts.

6.3.5 Emergency Vehicle Access (Alternative Specific and Cumulative)

Both Alternative 2 and Alternative 3 would provide adequate widths, clearance, and capacity for emergency vehicle access, similar to the proposed project and its variant. However, the bicycle lanes under Alternative 2 and Alternative 3 and the center-turn lane under Alternative 3 would be more accessible for vehicles to pull over than under the proposed project or its variant. The less-than-significant emergency vehicle access impacts from Alternative 2 and Alternative 3 would be similar compared to each other.

6.3.6 Loading Impacts (Alternative Specific and Cumulative)

Similar to the proposed project and its variant, Alternative 2 would have less-than-significant impacts on passenger loading relative to existing conditions. Alternative 2 would require relocating or removing two passenger loading zones, compared to the net loss of six passenger loading zones under the proposed project or its variant.

Unlike the proposed project or its variant or Alternative 2, Alternative 3 would result in a significant and unavoidable impact on passenger loading. Alternative 3 would eliminate nine passenger loading zones along Second Street, including the passenger loading zone in front of a hotel as well as a taxi stand for that same use. Therefore, Alternative 3 would result in a significant passenger loading impact (**Impact TR-21**). For these reasons, passenger loading impacts would be less under Alternative 2 than conditions under Alternative 3.

Alternative 2 would eliminate the proposed project's or project variant's project level and cumulative significant unavoidable impact on commercial loading (**Impacts TR-22** and **C-TR-24: eliminated**). Alternative 2 would remove 13 of the 41 commercial loading stalls on Second Street; five of these stalls would be relocated, resulting in a net loss of eight commercial loading stalls. These eight commercial loading stalls are currently not fully used; therefore, Alternative 2 would result in a less-than-significant commercial loading impact. The proposed project or its variant would remove approximately 25 commercial loading stalls on Second Street. They would relocate approximately four of these commercial loading stalls nearby, and an additional two new commercial loading stalls could be created. But this net loss of commercial loading spaces would be considered a significant commercial loading impact at a project and cumulative level. Mitigation measure M-TR-22, requiring the replacement of commercial loading stalls within a reasonable distance of the existing loading stall location, is applicable to the project or its variant. However, at this time no spaces to relocate the removed commercial loading stalls have been identified, so the project's or variant's commercial loading impact would remain significant and unavoidable with mitigation.

Alternative 3 would remove 24 commercial loading stalls on Second Street, whereas the proposed project or its variant would result in the net loss of up to 21 commercial loading stalls. Most of the commercial loading stalls removed under Alternative 3 would be on the east side of Second Street and distributed between Market and Bryant streets, where commercial loading demand is highest along the project corridor.

Most of the commercial loading stalls removed under the proposed project or its variant would be located between Market and Howard streets. Therefore, similar to the proposed project or its variant, the commercial loading impact under Alternative 3 would be significant and unavoidable. Mitigation measure M-TR-22 requiring the replacement of commercial loading stalls within a reasonable distance of the existing loading stall location would also be applicable to Alternative 3. However, similar to the proposed project or project variant, the removed commercial loading stalls could not likely be relocated or replaced. Therefore, the commercial loading impact as a result of Alternative 3 would remain significant and unavoidable with mitigation.

In addition, since the number of commercial loading stalls removed under Alternative 3 would be slightly greater than under the proposed project or its variant, the commercial loading impact under Alternative 3 would be more severe than under the proposed project or project variant.

Because Alternative 2 would eliminate the proposed project's or its variant's commercial loading impact, it would be less impactful than Alternative 3 with respect to commercial loading.

6.3.7 Parking Impacts (Alternative Specific and Cumulative)

Parking impacts at either a project level or cumulative level would be less than significant under the proposed project and its variant. Both Alternative 2 and Alternative 3 would have reduced parking impacts compared to the proposed project and its variant because the net parking loss would be less under either alternative than under the proposed project or its variant. In addition, Alternative 2 would remove fewer parking spaces than Alternative 3; therefore, the parking impact under Alternative 2 would be less compared to the parking impact under Alternative 3.

6.4 ENVIRONMENTALLY SUPERIOR ALTERNATIVE

State CEQA Guidelines Section 15126.6(e)(2) requires identification of an environmentally superior alternative. If the No Project Alternative is environmentally superior, CEQA requires selection of the "environmentally superior alternative other than the no project alternative" from among the proposed project and the alternatives evaluated. The No Project Alternative 1 is considered the overall environmentally superior alternative. This is because the impacts associated with the proposed project would not occur under the No Project Alternative 1. However, this alternative would not meet any of the project sponsor's objectives, as listed in Chapter 2, Project Description, on page 2-2.

To identify the environmentally superior alternative, the impacts of the proposed project and variant and Alternatives 2 and 3 are compared in Table 6-3 and in Section 6.3 above.

In accordance with the State CEQA Guidelines, an EIR is required to identify the environmentally superior alternative that has the fewest significant environmental impacts from among the alternatives evaluated. The proposed project or its variant would result in significant and unavoidable project-level and cumulative traffic and commercial loading impacts. The proposed project or its variant would result in less-than-significant impacts or less-than-significant impacts with mitigation related to archaeological and paleontological resources, construction-related noise, and construction-related air quality.

Alternative 2 is identified as the environmentally superior alternative. This is because it would result in fewer significant and unavoidable traffic impacts than the proposed project or project variant and it would eliminate the proposed project's or variant's significant and unavoidable commercial loading impact. While Alternative 3 would result in fewer significant and unavoidable traffic impacts compared with Alternative 2, Alternative 3 would result in a significant and unavoidable transit impact for Muni Route 10. In addition, Alternative 3 would result in a significant and unavoidable passenger loading impact and a significant and unavoidable commercial loading impact. These impacts would be more severe than the significant and unavoidable commercial loading impact under the proposed project or its variant.

Further, although Alternative 2 would result in less-than-significant impacts on alternative-specific and cumulative pedestrian and bicycle facilities, these impacts would be greater under Alternative 2 than under the proposed project. Alternative 2 would result in less-than-significant impacts on alternative-specific and cumulative parking; these impacts would be greater under Alternative 2 than under the proposed project or its variant. However, overall, Alternative 2 would have fewer significant and unavoidable traffic impacts than under the proposed project or project variant and would eliminate the project level and cumulative commercial loading impact of the proposed project or project variant. Alternative 2 would have similar impacts on cultural and paleontological resources, noise, and air quality as either Alternative 3 or the proposed project or its variant. Therefore, Alternative 2 is identified as the environmentally superior alternative.

6.5 ALTERNATIVES CONSIDERED BUT REJECTED FROM FURTHER ANALYSIS

The environmental review for the Bicycle Plan and associated projects analyzed three options for bicycle facilities along the Second Street corridor, referred to as the Near-Term Improvement Project 2-1, Option 1, Option 2, and Modified Option 1. However, the SFMTA decided not to pursue its board's approval for Project 2-1 due to community concerns regarding the project design options; instead, SFMTA partnered with Public Works as the project manager for continued project development and community outreach.

This section identifies alternatives that were considered by the City, but rejected as infeasible during the design development and public outreach process after the certification of the Bicycle Plan EIR. Among the factors that were considered were the failure to meet most of the basic objectives of the proposed project and the inability of a particular design to avoid significant environmental impacts. These considered and rejected alternatives are bicycle lanes and a two-way cycle track.

6.5.1 Design Options Considered During the Public Outreach Process

Public Works, SFMTA, and the Planning Department began the planning process for the Second Street Improvement Project in the spring of 2012 and held community meetings in 2012 and 2013. The first community meeting was on May 2, 2012. Over 100 residents attended, and 12 groups were formed to work on design scenarios. The groups had a total of 24 design recommendations. Public Works and SFMTA staff analyzed the resulting concepts and identified four options, based on recurring themes in the design recommendations. All options included similar pedestrian safety improvements, but they differed in the design of the bicycle facility.

The four design options were as follows:

- Bicycle lanes;
- Center-turn lane (with a combination of bike lanes and sharrows;
- One-way cycle tracks; and
- Two-way cycle track.

These four options were refined by staff and were presented to the community, along with a survey, during the second community meeting on September 20, 2012. The survey asked respondents to rate the elements of each design option from “strongly like” to “strongly dislike” or “no opinion.” Based on the community’s comments and survey results, as well as consideration of project objectives, the one-way cycle track design emerged as the preferred alternative. This alternative was presented in more detail during consecutive community meetings on November 28, 2012, and May 23, 2013.

Overall, analysis all of the responses identified the one-way cycle tracks design as the preferred option, with 10 percent more respondents supporting it over the next highest option, the center-turn lane.

6.5.2 Further Consideration of Design Options

The project team reviewed each design option and assessed how well the options met the project objectives. The bike lanes option, which closely matched Project 2-1 Modified Option 1 analyzed in the Bike Plan EIR, met many of the project objectives.

The two-way cycle track option would provide a two-way cycle track on the west side of Second Street with a raised median to separate the bicycle facility from the other travel lanes, bus bulbs and boarding islands, parking on the east side of the street, sidewalk widening south of Harrison Street along the Second Street corridor, and a restriction of left turns. The benefits of this option were that it would provide a dedicated bicycle facility separated from vehicular traffic and would allow northbound bicycle riders to avoid the heavy conflicting northbound vehicle right-turn movement from Second Street onto Harrison Street. However, the lack of community support coupled with several engineering difficulties described below made the option undesirable. The engineering challenges included the following:

- New dedicated signal phases for the two-way cycle track could be implemented to separate the two-way bicycle movements from vehicle turns at the major intersections. However, conflicts would need to be managed at seven minor street/alley intersections as well as numerous driveways on the west side of the street. The frequency of these unsignalized vehicle crossings—where many drivers would not expect bicyclists to be approaching from the opposite direction of vehicle traffic—makes this corridor unsuitable for a bi-directional cycle track.

- With a bikeway on one side of the street only, access, convenience, and ease of use of the bicycle facility would be reduced for northbound bicyclists and those with destinations on the east side of Second Street.

- The two-way cycle track design would reduce the number of travel lanes on Second Street to one in each direction and would not allow the addition of right-turn pockets at most intersections. Under these conditions it is expected that Muni bus service on Second Street would be delayed by queued right-turning vehicles.

For these reasons, Public Works and SFMTA determined that this alternative would not be feasible and rejected it from further consideration.

This page intentionally left blank.

CHAPTER 7: REPORT PREPARERS

7.1 EIR AUTHORS

San Francisco Planning Department
Environmental Planning Division
1650 Mission Street, Suite 400
San Francisco, California 94103

Environmental Review Officer: Sarah B. Jones
Senior Environmental Planner: Devyani Jain
EIR Coordinator: Debra Dwyer
Transportation Planner: Greg Riessen
Senior Transportation Planner: Bill Wycko
Preservation Planner: Pilar LaValley
Archeologist: Allison Vanderslice
Air Quality: Melinda Hue
Senior Air Quality Planner: Jessica Range

Office of the City Attorney, City and County of San Francisco
City Hall, Room 234
One Dr. Carlton B. Goodlett Place
San Francisco, California 94102

Deputy City Attorney: Audrey Pearson, Esq.

7.2 EIR CONSULTANTS

AECOM
Post Montgomery Center
One Montgomery Street, Suite 900
San Francisco, California 94104

Principal-in-Charge: Denise Heick
Project Manager: Rima Ghannam
CEQA Lead: Hannah Young, AICP
Lead Senior Air Quality Engineer: David Weaver
Senior Air Quality Engineer: Nasrin Behmanesh
Senior Acoustics and Noise Control Engineer: Mark Storm
Senior Noise Analyst: Susumu Shirayama
Senior Archaeologist: Mark Hale

CHS Consulting Group (Transportation)
130 Sutter Street, Suite 468
San Francisco, California 94104

Chi-Hsin Shao
Preethi Narayanan
Manoj Madhavan

Varney Edits (Technical Editing)
44 Surrey Street
San Francisco, California 94131

Randolph Varney

Cindy Schad (Word Processing)
145 Fell Street, Apt. 104
San Francisco, California 94102

Cindy Schad

7.3 PROJECT SPONSORS

San Francisco Public Works
30 Van Ness Avenue, 5th Floor
San Francisco, California 94102-6099

Project Manager: Cristina Olea, PE
Project Manager: Michael Rieger, RLA
Regulatory Affairs Manager: Frank Filice
Hydraulic Engineer: Jane Kao, PE

San Francisco Municipal Transportation Agency
Livable Streets Subdivision of Sustainable Streets
One South Van Ness Avenue, 7th Floor
San Francisco, California 94102

Project Lead: Ellen Robinson, PE

Debra Dwyer
San Francisco Planning Department
Environmental Planning Division
1650 Mission Street, Suite 400
San Francisco, CA 94103

PLEASE CUT ALONG DOTTED LINES

PLEASE RETURN THIS POSTCARD TO REQUEST A COPY OF
THE FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

(NOTE THAT THE DRAFT SEIR PLUS THE RESPONSES TO COMMENTS
DOCUMENT CONSTITUTE THE FINAL SEIR)

REQUEST FOR

FINAL SUPPLEMENTAL ENVIRONMENTAL IMPACT REPORT

Second Street Improvement Project,
Planning Department Case No. 2007.0347E

Check one box: ☐ Please send me a copy of the Final EIR on CD.
☐ Please send me a paper copy of the Final EIR.

Signed: ______________________________

Name: ______________________________

Street: ______________________________

City: ____________________ State: ______ Zip: ______

Revised 10/5/12