



Meeting Date: June 2, 2023

To: Public Works Commission

Through: Carla Short, Interim Public Works Director
Albert Ko, City Engineer and Deputy Director for Public Works

From: Carol Huang, Public Works Project Manager

Subject: 19th Avenue (State Route 1) Combined City Project, Contract No. 1000005832 - Contract Modification

Director's Recommendation: Approve contract modification to the 19th Avenue (State Route 1) Combined City Project Contract No. 1000005832 to increase the contract amount by \$4,572,155.20 and authorize the Director of Public Works to approve future modifications up to a total contract amount of \$54,865,862.40; and approve an increase of 245 calendar days to the contract duration contingency and authorize the Director of Public Works to approve future modifications up to a total contract duration of 1,220 consecutive calendar days.

Contract Background: The 19th Avenue (State Route 1) Combined City Project ("Project"), consists of civil roadway work, water and sewer utility improvements, electrical and traffic signal modifications as well as traffic routing on 19th Avenue between Lincoln Way and Holloway Street. The Project is sponsored by San Francisco Public Utilities Commission ("SFPUC") and San Francisco Municipal Transportation Authority ("SFMTA") and managed by Public Works. On May 5, 2020, Public Works awarded JMB Construction Inc. ("Contractor") a construction contract of \$45,721,552 for the 19th Avenue (State Route 1) Combined City Project ("Project").

On October 19, 2020, the Notice-to-Proceed was issued for construction services and the Contractor was directed to begin construction in November 2020 and would have up to 753 consecutive calendar days (CDs) for substantial completion and up to 60 CDs for final completion. Project construction was split into four segments. Segment 1 is for scope on 19th Avenue from Lincoln Way to Noriega Street, Segment 2 is for scope on 19th Avenue from Noriega Street to Taraval Street, Segment 3 is for scope on 19th Avenue from Taraval Street to Eucalyptus Street and Segment 4 is for scope on 19th Avenue from Eucalyptus Street to Holloway Avenue.

Previously, Public Works has approved a total of 10 change orders for a total contract amount increase of \$3,713,216.95 (8.12% increase to the original awarded contract amount) resulting in the current approved total contract amount of \$49,434,768.95 and a total contract duration increase of 155 calendar days (19% increase from original duration) and resulting in the current approved 968 CDs.

Specifically, Public Works has approved the following contract modifications:

CO #	Amount	Duration Change (Calendar Days)
1	\$ 65,043.00	0
2	\$ 263,307.36	28
3	\$ 49,134.00	0
4	\$ 2,983,214.00	127
5	\$ 167,848.95	0
6	\$ 84,121.22	0
7	\$ 21,420.59	0
8	\$ 11,279.05	0
9	\$ 40,368.19	0
10	\$ 27,480.59	0
Total	\$ 3,713,216.95	155

Explanation of Requested Contract Cost and Duration: While the Project team has been able to successfully work with the Contractor to mitigate several challenges encountered along this busy thoroughfare, due to a client requested water pipeline material change order, coordination with Stern Grove Festival, unexpected weather delays as well as world-wide supply-chain issues, the project schedule has been further impacted by 245 CDs from the previously approved duration contingency of 162 CDs and additional 10% cost contingency in the amount of \$4,572,155.20 from the original 10% cost contingency. The additional cost and duration contingency reserves requested are due to the following items:

Client Requested Change Order

In early 2021, SFPUC requested a material change on the new 36-inch diameter water pipeline from ductile iron to welded steel to increase the pipeline pressure rating and resiliency for future emergency firefighting water purposes. This change impacted approximately 1,970 linear feet of new water pipelines to be installed along 19th Avenue between Vicente Street and Sloat Boulevard and approximately 210 linear feet of new water pipelines to be installed along Sloat Boulevard across the 19th Avenue intersection.

The original Project scope includes open trench excavation for all new 36-inch pipelines but to manage impacts and potential risks, the new segment along Sloat Boulevard at the 19th Avenue intersection was changed to trenchless installation which required a pipeline redesign.

As a result, the 36-inch diameter welded steel pipeline (“36” WSP”) change order (“PCO”) was split into two parts. Package A is for the open trench water main installation along 19th Avenue between Vicente and Sloat Boulevard and Package B is the trenchless water main installation along Sloat Boulevard at the 19th Avenue intersection. Package A was formally executed in December 2021 as Change Order No. 4 while Package B pipeline redesign continued.

After the initial trenchless design for Package B was developed in April 2022, the Project team discovered several existing utilities appeared to be at deeper depths during utility potholing,

hence further redesign on pipe alignment and jak and bore pits were required for a deeper trenchless installation to avoid conflicts with existing utilities.

Package B was formally finalized to initiate the 36” WSP fabrication in late 2022. Due to unexpected steel material shortage, the WSP fabrication time was extended from four months to six months. The best estimate of the first delivery is the end of May 2023. The Project team estimates Package B will cost approximately \$1.1 million and will impact the project schedule by at minimum an additional 120 CD due to redesigns and supply-chain issues.

Unexpected Weather Delays and Coordination with Stern Grove Festival

The Contractor is actively working at and adjacent to the Stern Grove Entrance Plaza (“Stern Grove Plaza”) and the Project team is closely coordinating the construction with San Francisco Recreation and Parks (“Rec & Park”) and SFPUC. The Project scope adjacent to the Plaza includes 1) a segment of 36” WSP crossing the Plaza for tie-in to the existing 54” water main along the northern sidewalks on Sloat Boulevard, 2) trenchless water main construction along Sloat Boulevard at the 19th Avenue intersection and 3) sidewalk/curb ramp replacement and bulbout construction at the southern corners and northwest corner by the Plaza after conclusion of the underground work.

Due to unexpected stormy weather from January to March this year, the work at and near the Stern Grove Plaza has been significantly impacted. As of now, the Contractor has finished all the underground work within the Plaza but the Plaza restoration and sidewalk and bulbout construction need to be paused in May due to another SFPUC emergency project for slope stabilization needing full Plaza access for soil off-hauling from May 1 to May 31.

In addition, the 2023 Stern Grove Festival is approaching and will run from mid-June to late August. To minimize impacts, the Project team continues to coordinate with Rec & Park, SFPUC and SFMTA to possibly postpone the remaining scope at the 19th Avenue and Sloat Boulevard intersection until after the Stern Grove Festival ends in late August.

Weather delays resulted in approximately 35 CDs and the Project team estimates potential delay due to Stern Grove Festival and SFPUC’s emergency project will impact the project schedule by at minimum an additional 90 CDs.

Due to the above mentioned project changes, unexpected weather delays and coordination with others, the increased contract duration and cost contingencies will allow the Project to reach substantial completion by December 22, 2023, and final completion by February 20, 2024.

Staff proposes to increase the contract duration contingency by 245 non-compensable consecutive calendar days to the previously total contingency of 162 calendar days for a revised total contract duration contingency of 406 calendar days; and increase to the contract cost by \$4,572,155.20 to the original contract cost contingency of \$4,572,155.20 for a total contract cost contingency of \$9,144,310.40.

Contract Details:

Contract Title:	19th Avenue (State Route 1) Combined City Project
Contract Original Award Amount:	\$45,721,552
Contract Original Duration:	813 days
Contractor Name:	JMB Construction Inc.

Summary of Contract Value:

Contract Cost Amount	Amounts
Original Contract Amount:	\$45,721,552
Original 10% Cost Contingency:	\$4,572,155
Previously Approved Contingency Reserve:	-
Requested Additional Cost Contingency:	\$4,572,155
Total Revised Contract Cost Limit:	\$54,865,862

Contract Duration	Days
Original Contract Duration (Substantial & Final Completion):	813
Original 10% Duration Contingency:	81
Previously Approved Contingency Reserve:	81
Requested Additional Duration Contingency:	245
Total Revised Contract Duration Limit:	1,220

Contract Funding Sources:	MTA Transit Funds, Proposition K, MTA GO Bond, PUC Wastewater Renewal & Replacement Program Funds, PUC Water Enterprise Funds, PUC ESER Bond Funds
Compliance Information:	12B Equal Benefits Ordinance Compliant 14B Local Business Enterprise and Non-Discrimination Ordinance
Environmental Determination (if applicable):	Final Environmental Impact Report for the Transit Effectiveness Project certified by the San Francisco Planning Commission (Case No. 2011.0558E) CEQA Categorical Exemption for 19 th Avenue Combined City Project, Sewer Replacement (Case No. 2016-000102ENV) CEQA Categorical Exemption for 19 th Avenue Combined City Project, Water Replacement (Case No. 2015-004783ENV) CEQA Statutory Exemption Request for 19 th Avenue Combined City Project, Auxiliary Water Supply System Replacement under Public Resources Code Section 21080.21.

Related Commission Actions:	N/A
Additional Information:	N/A
Attachments:	<p>Attachment 1: Proposed Commission Resolution</p> <p>Attachment 2: Presentation</p> <p>Attachment 3: 19th Avenue Combined City Project Abbreviated CEQA Checklist for Transit Effectiveness Project (TEP) Improvements Subsequent to Certification of the TEP EIR</p> <p>Attachment 4: Caltrans Categorical Exemption/Categorical Exclusion Determination form for the 19th Avenue Combined City Project</p> <p>Attachment 5: Resolution No. 14-041 from San Francisco Municipal Transportation Agency Board of Directors</p>

**PUBLIC WORKS COMMISSION
CITY AND COUNTY OF SAN FRANCISCO**

RESOLUTION NO. _____

WHEREAS, The 19th Avenue (State Route 1) Combined City Project consists of civil roadway work, water and sewer utility improvements, electrical and traffic signal modifications and traffic routing on 19th Avenue between Lincoln Way and Holloway Street and was analyzed in the Transit Effectiveness Project Final Environmental Impact Report; and

WHEREAS, On July 10, 2013, the Planning Department prepared and published for Transit Effectiveness Project (“TEP”) Draft Environmental Impact Report (“DEIR”), which analyzed the impacts of all components of the TEP comprised of a Service Policy Framework, Service Improvements and Service Variants, Service-Related Capital Improvements, and Travel Time Reduction Proposals for the City’s Rapid Network within the transit system and the TEP DEIR was available for public review; and

WHEREAS, On March 27, 2014, the Planning Department certified the Transit Effectiveness Project Final Environmental Impact Report in Motion No. 19105; and

WHEREAS, On March 28, 2014, the Board of Directors of the San Francisco Municipal Transportation Agency adopted Resolution No. 14-041 approved all of the TEP proposals and adopted finding under the California Environmental Quality Act (“CEQA”), CEQA Guidelines, and Chapter 31 of the Administrative Code (“CEQA Findings”) and a Mitigation Monitoring and Reporting Program (“MMRP”); and

WHEREAS, On April 21, 2015, California Department of Transportation (“Caltrans”) issued a determination that the proposed 19th Avenue (State Route 1) Combined City Project is under Class 2 Categorical Exemption pursuant to California Public Resources Code 21084 et seq. and CEQA Guidelines Sections 15300 et seq.; and

WHEREAS, On May 29, 2015, the Planning Department issued an Abbreviated CEQA Checklist For TEP Improvements Subsequent to Certification of the TEP EIR (Planning Department Case No. 2011.0558E) and determined that the proposed 19th Avenue Combined City Project is within the scope of the TEP FEIR with no significant effects and no new mitigation or document requirement pursuant to CEQA Guideline Section 15168; and

WHEREAS, On July 7, 2015, the Board of Directors of the San Francisco Municipal Transportation Agency adopted Resolution No. 15-107 approving installation of traffic and parking modifications along the 28 19th Avenue rapid Muni transit corridor as part of the 19th Avenue Combined City Project; and

WHEREAS, On May 5, 2020, San Francisco Public Works awarded Contract No. 1000005832 under DPW Order No. 203065 for the 19th Avenue (State Route 1) Combined City

Project to JMB Construction Inc. in the amount of \$45,721,552 with a contract duration of 813 calendar days; and

WHEREAS, An increase of \$4,572,155.20 to the contract cost of \$4,572,155.20 and an increase of 245 calendar days to the previously approved contract duration contingency of 162 calendar days are requested for the 19th Avenue (State Route 1) Combined City Project; and

WHEREAS, The duration modification approved by this action would cover the longer construction duration due to client requested change orders, Stern Grove Festival coordination as well as unexpected weather and supply chain delays; and

WHEREAS, The Public Works Commission has reviewed the TEP FEIR, the Planning Commission Motion, the CEQA Findings, the CEQA Determination, and the SFMTA Board Resolutions, and the preceding documents are on file with the Public Works Commission Affairs Manager, and are incorporated herein by reference; now, therefore, be it

RESOLVED, That this Commission finds that the 19th Avenue (State Route 1) Combined City Project would not cause new significant impacts or a substantial increase in the severity of impacts identified and analyzed in the TEP FEIR, no changes have occurred in the TEP FEIR since its adoption that would cause new significant impacts or a substantial increase in the severity of impacts identified and analyzed in the TEP FEIR, and no new information has emerged that would materially change the analysis or conclusions set forth in the TEP FEIR; and that the actions approved herein would not necessitate implementation of additional or considerably different mitigation measures than those identified in the TEP FEIR; and, be it

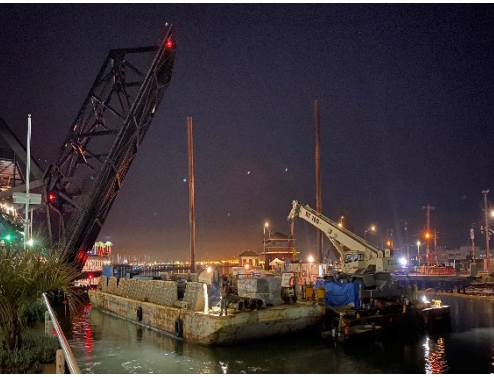
FURTHER RESOLVED, That in compliance with Chapter 31 of the San Francisco Administrative Code, this Commission adopts as its own the CEQA Findings and the Planning Department's determination in the CEQA Determination that there is no substantial evidence that the 19th Avenue (State Route 1) Combined City Project could have a significant effect on the environment; and, be it

FURTHER RESOLVED, That this Commission approves an increase of \$4,572,155.20 to the contract cost contingency of \$4,572,155.20 and an increase of 245 calendar days to the previously approved contract duration contingency of 162 calendar days for the 19th Avenue (State Route 1) Combined City Project, contract with JMB Construction Inc.; and be it

FURTHER RESOLVED, That this Commission hereby authorizes the Director of Public Works to approve future modifications to the contract for up to a total contract amount of \$54,865,862.40 and up to a total contract duration of 1,220 consecutive calendar days.

I hereby certify that the foregoing resolution was adopted by the Public Works Commission at its meeting of _____.

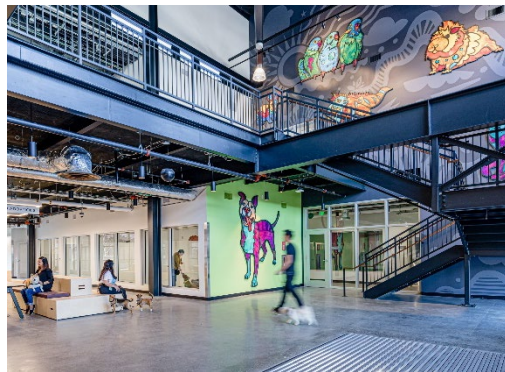
Commission Affairs Manager
Public Works Commission



June 2, 2023

19th Avenue Combined City Project

Carol Huang
Project Manager, Streetscape Program
Infrastructure Design & Construction



19th Avenue Combined City Project

Recommend Commission:

Approve a contract modification to increase the contract duration contingency by 245 calendar days and increase the contract cost contingency by \$4,572,155.20.

And Recommend Commission:

Authorize the Public Works Director to approve future contract modifications for a total contract duration of up to 1,220 consecutive calendar days and a total contract amount of up to \$54,865,862.40.

Amount:

\$45,721,552.00

Construction Duration:

813 consecutive calendar days

Contractor:

JMB Construction, Inc.

Reason:

Client-requested change orders, coordination with Stern Grove Festival, weather delays and supply-chain issues

19th Avenue Combined City Project

19th Avenue
between Lincoln Way and Holloway Avenue

Districts 4 and 7

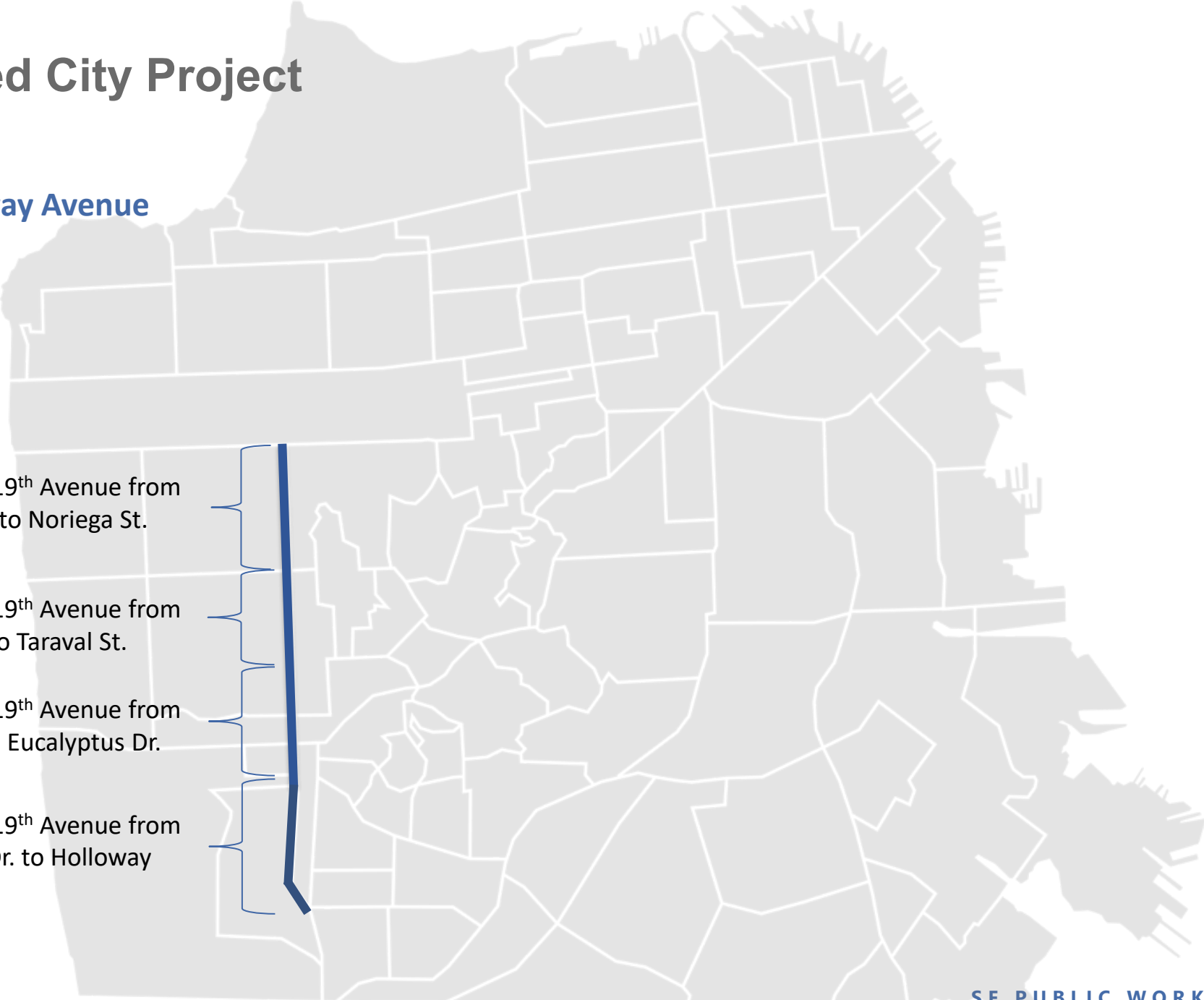
More info:
sfpublicworks.org/19th-Avenue

Segment 1: 19th Avenue from
Lincoln Way to Noriega St.

Segment 2: 19th Avenue from
Noriega St. to Taraval St.

Segment 3: 19th Avenue from
Taraval St. to Eucalyptus Dr.

Segment 4: 19th Avenue from
Eucalyptus Dr. to Holloway
Ave.



Project Improvements



CURB RAMP UPGRADES AND SIDEWALK WIDENING

Widened sidewalks and bulbouts to improve transit effectiveness and shorten pedestrian crossing distances

TRAFFIC SIGNAL MODIFICATIONS

New traffic signal system and conduits

STREETLIGHTING

New intersection streetlights

UTILITY IMPROVEMENTS

Water/Sewer/Emergency Fire Water Pipeline Installation

Project Background

- **On May 11, 2020**, San Francisco Public Works awarded the construction contract to JMB Construction, Inc., for the 19th Avenue Combined City Project.
- **On Oct. 19, 2020**, a Notice to Proceed was issued directing JMB Construction, Inc., to start construction and reach final completion 813 days later.
- **As of April 2023**, Public Works had approved 10 change orders for a total contract amount increase of \$3,713,216.95 and total contract duration increase of 155 days.
- Due to client-requested change orders, coordination with Stern Grove Festival as well as unexpected weather delays and worldwide supply-chain issues, project schedule and cost are greatly impacted.

Current Project Status

Construction started:
October 2020

Original total contract duration:
813 calendar days

Original total contract cost:
\$45,721,552.00

Current contract duration contingency:
162 calendar days

Current contract cost contingency:
\$4,572,155.20

Approximate completion to date:
90%

Identified potential delay:
Eight (8) months

Reason:
**Client-requested changes
Unexpected Weather Delays
Supply Chain Issues
Stern Grove Festival Coordination**

Current projected final completion:
February 2024

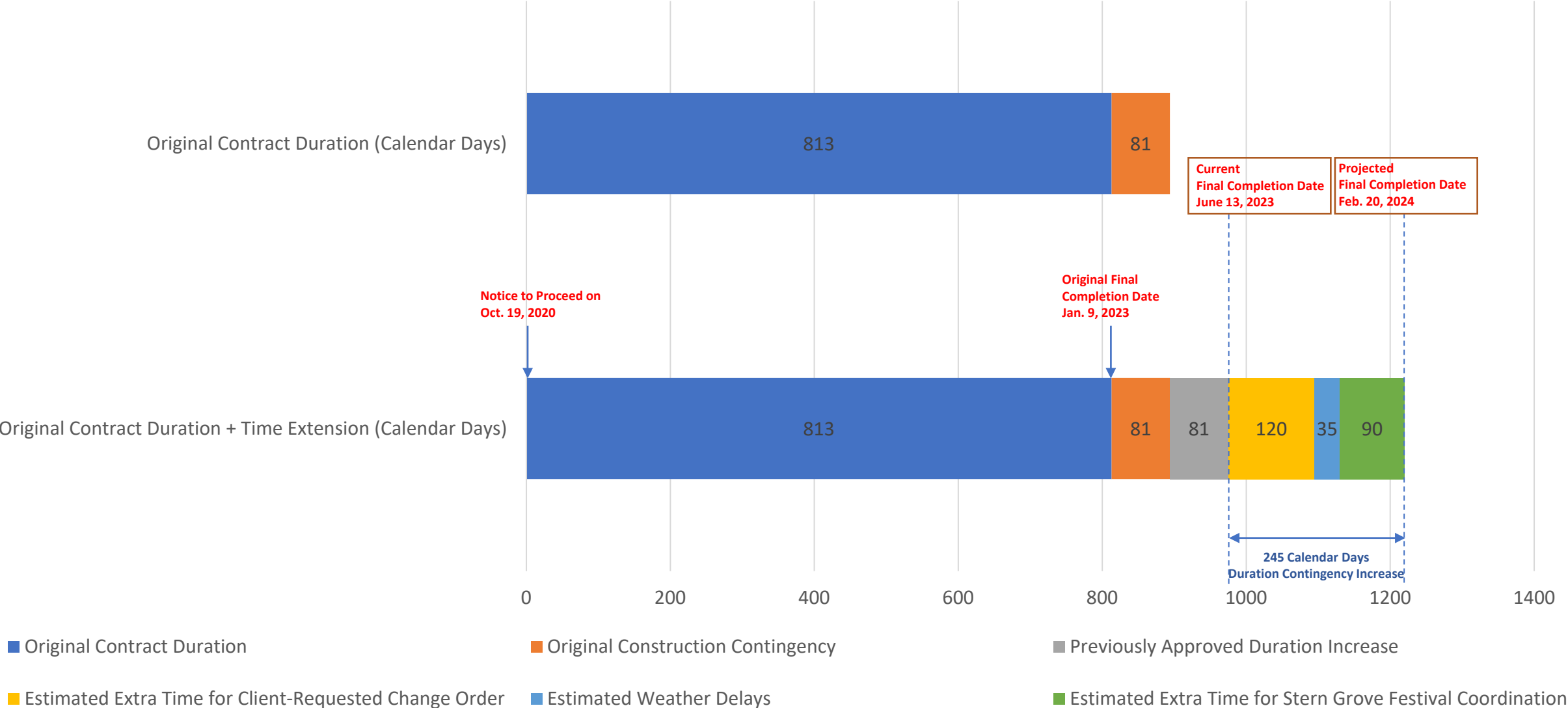
Projected Contract Cost Limit:
\$54,865,862.40

Reason for Modifications



- **Schedule and cost impacts due to SFPUC change orders on water pipeline material change**
 - New 36" water pipes at 19th Ave./Sloat Blvd. redesign for trenchless installation
 - Worldwide supply chain issues caused longer pipe fabrication time
- **Schedule impacts due to unexpected weather**
- **Schedule impacts due to Stern Grove Festival**
 - Festival: June 18 to Aug. 20
 - Rec & Park requests sidewalk widths to be maintained during festival
 - Restricted plaza access in May due to SFPUC's emergency slope repair project
 - Remaining work at Sloat Blvd./19th Ave. intersection to resume after festival

Contract Schedule with Time Extension



19th Avenue Combined City Project

Recommend Commission:

Approve a contract modification to increase the contract duration contingency by 245 calendar days and increase the contract cost contingency by \$4,572,155.20.

And Recommend Commission:

Authorize the Public Works Director to approve future contract modifications for a total contract duration of up to 1,220 consecutive calendar days and a total contract amount of up to \$54,865,862.40.

Amount:

\$45,721,552.00

Construction Duration:

813 consecutive calendar days

Contractor:

JMB Construction, Inc.

Reason:

Client-requested change orders, coordination with Stern Grove Festival, weather delays and supply-chain issues



QUESTIONS



SAN FRANCISCO PLANNING DEPARTMENT

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Suite 400
San Francisco,
CA 94103-2479

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ABBREVIATED CEQA CHECKLIST For Transit Effectiveness Project (TEP) Improvements Subsequent to Certification of the TEP EIR Planning Department Case Number: 2011.0558E

I. Project Information	
Agency (Project Sponsor):	SFMTA Date: May 29, 2015
Primary Project Contact:	Sean Kennedy, 1 South Van Ness Avenue, 7 th Floor, SF sean.kennedy@sfmta.com, 415-701-4717
Secondary Contact (responsible for TEP Abbreviated CEQA Checklist completion): (SFMTA Staff name, phone, email, address)	Dustin White, 415-701-4603, dustin.white@sfmta.com
Project Name and Identifier from the TEP EIR (i.e. OWE.6, TTRP.M, or Service Improvement 35 Eureka):	TTRP.28_1 - 19 th Avenue Corridor <input type="checkbox"/> Service Improvement or Service Variant <input type="checkbox"/> Service-related Capital Improvement <input checked="" type="checkbox"/> TTRP or TTRP Variant
Is this a Modification of a Project Covered at a Project level in TEP EIR?	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N
Has this project received subsequent environmental review since EIR certification? If yes, provide date(s), document types, and specify segment based on prior submittals.	<input type="checkbox"/> Y <input checked="" type="checkbox"/> N If yes: Date/ Document type: Segment:
For Project-level TTRPs, identify if proposed project is closer to the Moderate or Expanded Alternative.	<input type="checkbox"/> Moderate <input checked="" type="checkbox"/> Expanded <input type="checkbox"/> Not Applicable
Project Location, specify limits especially if only one segment of the corridor is proposed for modification [i.e. For TTRPs, identify TTRP Corridor, the primary streets, inbound/outbound, segment limit. For Service-related Capital Improvements, identify the Route/Line and project limits. For Service Improvements, identify Route/Line and inbound/outbound, and general limits for proposed changes.]	19 th Avenue between Lincoln Way and Junipero Serra Boulevard; the inbound direction is north towards Golden Gate Park, and the outbound direction is south towards the Daly City BART station.
Timeline for construction/ implementation	Fall 2016 through Spring 2018
Project Approval(s) [List all – include others besides SFMTA Board]	Please see Attachment 1. Required permits and approvals needed for the coordinated 19 th Avenue Projects. Hearing at SFMTA Board on June 2, 2015.
Other Anticipated Hearing Date(s) (Engineering Public Hearing; ISCOFF etc.)	The San Francisco Transportation Advisory Staff Committee reviewed this project on March 26, 2015. SFMTA held and public hearing on April 17, 2015 to solicit input on this project.

II. PURPOSE

On March 27, 2014, the San Francisco Planning Commission certified a Final Environmental Impact Report for the Transit Effectiveness Project (TEP EIR). This Program and Project EIR analyzed the impacts of all components of the TEP comprised of a Service Policy Framework, Service Improvements and Service Variants, Service-related Capital Improvements, and Travel Time Reduction Proposals (TTRP) for the .City of San Francisco's (San Francisco) Rapid Network within the transit system.

The EIR prepared for the TEP was both a Program EIR and Project EIR. This written checklist, pursuant to CEQA Guidelines Section 15168(c), Use With Later Activities, serves to evaluate whether the environmental effects of the proposed project based on a review of the site(s) and the activity or activities proposed now were covered in the TEP EIR. This checklist will be utilized to ascertain whether the impacts of TEP proposals identified at a conceptual level in the EIR (program level) and/or modifications to project-level components were sufficiently addressed in the TEP EIR. Based on a review of the project described herein and Section 15162(a), the San Francisco Planning Department, as the lead agency for CEQA, would assess whether the activity or activities is/are within the scope of the project covered by the Transit Effectiveness Project EIR (TEP EIR), a Program and Project EIR, such that project approval(s) may be considered by the City of San Francisco (San Francisco).

III. TEP EIR Project Characteristics

The TEP EIR contains a full description of all project components beginning on p. 2-1. The TEP project overview is provided on pp. 2-7 to 2-15. Specific details for the project components including the Service Policy Framework, the Service Improvements and Service Variants, the Service-related Capital Improvements, and the Travel Time Reduction Proposals (TTRPs) are provided on the following TEP EIR pages, respectively. Please use these TEP EIR references to provide a narrative project description that presents the current proposal in the context of what was analyzed in the TEP EIR.

Program level:

- Service Policy Framework is described on TEP EIR pp. 2-19 to 2-23.
- Program-level Service-related Capital Improvement Projects are described on TEP EIR pp. 2-11 and 2-23 and in Figure 2 on TEP EIR p. 2-12.
- TPS Toolkit Categories and Elements as applied to the Muni Rapid Corridors are listed in Table 3 on TEP EIR p. 2-14. The complete project description and figures illustrating each TPS Toolkit element are found on TEP EIR pp. 2-23 to 2-51.
- Program level TTRPs are described in Table 4 on TEP EIR pp. 2-17 to 2-18. In addition, these program level TTRP corridors are described on p. 2-51, and pp. 2-54 to 2-56. Specifically on the following TEP EIR pages:

Program TTRP Corridor: TEP EIR Page References	Program TTRP Corridor: TEP EIR Page References
TTRP.K: pp. 2-55 to 2-56	TTRP.22_2: p. 2-54
TTRP.M: p. 2-56	TTRP.28_2: p. 2-55
TTRP.1: p. 2-54	TTRP.30_2: p. 2-55

Project level:

- Service Improvements and Service Variants are described on TEP EIR pp. 2-57 to 2-102, including Tables 6, 7, and 8. In addition, the Service Improvements and Service Variants are illustrated on the route maps provided in Appendix 2 to the TEP EIR.
- Project-level Service-related Capital Improvement Projects are described on TEP EIR pp. 2-102 to 2-110 and the locations are shown on Figure 2 on TEP EIR p. 2-12.
- Project-level TTRPs are described in Table 4 on TEP EIR pp. 2-17 to 2-18. In addition, a Moderate and an Expanded Alternative for the project-level TTRP corridors are described on TEP EIR pp. 2-110 to 2-162 and illustrated with graphics as appropriate. TEP EIR pages references for the individual corridors are as follows:

Project TTRP Corridor: TEP EIR Page References	Project TTRP Corridor: TEP EIR Page References	Project TTRP Corridor: TEP EIR Page References	Project TTRP Corridor: TEP EIR Page References
TTRP.J: pp. 2-212 to 2-118	TTRP.5: p. 2-121 to 128	TTRP.14: p. 2-2-135 to 2-147	TTRP.30_1: p. 2-156 to 2-160
TTRP.L: pp. 2-117 to 2-118h	TTRP.8X: p. 2-126 to 135	TTRP.22_1: p. 2-144 to 153	TTRP.71: p. 2-159 to 2-160e
TTRP.N : pp. 2-117 to 2-122	TTRP.9: p. 2-135 to 2-135i	TTRP.28_1: p. 2-152 to 2-156	

Provide a complete Narrative Project Description, including TPS Toolkit Element dimensions, if applicable, and a comparison of the modified project with the applicable TEP EIR project description. If the current project is a TTRP project, please use the template provided by EP, organize project changes by TPS Toolkit Category, and note whether or not overall the current project is closer to the Moderate or to the Expanded Alternative. Please also include any elements (curb color, parking spaces, etc.) that will be specifically described in the SFMTA Board packet for the approval hearing.

See Attached Project Description, Attachment 2.

IV. Project Screening - Topic Areas Addressed in the TEP EIR [Parts A (Transportation), B (Noise) and C (Air Quality)]

IV.A. Transportation and Circulation

Instructions – Review the analysis sections cited below for the TEP component being reviewed. For example, a change to the project design for TTRP.5 requires review of the Project level TTRPs. In addition, should the proposed project introduce a TPS Toolkit Element not previously analyzed for the TTRP.5, review of the analysis for the TPS Toolkit Category/Element may be beneficial.

IV.A.1. Transit

Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Cumulative Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner and to highlight potentially applicable mitigation measures
Service Improvements and/or Service Variants	Impact TR-18: pp. 4.2-121 to 4.2-141 (LTS Impact).	N/A	Impact C-TR-1: pp. 4.2-267 to 4.2-271. (S/U cumulative impact on the Mission Corridor) Impact C-TR-4: pp. 4.2-276 to 4.2-278. (LTS impact on regional transit.)	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Mitigation measure C-M-TR-1: SFMTA Monitoring of Muni Service is applicable to the cumulative transit Impact C-TR-1 for the Service Improvements and Service Variants.

Service-related Capital Improvements	Impact TR-19: pp. 4.2-163 to 4.2-164. (LTS impact)	Impact TR-12: pp. 4.2-97 to 4.2-98 (LTS impact).	N/A	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Travel Time Reduction Proposals (TTRPs)	<p>Moderate TTRP Alternatives TTRP.J, L, N, 5, 8X, 9, 14, 22_1, 28_1, 30_1, or 71: Impact TR-20: pp. 4.2-169 to 4.2-174 plus Tables 12 and 13 on pp. 4.2-122 to 4.2-135, (LTS Impact); and</p> <p>Expanded TTRP Alternatives TTRP.J, L, N, 5, 8X, 9, 14, 22_1, 28_1, 30_1, or 71: Impact TR-21: pp. 4.2-174 to 4.2-177 plus Tables 12 and 13 on pp. 4.2-122 to 4.2-135, and Tables 14 and 15 on pp. 4.2-172 to 4.2-173 (LTS Impact).</p>	All TPS Toolkit categories implemented along the program level TTRPs: Impact TR-13: pp. 4.2-103 to 4.2-105 (LTS impact).	<p>Moderate Alternative Impact C-TR-2: pp. 4.2-272 to 4.2-273 plus Tables 20 and 21 on pp. 4.2-268 to 4.2-269. (S/U cumulative impact on the Fulton/Hayes & Mission corridors)</p> <p>Impact C-TR-5: p. 4.2-278, (LTS impact)</p> <p>Expanded Alternative Impact C-TR-3: pp. 4.2-273 to 4.2-276 plus Tables 20 and 21 on pp. 4.2-268 to 4.2-269. (S/U cumulative impact on the Fulton/Hayes & Mission corridors)</p> <p>Impact C-TR-6: p. 4.2-278, (LTS impact)</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		Mitigation measure C-M-TR-1: SFMTA Monitoring of Muni Service is applicable to the cumulative transit Impact C-TR-2 for the Moderate Alternative; and Impact C-TR-3 for the Expanded Alternative.
TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors	N/A	All TPS Toolkit categories: Impact TR-7: pp. 4.2-81 to 4.2-83 (LTS impact)	Moderate Alternative Impact C-TR-2: pp. 4.2-272 to 4.2-273 plus Tables 20 and 21 on pp. 4.2-268 to 4.2-	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Mitigation measure C-M-TR-1: SFMTA Monitoring of Muni Service is applicable to the cumulative transit

			<p>269. (S/U cumulative impact)</p> <p>Impact C-TR-5: p. 4.2-278, (LTS impact).</p> <p>Expanded Alternative</p> <p>Impact C-TR-3: pp. 4.2-273 to 4.2-276 plus Tables 20 and 21 on pp. 4.2-268 to 4.2-269 (S/U cumulative impact on the Fulton/Hayes & Mission corridors)</p> <p>Impact C-TR-6: p. 4.2-278, (LTS impact).</p>			<p>Impact C-TR-2 for the Moderate Alternative; and Impact C-TR-3 for the Expanded Alternative.</p>
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Section Instructions:

For Service Improvements or Service Variant, complete questions 1, 2, and 3. Question 4 is not applicable (N/A).

For TTRPs or their variants, please complete question 4. Other questions are not applicable (N/A). Note that if stop consolidation or stop optimization are not part of the project modification, then question 4 is not applicable to the project change.

The only relevant question for the Service-related Capital Improvements is most likely question 4, but it depends on project description.

Consult EP if uncertain.

1. Would the proposed project result in an increase in transit service hours greater than the 12 percent annual increase in service hours analyzed in the TEP EIR? [Note: This question only applies to changes resulting from Service Improvements and Service Variants]
Y ___ N ___ N/A X___

If yes, please consult EP.

2. Would the proposed project remove transit service from a street or street segment(s) not analyzed in the TEP EIR?
Y ___ N ___ N/A X___ If so, provide information regarding the closest alternate transit service to this existing service.

3. Would the proposed project add transit service to a street or street segment(s) not analyzed in the TEP EIR?

Y ___ N ___ N/A X If so, specify route and/or line number(s), identify street segment(s), and provide peak period and midday frequencies. _____

For service added to new streets or street segments, please confirm that new transit stop locations meet the Stop Spacing Guidelines. Y ___ or N ___ N/A ___

If No, then provide additional information regarding the deviation from the Stop Spacing Guidelines.

4. If the proposed project or project modification includes the removal or consolidation of transit stops, or the optimization of transit stops (nearside or farside), do those changes meet the current Stop Spacing Guidelines? Y X or N _____. If No, then please provide additional information regarding the deviation from the Stop Spacing Guidelines.

Continued on the next page.

IV.A.2. Traffic Operations [Refer to Attachment(s) to this TEP Abbreviated Checklist if supplemental intersection analysis is required.]

Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Cumulative Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner
Service Improvements and/or Service Variants	Impact TR-18: pp. 4.2-142 to 4.2-154 (LTS impact).	N/A	Impact C-TR-11: 4.2-282 to 4.2-291 (LTS impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Service-related Capital Improvements	Impact TR-19: pp. 4.2-164 to 4.2-165 (LTS impact).	Impact TR-12: pp. 4.2-98 to 4.2-99 (LTS impact).	<i>[Note this component is assumed in cumulative for both alts under TTRPs below. Therefore, there are no separate impact statements]</i>	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
PROGRAM LEVEL - Travel Time Reduction Proposals (TTRPs)	N/A	Lane Modifications and Pedestrian Improvements Impact TR-14: pp. 4.2-110 to 4.2-112 (S/U with mitigation). Intersections with potential SU Impacts by	See below for Cumulative plus Moderate and Cumulative plus Expanded Alternatives with other TEP project components.	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Mitigation Measure M-TR-8 Optimization of Intersection Operations is applicable to Impact TR-14 for the following program level corridors: TTRP.1, TTRP.22_2, and TTRP.K unless the project-level analysis demonstrates that there would be no significant

		<p>TTRP Corridor:</p> <p>TTRP.1: California/Arguello, California/Park Presidio, California/Cherry, California/Locust, California/Presidio, and California/Divisadero</p> <p>TTRP.9: Potrero/Division, Potrero/16th, Potrero/17th, Potrero/21st, Potrero/23rd, Potrero/24th, Potrero/25th, Jerrold/Bayshore/U.S. 101 Northbound On- ramp, Bayshore/Oakdale, Bayshore/Industrial, and Bayshore/Silver</p> <p>TTRP.22_2: Fillmore/Lombard</p> <p>TTRP.71: Haight/Masonic, Stanyan/Haight, Stanyan/Frederick</p> <p>TTRP.K: Ocean/Junipero Serra, Ocean/Geneva/Phelan, Ocean/Lee, Ocean/Miramar, Ocean/Brighton</p> <p>TTRP.L: Taraval/19th, Taraval/Sunset and</p>				<p>traffic impacts as a result of the corridor proposals.</p>
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		<p>Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes</p> <p>Impact TR-15: pp. 4.2-112 to 4.2-114 (LTS impact).</p>				
<p>PROJECT LEVEL – Travel Time Reduction Proposals (TTRPs) – Moderate Alternative</p>	<p>Moderate</p> <p>TTRP.J, L, N, 5, 8X, 9, 14, 22_1, 28_1, 30_1, or 71:</p> <p>Impact TR-22, pp. 4.2-179 to 4.2-189 (LTS impact).</p>	N/A	<p>Service Policy Framework, TPS Toolkit, Program level TTRPs and Moderate Alternative TTRPs:</p> <p>Impact C-TR-7: pp. 4.2-278 to 4.2-280 (SU with Mitigation).</p> <p>Intersections with potential SU Impacts by TTRP Corridor:</p> <p>TTRP.1: California/Arguello, California/Park Presidio, California/Cherry, California/Locust, California/Presidio, and California/Divisadero</p> <p>TTRP.9: Potrero/Division, Potrero/16th, Potrero/17th, Potrero/21st, Potrero/23rd, Potrero/24th, Potrero/25th,</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input checked="" type="checkbox"/> N/A</p>		<p>Mitigation Measure M-TR-8 Optimization of Intersection Operations is applicable to the following program level corridors: TTRP.1, TTRP.22_2, and TTRP.K for Impact C-TR-7 for Moderate Alternative unless the project-level analysis demonstrates that there would be no significant traffic impacts as a result of the corridor proposals.</p>

			<p>Jerrold/Bayshore/U.S. 101 Northbound On-ramp, Bayshore/Oakdale, Bayshore/Industrial, and Bayshore/Silver</p> <p>TTRP.22_2: Fillmore/Lombard</p> <p>TTRP.71: Haight/Masonic, Stanyan/Haight, Stanyan/Frederick</p> <p>TTRP.K: Ocean/Junipero Serra, Ocean/Geneva/Phelan, Ocean/Lee, Ocean/Miramar, Ocean/Brighton</p> <p>TTRP.L: Taraval/19th, Taraval/Sunset</p> <p>Impact C-TR-8: p. 4.2-280 (LTS impact); Impact C-TR-12: pp. 4.2-291 to 4.2-292 (LTS impact)</p> <p>The above references are also in conjunction with 2035 Cumulative LOS as described in Tables 24 and 25 on pp. 4.2-283 to 4.2-289.</p>			
<p>Travel Time Reduction Proposals (TTRPs) – Expanded Alternative</p>	<p>Expanded Alternative: TTRP.J, L, N, 5, 8X, 9, 28_1, or 71: Impact TR-23 pp.</p>	N/A	<p>Service Policy Framework, TPS Toolkit, Program level TTRPs and Expanded</p>	<p><input checked="" type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input type="checkbox"/> N/A</p>		<p>M-TR-8: Optimization of Intersection Operations is applicable to the following program level corridors: TTRP.1, TTRP.22_2, and TTRP.K for Impact C-TR-9 for</p>

	<p>4.2-189 to 4.2-191 (LTS impact).</p> <p>TTRP.14 Impact TR-24, pp. 4.20191 to 4.2-192 (S/U impact at Randall/San Jose Ave); and Impact TR-25, pp. 4.2-192 to 4.2-193 (LTS impact);</p> <p>TTRP.22_1 and Variants 1 and 2, pp. 4.2-193 to 4.2-201: Impacts TR-26, TR-30, and TR-34 – (S/U with mitigation) at 16th/Bryant; Impacts TR-27, TR-31, and TR-35 – (S/U impact) at 16th/Potrero; Impacts TR-28, TR-32, and TR-36 – (S/U impact) at 7th/Bryant ; Impacts TR-29, TR-33, and TR-37 – (LTS impact).</p> <p>TTRP.30_1 and Variants 1 and 2, pp. 4.2-201 to 4.2-</p>		<p>Alternative TTRPs: Impact C-TR-9: pp. 4.2-280 to 4.2-281 (SU with mitigation); Intersections with potential SU Impacts by TTRP Corridor:</p> <p>TTRP.1: California/Arguello, California/Park Presidio, California/Cherry, California/Locust, California/Presidio, and California/Divisadero</p> <p>TTRP.9: Potrero/Division, Potrero/16th, Potrero/17th, Potrero/21st, Potrero/23rd, Potrero/24th, Potrero/25th, Jerrold/Bayshore/U.S. 101 Northbound On-ramp, Bayshore/Oakdale, Bayshore/Industrial, and Bayshore/Silver</p> <p>TTRP.22_2: Fillmore/Lombard</p> <p>TTRP.71: Haight/Masonic, Stanyan/Haight, Stanyan/Frederick</p> <p>TTRP.K: Ocean/Junipero Serra, Ocean/Geneva/Phelan, Ocean/Lee, Ocean/Miramar,</p>			<p>Expanded Alternative unless the project-level analysis demonstrates that there would be no significant traffic impacts as a result of the corridor proposals.</p> <p>Expanded TTRP.22_1 and Variants 1 and 2 For Impacts TR-26, TR-30, and TR-34 as well as for C-TR-20, C-TR-21 and C-TR-22 at 16th and Bryant, mitigation measure M-TR-26: Intersection Restriping at 16th/Bryant Streets is applicable. There is no feasible mitigation for Impacts TR-27, TR-31, and TR-35 at 16th St/Potrero and Impacts TR-28, TR-32, and TR-36 16th/7th Streets.</p> <p>Expanded TTRP.30_1 and Variants 1 and 2 There is no feasible mitigation for Impacts TR-38, TR-40, TR-42, C-TR-35, C-TR-36, and C-TR-37 at Columbus/Green/Stockton.</p> <p>No Feasible mitigation measures existing for the cumulative traffic impacts identified for TTRP.J: Impact C-TR-13 Market/Church and 14th TTRP.5: Impact C-TR-14, Fulton</p>
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	<p>204: Impacts TR-38, TR-40, TR-42, (SU Impact at Columbus/Green/Stockton); and Impacts TR-39, TR-41, TR-43 (LTS impact).</p>		<p>Ocean/Brighton TTRP.L: Taraval/19th, Taraval/Sunset Impact C-TR-10: p. 4.2-282 (LTS Impact); Impact C-TR-13 to Impact C-TR-37, pp. 4.2-292 to 4.2-297 (SU Impact and SU with Mitigation). Intersections with potential SU Impacts by TTRP Corridor: TTRP.J: Impact C-TR-13 Market/Church and 14th TTRP.5: Impact C-TR-14, Fulton Street/Masonic Avenue TTRP.8X: Impact C-TR-15, Geneva Avenue/Carter Street Impact C-TR-16, Geneva Avenue/Moscow Street TTRP.14: Impact C-TR-17, Randall Street/San Jose Avenue; Impact C-TR-18, Mission/Fifth Streets; and Impact C-TR-19, Mission/16th Streets; TTRP.22_1: Impact C-TR-20, 16th/Bryant Streets; TTRP.22_1 Variant 1 Impact C-TR-21, 16th/Bryant Streets TTRP.22_1 Variant 2</p>			<p>Street/Masonic Avenue TTRP.8X: Impact C-TR-15, Geneva Avenue/Carter Street Impact C-TR-16, Geneva Avenue/Moscow Street TTRP.14: Impact C-TR-17, Randall Street/San Jose Avenue; Impact C-TR-18, Mission/Fifth Streets; and Impact C-TR-19, Mission/16th Streets; TTRP.22_1 and Variants 1 and 2: Impact C-TR-23, C-TR-24, and C-TR-25 at 16th/Potrero Streets; TTRP.22_1 and Variants 1 and 2: Impact C-TR-26, C-TR-27, and C-TR-28 at 16th/Owens Streets; TTRP.22_1 and Variants 1 and 2: Impact C-TR-29, C-TR-30, and C-TR-31 at 16th/4th Streets; TTRP.22_1 and Variants 1 and 2: Impact C-TR-32, C-TR-33, and C-TR-34 at 16th/7th Streets.</p>
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			<p>Impact C-TR-22, 16th/Bryant Streets.</p> <p>TTRP.22_1: Impact C-TR-23, 16th/Potrero Streets;</p> <p>TTRP.22_1 Variant 1 Impact C-TR-24, 16th/Potrero Streets</p> <p>TTRP.22_1 Variant 2 Impact C-TR-25, 16th/Potrero Streets.</p> <p>TTRP.22_1: Impact C-TR-26, 16th/Owens Streets;</p> <p>TTRP.22_1 Variant 1 Impact C-TR-27, 16th/Owens Streets</p> <p>TTRP.22_1 Variant 2 Impact C-TR-28, 16th/Owens Streets.</p> <p>TTRP.22_1: Impact C-TR-29, 16th/4th Streets;</p> <p>TTRP.22_1 Variant 1 Impact C-TR-30, 16th/4th Streets TTRP.22_1 Variant 2 Impact C-TR-31, 16th/4th Streets.</p> <p>TTRP.22_1: Impact C-TR-32, 16th/7th Streets;</p> <p>TTRP.22_1 Variant 1 Impact C-TR-33, 16th/7th Streets TTRP.22_1 Variant 2 Impact C-TR-34, 16th/7th Streets.</p> <p>TTRP.30_1: Impact C-TR-35, Columbus/Green/Stockton</p> <p>TTRP.30_1 Variant 1 Impact C-TR-36,</p>			
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			<p>Columbus/Green/Stockton TTRP.30_1 Variant 2 Impact C-TR-37, Columbus/Green/Stockton.</p> <p>Impact C-TR-38 on pp.4.2-297 to 4.2-298 (LTS Impact). Impact C-TR-39, p. 4.2-298 (LTS Impact). The above references are also in conjunction with 2035 Cumulative LOS as described in Tables 24 and 25 on pp. 4.2-283 to 4.2-289.</p>			
<p>TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors</p>	N/A	<p>Lane Modifications and Pedestrian Improvements Impact TR-8: pp. 4.2-91 to 4.2-93 (SU with Mitigation); and</p> <p>Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes Impact TR-9: pp. 4.2-93 to 4.2-95 (LTS Impact).</p>	<p>See above for Cumulative plus Moderate and Cumulative plus Expanded Alternatives with other TEP project components.</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input checked="" type="checkbox"/> N/A</p>		<p>Mitigation measure M-TR-8 Optimization of Intersection operations is applicable for Impact TR-8 when implementing Lane Modifications and Pedestrian Improvements, should project level analysis show significant traffic impacts.</p>

Section Instructions:

For Service Improvements or Service Variant, the questions in this section are likely not applicable (N/A).

For TTRPs or their variants, please complete questions 5, 6, 7, and 8.

Most likely the questions below are not applicable to the Service-related Capital Improvements, but it depends on the project description.

Consult EP if uncertain.

5. Would the proposed changes result in intersection operation(s) different than was (were) analyzed in the TEP EIR? Y or N ___
N/A ___

For example, the removal of a travel lane or turn pocket, or introduction of turn restrictions, not analyzed in the TEP EIR that would alter the intersection operation by reducing or changing the capacity of an approach.

6. If the answer to item 5 is yes, was/were the affected intersection(s) analyzed in the TEP EIR? Y N ___ N/A ___

If Yes, consult EP regarding whether or not the intersection analysis needs to be updated. If No, please provide information regarding the analysis prepared for nearby intersections that were analyzed in the TEP EIR, or for intersections that would have similar configuration.

See attached supplemental analysis (Attachment 3) for the changes proposed at 19th Avenue and Ocean, Winston and Holloway.

Consult with EP for confirmation regarding the Synchro analysis for intersection LOS to be updated/provided. Completed.

7. For installation of Traffic Signals at Uncontrolled and Two-way Stop-controlled Intersections not analyzed in the TEP EIR; and Traffic Signals at All-way Stop-controlled Intersection, would the traffic volumes at the changed intersection(s) meet the criteria for a peak hour traffic signal warrant? Y ___ N ___ N/A

If Yes, provide analysis. _____

8. For installation of Traffic Calming Measures at intersections with All-way Stop-controls, does implementation involve constructing a traffic circle? Y ___ N ___ N/A

If Yes, does the proposed traffic circle meet the SFPW design specifications for this feature? Y ___ N ___

If No, specify the Traffic Calming Measures to be implemented. Please describe the type and location.

IV.A.3. Pedestrian and Bicycles						
Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Cumulative Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner.
Service Improvements and/or Service Variants	Impact TR-18: Pedestrians and Bicycles, pp. 4.2-154 to 4.2-162 (LTS Impact).	N/A	<p>Impact C-TR-40: Pedestrians, 4.2-298 to 4.2-300; Bicycles, 4.2-300 to 4.2-302 (LTS Impact).</p> <p>Service Improvements plus Moderate TTRPs</p> <p>Impact C-TR-41: Pedestrians, 4.2-302 to 4.2-303; Bicycles, 4.2-304 to 4.2-305 (LTS Impact)..</p> <p>Service Improvements plus Expanded TTRPs</p> <p>Impact C-TR-42: Pedestrians, 4.2-305 to 4.2-306; Bicycles, 4.2-306 to 4.2-307 (LTS Impact).</p>	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		

<p>Service-related Capital Improvements</p>	<p>Impact TR-19: Pedestrians, pp. 4.2-165 to 4.2-166, and Bicycles, pp. 4.2-166 to 4.2-167 (LTS Impact).</p>	<p>Impact TR-12: Pedestrians, p. 4.2-99, and Bicycles, pp. 4.2-99 to 4.2-100.</p>	<p>Service Improvements plus Moderate TTRPs Impact C-TR-41: Pedestrians, 4.2-302 to 4.2-303; Bicycles, 4.2-304 to 4.2-305 (LTS Impact).</p> <p>Service Improvements plus Expanded TTRPs Impact C-TR-42: Pedestrians, 4.2-305 to 4.2-306; Bicycles, 4.2-306 to 4.2-307 (LTS Impact).</p>	<p><input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A</p>		
<p>Travel Time Reduction Proposals (TTRPs)</p>	<p>All TTRP Moderate Alternatives: Impact TR-44, Pedestrians and Bicycles, pp. 4.2-205 to 4.2-213 (LTS Impact). All TTRP Expanded Alternatives: Impact TR-45, Pedestrians and Bicycles, pp. 4.2-213 to 4.2-225 (LTS Impact).</p>	<p>All TPS Toolkit Categories on the Rapid Network Impact TR-13: Pedestrians, pp. 4.2-105 to 4.2-107; and Bicycles, pp. 4.2-107 to 4.2-108 (LTS Impact).</p>	<p>Service Improvements plus Moderate TTRPs Impact C-TR-41: Pedestrians, 4.2-302 to 4.2-303; Bicycles, 4.2-304 to 4.2-305 (LTS Impact). Service Improvements plus Expanded TTRPs Impact C-TR-42: Pedestrians, 4.2-305 to 4.2-306; Bicycles, 4.2-306 to 4.2-307 (LTS Impact).</p>	<p><input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A</p>		

TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors	N/A	All TPS Toolkit Categories Impact TR-7: Pedestrians, pp. 4.2-83 to 4.2-85, LTS; and Bicycles, pp. 4.2-85 to 4.2-87 (LTS Impact).	Impact C-TR-40: Pedestrians, 4.2-298 to 4.2-300; Bicycles, 4.2-300 to 4.2-302 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
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Section Instructions:

For Service Improvements or Service Variant, the questions in this section are likely not applicable (N/A).

For TTRPs or their variants, please complete questions 9 and 10, if applicable.

Most likely the questions below are not applicable to the Service-related Capital Improvements, but it depends on the project description.

Consult EP if uncertain.

9. Would the proposed project involve changes to signal phases and timing? Y ___ N X_. If yes, please describe and *confirm that these will changes meet the minimum crossing time requirements* in the CA MUTCD.

10. Would the project changes occur along a designated Bicycle Route? Y ___ N X_. If yes, list the bicycle route number and any existing facilities in the project area (bicycle lanes, bicycle racks, etc.).

Continued on the next page.

IV.A.4. Passenger and Commercial Loading						
Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Cumulative Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner.
Service Improvements and/or Service Variants	Impact TR-18: pp. 4.2-141 to 4.2-154 (LTS Impact).	N/A	Impact C-TR-46: pp. 4.2-309 to 4.2-310 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Service-related Capital Improvements	Impact TR-19: p. 4.2-167 (LTS Impact).	Impact TR-12: All loading, pp. 4.2-100 to 4.2-101 (LTS Impact).	Impact C-TR-46: pp. 4.2-309 to 4.2-310 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Travel Time Reduction Proposals (TTRPs)	Moderate Alternative: TTRP.J, L, N, 5, 8X, 9, 22_1, or 28_1, 71 Impact TR-46: Commercial Loading, pp. 4.2-225 to 4.2-227 (LTS Impact); and TTRP.14 and Variants 1 and 2 Impacts TR-48 and TR-49, pp. 4.2-230 to 4.2-	Transit Stop Changes, Lane Modifications, and Pedestrian Improvements Impact TR-16: Commercial loading, pp. 4.2-115 to 4.2-116 SU With Mitigation); and Traffic Signal and Stop Sign Changes	TTRP Moderate Alternative (J, L, N, 5, 8X, 9, 22_1, 28_1, and 71): Impact C-TR-47: p. 4.2-310 (LTS Impact) Moderate Alternative TTRP 14 and Variants and TTRP.30_1: Impact C-TR-44: pp.	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		Mitigation measure M-TR-10 Provision of Replacement Commercial Loading Facilities is applicable to Impacts TR-16, C-TR-43. M-TR-48 Enforcement of Parking Violations

	<p>233 (SU impact with mitigation on the Mission corridor);</p> <p>TTRP.30_1</p> <p>Impact TR-51, pp. 4.2-235 to 4.2-236 (SU impact with mitigation on the Stockton corridor);</p> <p>Expanded Alternative:</p> <p>TTRP.J, L, N, 5, 8X, 9, 22_1 and Variants 1 and 2, 28_1, or 71</p> <p>Impact TR-47, Commercial Loading, pp. 4.2-227 to 4.2-230 (LTS Impact);</p> <p>TTRP.14</p> <p>Impact TR-50, pp. 4.2-234 to 4.2-235 (SU impact with mitigation on the Mission Corridor);</p> <p>TTRP.30_1 and Variants 1 and 2</p> <p>Impacts TR-52 to TR-54, pp. 4.2-236 to 4.2-238 (SU impacts with mitigation on the Stockton corridor).</p>	<p>Impact TR-17: Loading, p. 4.2-116 (LTS Impact).</p>	<p>4.2-308 to 4.2-309 (SU with mitigation on the Mission and Stockton corridors);</p> <p>TTRP Expanded Alternative (J, L, N, 5, 8X, 9, 22_1, 28_1, and 71):</p> <p>Impact C-TR-48: pp. 4.2-310 to 4.2-311 (LTS Impact).</p> <p>Expanded Alternative TTRP.14 and TTRP.30_1 and Variants:</p> <p>Impact C-TR-45: p. 4.2-309 (SU impact with mitigation on the Mission and Stockton corridors);</p>			<p>Mitigation measure M-TR-48 is applicable to:</p> <p>Moderate and Expanded TTRP.14 and Variants for Impacts TR-48, TR-49, and TR-50;</p> <p>Moderate and Expanded TTRP.30_1 and Variants for impacts TR-51, TR-52, TR-53, and TR-54.</p>
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<p>TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors</p>	<p>N/A</p>	<p>All TPS Toolkit Categories Impact TR-7: Passenger loading, pp. 4.2-87 to 4.2-88 (LTS Impact); TPS Toolkit Categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements Impact TR-10: Commercial loading, pp. 4.2-95 to 4.2-96 (SU impact with mitigation); and TPS Toolkit Categories: Traffic Signal and Stop Sign Changes Impact TR-11: Commercial loading, pp. 4.2-96 to 4.2-97 (LTS Impact).</p>	<p>TPS Toolkit Categories: Transit Stop Changes, Lane Modifications, Parking and Turn restrictions, and Pedestrian Improvements along Program level TTRPs – Impact C-TR-43: pp. 4.2-307 to 4.2-308 (SU with mitigation). TPS Toolkit Categories: Traffic Signal and Stop Sign Changes Impact C-TR-46: Commercial loading, pp. 4.2-309 to 4.2-310 (LTS Impact).</p>	<p><input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A</p>		<p>For Impacts TR-10 and C-TR-43, mitigation measure M-TR-10 Provision of Replacement Commercial Loading Facilities is applicable when implementing TPS Toolkit categories - Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements, unless project-level analysis demonstrates no significant impact.</p>
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Continued on the next page.

Section Instructions:

For Service Improvements or Service Variant, the question in this section is likely not applicable (N/A).

For TTRPs or their variants, please complete question 11, if applicable.

The question below is not likely applicable to the Service-related Capital Improvements, but it depends on the project description. Complete this if any loading spaces are affected by the project change. Consult EP if uncertain.

11. Would the project remove or relocate any commercial loading spaces not analyzed in the TEP EIR? Y ___ or N X.

If yes, specify approximate number of commercial loading spaces removed, the approximate location(s), and occupancy, if known.

Please provide information regarding potential for relocation of the existing commercial loading space(s) proposed for removal within a reasonable distance (i.e. 250 feet of the existing commercial loading space location).

IV.A.5. Emergency Vehicle Access					
Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner.
Service Improvements and/or Service Variants	Impact TR-18: pp. 4.2-141 to 4.2-154 (LTS Impact).	N/A	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		

Service-related Capital Improvements	Impact TR-19: pp. 4.2-167 to 4.2-168 (LTS Impact).	Impact TR-12: p. 4.2-101 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Travel Time Reduction Proposals (TTRPs)	TTRP Moderate Alternative(All): Impact TR-55, pp. 4.2-238 to 4.2-240 (LTS Impact); and TTRP Expanded Alternative (All): Impact TR-56: pp. 4.2-240 to 4.2-241 (LTS Impact).	Impact TR-13: pp. 4.2-108 to 4.2-109 (LTS Impact).	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		
TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors	N/A	Impact TR-7: pp. 4.2-88 to 4.2-89 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		

As specified in the TEP EIR in the sections referenced provided above, the proposed project components would be designed to meet the SFPW and SFFD standards and/or the California Manual of Uniform Traffic Control Devices (CA MUTCD) specifications. In addition, the San Francisco Fire Department (SFFD) along with other city agencies participates in the review of changes to the public right-of-way through the Transportation Advisory Staff Committee (TASC), which would address any safety issues including emergency vehicle access related to project design.

Continued on the next page.

IV.A.6. Parking						
Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Cumulative Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided]	Are the potential impacts covered or disclosed in the TEP EIR?	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner
Service Improvements and/or Service Variants	Impact TR-18: pp. 4.2-141 to 4.2-154 (LTS Impact).	N/A	Impact C-TR-50: pp. 4.2-313 to 4.2-315 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Service-related Capital Improvements	Impact TR-19: p. 4.2-168 (LTS Impact).	Impact TR-12: p. 4.2-102 (LTS Impact).	Impact C-TR-50: pp. 4.2-313 to 4.2-315 (LTS Impact).	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		
Travel Time Reduction Proposals (TTRPs)	TTRP Moderate Alternative (All): Impact TR-57, pp. 4.2-242 to 4.2-254 (LTS impact); and TTRP Expanded Alternative (All): Impact TR-58: pp. 4.2-254 to 4.2-265	Impact TR-13: pp. 4.2-109 to 4.2-110 (LTS Impact).	TTRP Moderate Alternative (J, L, N, 5, 8X, 9, 22_1, 28_1, 30_1, and 71): Impact C-TR-51: pp. 4.2-315 to 4.2-316 (LTS impact) TTRP.14 Moderate	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		M-C-TR-49 Explore Implementation of Parking Management Strategies. Mitigation measure M-C-TR-49 is applicable to Moderate TTRP.14 Variants as well as Expanded TTRP.22 and Variants for cumulative parking impacts Impact C-TR-52 and Impact C-TR-54.

	(LTS impact).		<p>Alternative and Variants:</p> <p>Impact C-TR-52: pp. 4.2-316 to 4.2-319 (S/U impact on the 14 corridor)</p> <p>TTRP Expanded Alternative (J, L, N, 5, 8X, 9, 14, 28_1, 30_1, and 71):</p> <p>Impact C-TR-53: pp. 4.2-319 to 4.2-320 (LTS impact).</p> <p>TTRP.22_1 Expanded Alternative:</p> <p>Impact C-TR-54: pp. 4.2-320 to 4.2-322 (SU impact on the 22 corridor)</p>			
<p>TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors</p>	N/A	<p>TPS Toolkit Categories: Transit Stop Changes, Lane Modifications, Parking and Turn restrictions, Traffic Signal and Stop Sign Changes, and Pedestrian Improvements</p> <p>Impact TR-7: pp.</p>	<p>TPS Toolkit Categories: Lane Modifications, Parking and Turn Restrictions, Pedestrian Improvements along Program level TTRPs</p> <p>Impact C-TR-49: pp. 4.2-311 to 4.2-313 (SU with Mitigation).</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input checked="" type="checkbox"/> N/A</p>		<p>M-C-TR-49 Explore the implementation of Parking Management Strategies</p> <p>Mitigation measure M-C-TR-49 is applicable to implementation of TPS Toolkit Categories: Lane Modifications, Parking and Turn Restrictions, Pedestrian Improvements along Program level TTRPs for cumulative parking impacts, unless project level analysis demonstrates that there would be no significant parking impact.</p>

		4.2-89 to 4.2-91 (LTS Impact)	TPS Toolkit Categories: Transit Stop Changes, Traffic Signal and Stop Sign Changes, Pedestrian Improvements along Program level TTRPs Impact C-TR-50: pp. 4.2-313 to 4.2-315 (LTS Impact)			
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Section Instructions: This section should be completed for all project components. Confirm that there are no changes to parking removal numbers compared to what was analyzed in the TEP EIR.

12. Would the proposed project remove or restrict the use of parking spaces not previously analyzed in the TEP EIR? Y X or N ___

If yes, please provide the approximate number of parking spaces removed and the general location(s), and/ provide information regarding parking restrictions including the location and hours (i.e. change restriction to no parking between 7:00 am to 7:00 pm, etc.), as applicable. How would these numbers and/or times differ from the analysis in the TEP EIR for the affected area(s) [i.e. only for the area(s) where changes are being proposed.]?

The modified TTRP.28_1 Expanded Alternative would remove up to 55 parking spaces along the 19th Avenue corridor between Junipero Serra Boulevard and Lincoln Way. This would not be considered substantial in the context of this segment of 19th Avenue and would result in a less than significant parking impact. In addition, in conjunction with the Muni Forward (TEP) changes for the 28/28L 19th Avenue and 19th Avenue Limited, the SFMTA is proposing to implement additional part-time bus zones for the use by permitted employer commuter shuttles along this same segment of 19th Avenue as part of the SFMTA's Commuter Shuttle Program. These zones would be used from 6 am to 10 am in the southbound direction and between 4 pm and 7 pm in the northbound direction. At other times, the zones would be available for general parking. Implementation of these zones would result in the removal of an additional 15 parking spaces on a part-time basis. The loss of a total of 70 parking spaces along 19th Avenue between Junipero Serra Boulevard and Lincoln Way would not be considered substantial along a corridor of approximately 3.4 miles in length with available parking spaces located along adjacent side streets. Therefore, there would not be a significant cumulative parking impact as a result of these two projects. Therefore, parking impacts along 19th Avenue between Junipero Serra Boulevard and Lincoln Way would be less than significant at either a project or cumulative level.

IV.A.7. Transportation-related Construction					
Project component	Project-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Program-level Analysis [Please review the Impact discussion referenced below to respond to applicable questions; TEP EIR Page References provided.]	Are the potential impacts covered or disclosed in the TEP EIR? (Is there anything regarding the construction of this change that would differ from that anticipated for this proposal?)	If no, briefly describe how the potential impact(s) would differ.	Notes – To be used by the Environmental Planner
Service Improvements and/or Service Variants	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	N/A	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Improvement Measure I-TR-1 is applicable to any
Service-related Capital Improvements	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Improvement Measure I-TR-1 is applicable to any TEP construction.
Travel Time Reduction Proposals (TTRPs)	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A		Improvement Measure I-TR-1 is applicable to any TEP construction.
TPS Toolkit Categories and Elements on the Muni Rapid Network Corridors	N/A	Impact TR-1 – pp. 4.2-66 to 4.2-71 (LTS Impact)	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A		Improvement Measure I-TR-1 is applicable to any TEP construction.

Provide any additional information relevant for the environmental review.

In keeping with the City's Complete Streets Policy and in anticipation of the repaving of 19th Avenue from Junipero Serra Boulevard to Lincoln Way by the California Department of Transportation (CalTrans)¹, the San Francisco Municipal Transportation Agency (the SFMTA), San Francisco Public Works (Public Works), and the San Francisco Public Utilities Commission (SFPUC) are coordinating the timing of various infrastructure repair, maintenance and upgrade projects within the 19th Avenue right-of-way between Junipero Serra Boulevard and Lincoln Way and certain side streets such that construction-related disruption to the public would be minimized. The subject projects per responsible agencies include the following and a detailed project description for each project is attached as Attachment 4:

1. SFMTA: Transit effectiveness and pedestrian safety enhancements including
 - a. Bus and pedestrian bulb-outs,
 - b. Removal of channelizing islands and tightened corner radii, and
 - c. 19th Avenue northbound left-turn lane modification at Winston Drive,
 - d. Red zone (no parking) striping
2. SFPUC: Water distribution system replacement, new installation, and upgrades;
3. SFPUC: Wastewater system repair and replacement;
4. SFMTA: Rail replacement of the M-Ocean View tracks crossing 19th Avenue at Rossmoor Drive;
5. SFMTA: Modification of the crosswalk on 19th Avenue at Junipero Serra Boulevard;
6. SF Public Works: Signal modifications.

A discussion regarding the potential for cumulative impacts is provided as Attachment 5.

¹ The limits for the repaving of State Highway 1 by CalTrans extend from 19th Avenue at Junipero Serra Boulevard to Ruckman Avenue in the Presidio. However, the City is proposing infrastructure projects only for 19th Avenue between Junipero Serra Boulevard and Lincoln Way.

IV.B. Project Screening for Noise and Vibration

Noise and Vibration impacts as a result of the TEP are discussed on TEP EIR pp. 4.3-1 to 4.3-54. As described on p 4.3-1, the noise and vibration analysis provided in the TEP EIR addresses the effects from all of the TEP components (program level and project level), except for the E Line Independent Terminal (TTPI.3).

IV.B.1. Construction Noise and Vibration

Pursuant to the discussion on TEP EIR p. 4.3-26, construction directly associated with the Service Improvements and Service Variants would be limited to installation of curb ramps and striping for transit zones and/or parking. Therefore, construction noise and vibration as a result of the TEP would result from construction of the Service-related Capital Improvements, such as installation of overhead wires, and from construction of the TTRPs and TTRP Variants. ***This section is not applicable to Service Improvements and Service Variants.***

		(DO NOT FILL IN, THIS SECTION IS FOR EP PLANNER ASSESSMENT ONLY)
		EP Planner to confirm Yes or No with Applicable Comments
<p>IV.B.1.a. Construction noise is addressed under Impact NO-1 on TEP EIR pp. 4.3-25 to 4.3-32.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	N/A for Service Improvements or Service Variants
<p>IV.B.1.b. Construction vibration is addressed under Impact NO-2 on TEP EIR pp. 4.3-32 to 4.3-35.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	N/A for Service Improvements or Service Variants

IV.B.2. Operational Noise and Vibration

Pursuant to the discussion on TEP EIR p. 4.3-35, once the Service-related Capital Improvements and Transit Travel Time Reduction Proposals (TTRPs) have been constructed, there would be no operational noise or vibration impacts as a result of these components. The operational noise and vibration impacts of the TEP would result from the transit service provided by the Service Improvements and Service Variants. ***This section is not applicable to Service-related Capital Improvements or TTRPs.***

For Service Improvements or Service Variants, or modifications to same, please include proposed frequencies, if different from information in the TEP EIR. Attach a modified route map should changes in alignment be proposed.

<p>IV.B.2.a. Operational noise is addressed under Impact NO-3 on TEP EIR pp. 4.3-35 to 4.3-48.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	<p>If project is a Service Improvement or Service Variant and proposes a substantial increase in service frequency, then provide the ambient noise level for the affected area(s): _____</p>
<p>IV.B.2.b. Operational vibration is addressed under Impact NO-4 on TEP EIR pp. 4.3-48 to 4.3-51.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<input type="checkbox"/> Y <input type="checkbox"/> N <input checked="" type="checkbox"/> N/A	
<p>IV.B.2.c. Cumulative Noise and Vibration is addressed under Impact C-NO-1 on TEP EIR pp. 4.3-51 to 4.3-54.</p> <p>Potential Impacts are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	

IV.C. Project Screening for Air Quality

Air Quality impacts that would result from the TEP are discussed on TEP EIR pp. 4.4-1 to 4.4-55. As described on TEP EIR p 4.4-1 to 4.4-2, the air quality analysis provided in the TEP EIR addresses the effects from all of the TEP components (program level and project level), except for the E Line Independent Terminal (TTPI.3).

IV.C.1. Construction Air Quality Impacts

The TEP EIR construction air quality analysis identified two worst-case or maximum construction scenario(s). TEP Components that would include fewer construction activities within a two-block street segment would not exceed the construction air quality impacts identified in the TEP EIR for the maximum construction scenario(s), which were found to be less than significant. TEP EIR p. 4.4-38 describes that construction directly associated with the Service Improvements and Service Variants would be limited to installation of curb ramps and striping for transit zones and/or parking. Therefore, construction air quality impacts as a result of the TEP would result from construction of the Service-related Capital Improvements, such as installation of overhead wires, or from the implementation of TTRPs and TTRP Variants. ***This section (IV.C.1.) is not applicable to Service Improvements or Service Variants.***

For TTRPs, please identify the two-block segment proposed (or proposed for modification) with the greatest amount of construction. For Service-related Capital improvement projects, identify the construction activities. Generally describe the TPS Toolkit Elements including number of TPS Toolkit types (i.e. four pedestrian bulbs) as well as the approximate dimension for those elements that are within the identified two-block segment or

project area.

The two-block segment with the greatest amount of construction activity would be 19th Avenue between Holloway Avenue and Eucalyptus Drive. This segment would include the following construction activity. The modified TTRP.28_1 would remove existing channelizing islands that currently allow free right turns (corner radii would be tightened to maintain reasonable pedestrian crossing distances and discourage high-speed right-turning vehicles) at 19th Avenue and Winston Drive (northwest corner) as well as 19th Avenue and Holloway Avenue (northeast corner). At Holloway Avenue, a northbound/inbound 130-foot transit bulb would be constructed. At Eucalyptus Drive, 65-foot transit bulbs would be constructed on the farside of the intersection in both the northbound/inbound and southbound/outbound directions. The modified project would implement a 130-foot farside transit bulb in the southbound/outbound direction. At Winston Drive, the sidewalk along the west side of 19th Avenue would be widened from Winston Drive for a length of up to 230 feet north by narrowing the southbound right-turn lane. The existing sidewalk is 10 feet wide, and it would be widened by 3 to 5 feet resulting in an up to 15-foot wide sidewalk. In addition, pedestrian bulbs would be added at the following locations: nearside pedestrian bulb extending into Eucalyptus Drive on the northeast corner (5-foot long), a nearside pedestrian bulb extending into Eucalyptus Drive on the southwest corner (10-foot long), a farside pedestrian bulb extending into Holloway Avenue on the southeast corner (5-foot long), and a nearside pedestrian bulb extending into 19th Avenue on the southeast corner (10-foot long).

Compare the above information with the maximum construction scenarios in the EIR pp. 4.4-34 to 4.4-36a. Would the proposed project or proposed modification result in greater construction activity than the worst case scenarios in the EIR?

Y ___ N X If yes, then please attach a completed AQ Worksheet for evaluation.

		(DO NOT FILL IN, THIS SECTION IS FOR EP PLANNER ASSESSMENT ONLY)
		Confirm Yes or No with Applicable Comments
<p>IV.C.1.a. Construction criteria pollutant emissions impacts are addressed in Impact AQ-1 on TEP EIR pp. 4.4-38 to 4.4-41.</p> <p>Potential Impacts are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<p><input checked="" type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input type="checkbox"/> N/A</p>	
<p>IV.C.1.b. Construction health risks and hazard air quality impacts are addressed in Impact AQ-2 on TEP EIR pp. 4.4-41 to 4.4-43.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<p><input checked="" type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input type="checkbox"/> N/A</p>	

IV.C.2. Operational Air Quality Impacts. The TEP EIR operational air quality analysis identified that an increase in emissions would result from the Service Improvements (or Service Variants) because the number

of transit trips, including diesel motor coach trips within San Francisco, would increase as a consequence of the additional 380,000 yearly service hours. Implementation of the TEP proposals is expected to result in a travel mode shift to public transit as a result of providing a more efficient transit system, which would reduce emissions of criteria pollutants and ozone precursors from privately-owned vehicles. Implementation of some TPS Toolkit elements as part of the TTRPs, such as the introduction of new transit-only lanes, has the potential to result in an increase in non-transit vehicle congestion that could cause an increase in criteria pollutant and ozone precursor emissions due to longer idle times at intersections. **Sections IV.C.2.a. and IV.C.2.b. are not applicable to Service-related capital Improvements or TTRPs.**

<p>IV.C.2.a. Operational air quality impacts are addressed in Impact AQ-3 on TEP EIR pp. 4.4-43 to 4.4-47.</p> <p>Potential Impacts are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input checked="" type="checkbox"/> N/A</p>	
<p>IV.C.2.b. Operational health risks and hazard air quality impacts are addressed in Impact AQ-4 on TEP EIR pp. 4.4-47 to 4.4-49.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed.</p>	<p><input type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input checked="" type="checkbox"/> N/A</p>	
<p>IV.C.2.c. Compliance with 2010 Clean Air Plan is discussed in Impact AQ-5 on TEP EIR pp. 4.4-49 to 4.4-52.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed</p>	<p><input checked="" type="checkbox"/> Y</p> <p><input type="checkbox"/> N</p> <p><input type="checkbox"/> N/A</p>	

IV.C.3. Cumulative Air Quality Impacts

Please specify any known construction projects within the right-of-way in proximity to the proposed project or project modification. See attached discussion regarding cumulative impacts.(Attachment 5)

Specify other TTRP projects for which construction would be concurrent with the project or project modification:
In 2016, construction may be concurrent with TTRP.14 (Inner Mission) and TTRP.30 1. In 2017, construction may be concurrent with construction of TTRP.22 1 and TTRP.14 (downtown).

<p>IV.C.3.a. Cumulative Criteria Air Pollutant Air Quality impacts are addressed under Impact C-AQ-1 on TEP EIR p. 4.4-52.</p> <p>Potential Impacts for this proposal are</p>		<p>See also attached discussion.</p>
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<p>covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	
<p>IV.C.3.b. Cumulative health risks and hazard air quality impacts are addressed under Impact C-AQ-2 on TEP EIR pp. 4.4-52 to 4.4-52 to 4.4-55.</p> <p>Potential Impacts for this proposal are covered or disclosed in the TEP EIR?</p> <p>If yes, no further environmental analysis is needed</p>	<input checked="" type="checkbox"/> Y <input type="checkbox"/> N <input type="checkbox"/> N/A	<p>See also attached cumulative air quality discussion – Attachment 5.</p>

V- Project Screening – Topic Areas Addressed in the TEP Initial Study (TEP IS)		
<p>The TEP Initial Study was issued January 23, 2013 and is attached as Appendix 2 to the EIR.</p>		
<p>V.1. Less than Significant Impacts</p> <p>The TEP Initial Study (TEP IS) determined that the program-level and project-level TEP Components (all project components) would result in less than significant impacts with respect to the topics below as analyzed on the referenced TEP IS pages. Therefore, no mitigation is required for any of these topics.</p> <p>Land Use and Land Use Planning (TEP IS pp. 176 – 183), Aesthetics (TEP IS pp. 184 – 194), Population and Housing (TEP IS pp. 195 – 200), Greenhouse Gas Emissions (TEP IS pp. 237 – 256), Wind and Shadow (TEP IS pp. 260 – 266), Recreation (TEP IS pp. 257 – 260), Utilities and Service Systems (TEP IS pp. 266 – 276), Public Services (TEP IS pp. 276 – 284), Biological Resources (TEP IS pp. 284 – 291), Geology and Soils (TEP IS pp. 292 – 303), Hydrology and Water Quality (TEP IS pp. 303 – 320), Mineral and Energy Resources (TEP IS pp. 335 – 340), and Agricultural and Forest Resources (TEP IS pp. 341 – 343).</p> <p>Are the potential Impacts for the proposal TEP EIR disclosed in the TEP Initial Study?</p>	<p>Yes <u> X </u> No <u> </u></p>	

<p>If yes, no further environmental analysis is needed</p>		
<p>V.2. Less than Significant Impacts with Mitigation Incorporated.</p> <p>The TEP Initial Study (TEP IS) determined that the TEP Components (all project components) would result in less than significant impacts with mitigation implemented with respect to Cultural and Paleontological Resources (TEP IS pp. 201-230) and Hazards and Hazardous Materials (TEP IS pp. 321 – 334). These topics are addressed on the above referenced pages in the TEP Initial Study, Appendix 2 to the TEP EIR.</p> <p>Are the potential Impacts for the proposal disclosed in the TEP Initial Study?</p> <p>If yes, no further environmental analysis is needed</p> <p>Mitigation identified in the TEP IS would be applicable to this project component. Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p> <p>If yes, see Applicable Mitigation Measures Section VII. below.</p>	<p>Yes <input checked="" type="checkbox"/> No <input type="checkbox"/></p>	

13. Would the proposed project involve removal of streets trees or significant trees?
 Y N If yes, confirm that SFPW tree removal and replacement procedures and permitting requirements would be complied with. Y or N

14. What is the maximum depth of excavation for the proposed project or project modification – indicate feature requiring this depth? _____
Up to 3 feet of excavation for transit and pedestrian bulbs.

Continued on the next page.

VI. Project Screening – Identify known public projects within project vicinity (particularly within ROW). By completing this section, SFMTA is confirming that a search was conducted to identify such projects.

Project Name and Responsible Agency	Approximate location and Date of Implementation	Notes: EP Planner to evaluate if any additional analysis or documentation is needed based on the potential for combined or cumulative effects.
SFMTA SFPUC Public Works CalTrans	Crosswalk realignment at Junipero Serra Blvd; rail replacement at Rossmoor Drive, TTRP.L, TTRP.N; Commuter Shuttle Program Sewer and Water infrastructure Signals Repaving	

VII. Applicable Mitigation Measures and Improvement Measures identified in the TEP EIR and TEP IS.

Provide draft MMRP with mitigation measure text applicable to proposal for Environmental Planning review.

Mitigation or Improvement Measure [No. and Title – For details see the TEP MMRP.]	Applicable to the proposed project or project modification [Yes, if checked.]	Notes – For use by the Environmental Planner
Mitigation Measure M-CP-2a: Accidental Discovery of Archeological Resources	<input checked="" type="checkbox"/>	Applicable to all TEP construction activities.
Mitigation Measure M-CP-2b: Archaeological Monitoring	<input type="checkbox"/>	Once engineering design details for the identified projects (OWE.1, OWE.1 Variant, SCI.2, TTRP.9 and TTRP.22_2) and other projects in archaeologically sensitive areas , as identified by the Environmental Review Officer, are known, the project sponsor shall consult with the Planning Department archeologist regarding a determination of the specific aspects of these proposals that would require archeological

		monitoring.
Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery	<input checked="" type="checkbox"/>	Applicable to all TEP construction activities.
Mitigation Measure M-HZ-1: Hazardous Materials Soil Testing	<input checked="" type="checkbox"/>	Applicable to all TEP construction activities.
Mitigation Measure M-TR-8: Optimization of Intersection Operations	<input type="checkbox"/>	Applicable if the final design of program-level TTRPs includes TPS Toolkit Elements from the Lane Modifications and Pedestrian Improvements categories.
Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces	<input type="checkbox"/>	Applicable if the final design of program-level TTRPs or project modification would remove commercial loading spaces.
Mitigation Measure M-TR-26: Intersection Restriping at 16 th /Bryant streets	<input type="checkbox"/>	Applicable to TTRP.22_1
Mitigation Measure M-TR-48: Enforcement of Parking Violations	<input type="checkbox"/>	On streets where the implementation of TTRPs would result in a net reduction of on-street commercial loading spaces that results in a significant commercial loading impact.
Mitigation Measure M-C-TR-1: SFMTA Monitoring of Muni Service	<input type="checkbox"/>	Ongoing
Mitigation Measure M-C-TR-49: Explore the Implementation of Parking Management Strategies.	<input type="checkbox"/>	Ongoing, along the TTRP corridors where greater amount of parking is being removed and a significant cumulative parking impact is identified.
Improvement Measure I-TR-1: Construction Measures	<input checked="" type="checkbox"/>	Applicable to all TEP Construction activities.

Continued on the next page.

VIII. EVALUATION SUMMARY. This section is to be completed by an EP Planner.

Enclosed information and documentation:

- Existing and Proposed Graphics or Site Plan provided, if available, or upon request.
- Supplemental Transportation Analysis provided, if applicable, and reviewed by EP Planner.
For example, Synchro Results for Lane Reductions and certain Traffic Calming Elements (Attachment 3).
- Air Quality Worksheet, if applicable, and reviewed by EP Planner.
- Noise topic adequately addressed.
- Other, please specify. Project permits and approvals for the Coordinated 19th Avenue Projects (Attachment 1); project description (Attachment 2); project description of coordinated 19th Avenue Projects (Attachment 4); cumulative analysis for City projects being coordinated for 19th Avenue between Junipero Serra Boulevard and Lincoln Way (Attachment 5); and SFPUC Construction Measures (Attachment 6).

CEQA Review

The proposed project is within the scope of the TEP EIR. No new significant effects have been identified and no new mitigation is required for the project, pursuant to CEQA Section 15168:

- Note to file (no additional documentation required)

Proposed project is not within the scope of the TEP EIR and requires subsequent environmental review anticipated to be:

- Addendum
- Supplemental Focused EIR or Focused MND

NOTES:

Americans with disabilities as the Americans with Disabilities Act of 1990 (ADA) does. The current project proposes the construction of pedestrian and transit bulb-outs. These bulb-outs along with shelters and other facilities will be in full compliance with ADA requirements.

9. OTHER CONSIDERATIONS AS APPROPRIATE

9A. Permits

Permits that would be required under the project are summarized in Table 9.1

Table 9.1. Anticipated Permits and Approvals

Agency	Approval or Permit
SF Public Works/ISCOTT	Encroachment permit required for work within public right-of-way
SF Public Works/BSSR	The geometrics of street, pavement markings, use of streets and sidewalks must be approved by the SF Public Works Bureau of Street Use and Mapping, along with review proposed construction staging and access.
SF Public Works/SFMTA	The SF Public Works will need to approve proposed alterations to street lighting circuitry and/or traffic signals.
SF Public Works/BSM	The SF Public Works must approve an excavation permit, requiring compliance with the Article 2.4 and Director's Order No. 176, 707, Excavation in the Public Right-of-Way.
SF Public Works/BSES	Approves tree removals and replanting in Public Right-of-Way
SF Public Works	The Director of Public Works must approve nighttime construction work permits. The approved Night Noise Permits allows the permitted to work between the hours of 8 P.M. and 7 A. M. with inspection monitoring in place. However, after 10 P.M., the noise level must not exceed 5 dBA above the ambient noise.
SF Public Works	Approves street excavation work.
San Francisco Planning Department	Recommends to the Board of Supervisors any required General Plan Amendments.
San Francisco Planning Department	Determines consistency of project with General Plan, if Board of Supervisors approval of any sidewalk and median width changes is required.
San Francisco Arts Commissions	Approves design of public structures
SFPUC, SFFD, PG&E, SF Public Works	Coordination with utility providers regarding temporary or permanent relocation of utilities (including sewer line) through NOI and other filings with the San Francisco Street Construction Coordination Center and participation in the Committee for Utility Liaison on Construction and other Projects (CULCOP). Also, coordination with the San Francisco Fire Department regarding the Auxiliary Water Supply System.

SFPUC/Hetch Hetchy/PG&E	Permits required for OCS Support Pole/Streetlight and related duct bank replacement. Approval by the SFPUC of minimum allowable clearances to wires and work requirements near overhead lines per State of California General Order No. 95
SFPUC	Approval of minimum allowable clearances to wires and work requirements near overhead lines per State of California General Order No. 95
SFPUC	Approves discharge for release of any construction wastewater, including groundwater, into the City's Combined Sewer System.
SFPUC	Determines compliance with National Pollutant Discharge Elimination System (NPDES) Permit requirements for construction activities including contractor's preparation of a Storm Water Pollution Prevention Plan (SWPPP)
Caltrans	Access Control Properties Review and Encroachment Permit.
Caltrans	Approves Project Study Report/Project Report, including conceptual design of project.
Caltrans	Plans approvals for traffic and electrical work.
Caltrans	A Lead Compliance Plan approved by Caltrans will be required prior to the start of construction or soil-disturbance activities if an Aerially Deposited Lead (ADL) Survey identifies soil contains extractable lead concentrations that meet the definition of hazardous materials.
Caltrans	Cooperative Agreement for Construction
Caltrans	Maintenance Agreements
Caltrans	Right-of-Way Certification
Caltrans	Utility Permits
San Francisco Bay Area Regional Water Quality Control Board (RWQCB)	Receives General Construction Activity Stormwater Permit. A Notice of Intent (NOI) to construct, which includes the SWPPP, must be filled out with the San Francisco Bay RWQCB at least 30 days prior to any soil-disturbing activities.
MTC	Air Quality Conformity Determination
CA Fire Marshall	Construction on State ROW - Fire & Life Safety
San Francisco Board of Supervisors	Approves sidewalk and grade changes.
SHPO	Finding of Effort Determination
CPUC	Deviations from GO Standards.

Attachment 2 – Project Description

TTRP.28_1 Expanded Alternative Project Changes

The Modified TTRP.28_1 project would include elements that were proposed in both the Moderate and Expanded alternatives in the EIR for 19th Avenue within the TTRP.28_1 project limits on 19th Avenue between Lincoln Way and Junipero Serra Boulevard, but the Modified TTRP.28_1 most closely represents the Expanded Alternative, except where noted below.

In the TEP EIR, a net total of 10 parking spaces would be added for both the TTRP.28_1 Moderate and Expanded Alternatives on 19th Avenue between Lincoln Way and Junipero Serra Boulevard. The modified project would result in the net removal of up to 55 parking spaces. Since publication of the TEP EIR, the SFMTA has initiated a pilot of its Commuter Shuttle Program which allows permitted employer commute shuttle buses to use existing Muni bus zones for passenger loading and unloading. In some instances, bus zones have been extended to provide adequate space for this operation. The SFMTA's Commuter Shuttle Program is anticipated to undergo environmental review in order to implement it permanently. In conjunction with that process, additional part-time peak hour bus zones would be implemented resulting in the removal of 15 additional parking spaces on a part-time basis along the 19th Avenue corridor. Additional detail regarding the SFMTA's Commuter Shuttle Program and the cumulative parking impacts are addressed in the cumulative impacts section of the TEP Abbreviated CEQA Checklist.

1. Transit Stop Changes

- a. In order to provide accessible transit passenger loading areas, some of the bus bulbs proposed in the TEP EIR may be lengthened by the modified project to ensure that the front door of bus can deploy a wheelchair lift without resulting in driveway conflicts. The anticipated locations for longer transit bulbs include:
 - i. 19th Avenue at Judah Street – the southbound farside bulb would be extended from 130 feet to up to 160 feet in length. This change would have the same net parking impacts as what was proposed in the TEP EIR at this intersection.
 - ii. 19th Avenue at Taraval Street – the southbound farside bulb would be extended from 130 feet to up to 150 feet in length. This change would have the same net parking impacts as what was proposed in the TEP EIR.
 - iii. 19th Avenue at Taraval Street – the northbound farside bulb would be extended from 130 feet to up to 150 feet in length. This change would have the same net parking impacts as what was proposed in the TEP EIR.
 - iv. 19th and Vicente Street – the northbound farside bulb would be extended from 65 feet to up to 80 feet in length. This change would have the same net parking impacts as what was proposed in the TEP EIR.
- b. 19th Avenue and Kirkham Street: There would be no change from what is proposed in the TEP EIR at this intersection. Since certification of the TEP EIR, the existing bus stops at this intersection have been modified by the Commuter Shuttle Program pilot to accommodate use by permitted employer commuter shuttle buses. The northbound farside bus zone was designated for use by permitted commuter shuttles and the southbound nearside bus zone was extended from 68 feet to 85 feet in length and was designated for use by permitted commuter shuttles. Additionally, a part-time southbound bus zone for

use by permitted employer commuter shuttles was added from 85 feet to 153 feet north of Kirkham Street on weekdays from 6 am to 10 am. In order to continue to accommodate commuter shuttle operations following completion of that project's environmental review, parking changes are proposed at this intersection as part of the Commuter Shuttle Program and are discussed in the cumulative parking impacts discussion.

- c. 19th Avenue and Lawton Street: In the TEP EIR, the existing northbound bus stop was proposed to remain nearside, with installation of a farside pedestrian bulb extending into 19th Avenue. The modified project would relocate the northbound bus stop from the nearside to the farside, with a new farside bus bulb up to 80 feet long instead of a pedestrian bulb. These changes along with implementation of a red zone within the former nearside bus zone described under the Parking and Turn Restrictions Section would have the same net parking impacts as what was proposed in the TEP EIR.
- d. 19th Avenue and Noriega Street: In the TEP EIR, the northbound bus stop was proposed to be relocated from nearside to farside with a new bus bulb, and parking added in the former nearside bus zone. The southbound bus stop was proposed to remain farside with a new bus bulb in the TEP EIR. The bus stop changes would still be implemented, but in the northbound direction a 40-foot nearside red zone described under the Parking and Turn Restrictions Section would result in the net removal of one additional parking space compared to what was proposed in the TEP EIR. Since certification of the TEP EIR, the existing bus stops at this intersection have been designated for use by permitted employer commuter shuttles by the SFMTA's Commuter Shuttle Program. In order to continue to accommodate permitted commuter shuttle operations following completion of that project's environmental review, additional parking changes are proposed at this intersection. These are described in the cumulative parking impacts of this TEP Abbreviated CEQA Checklist.
- e. 19th Avenue and Quintara Street: In the TEP EIR, the northbound and southbound bus stops were proposed to be converted from shared limited/local stops to local-only stops, with a 65-foot bus bulb installed at the farside southbound stop. The modified project would maintain both limited and local service at these stops. The modified project would extend the 65-foot farside southbound bus bulb to up to 130 feet in length, which would remove three additional parking spaces compared to what was proposed in the TEP EIR. The modified project would extend the 75-foot nearside northbound bus zone to up to 145 feet, which would remove one additional parking space compared to what was proposed in the TEP EIR.
- f. 19th Avenue and Rivera Street: In the TEP EIR, the northbound bus stop was proposed to remain nearside, with a farside pedestrian bulb extending into 19th Avenue installed. The modified project would relocate the northbound bus stop from the nearside to the farside, and would install a new farside bus bulb up to 100 feet in length instead of a pedestrian bulb. These changes along with a 40-foot red zone within the former nearside bus zone described under the Parking and Turn Restrictions Section would result in the removal of two additional parking spaces compared to what was proposed in the TEP EIR.
- g. 19th Avenue and Wawona Street: In the TEP EIR, the northbound and southbound bus stops were proposed to be removed with parking added in the former bus zones. Since certification of the TEP EIR, the existing bus stops at this intersection have been designated for use by permitted employer commuter shuttles by the SFMTA's Commuter Shuttle Program. The project would still

remove these bus stops for Muni bus service. However, in order to continue to accommodate permitted employer commuter shuttle operations following completion of that project's environmental review, parking changes are proposed at this intersection to implement part-time peak hour bus zones midblock between Vicente and Wawona streets in the southbound direction and nearside in the northbound direction. These changes are described and discussed in the cumulative parking impacts section of this TEP Abbreviated CEQA Checklist.

- h. 19th Avenue and Winston Drive: In the TEP EIR, the southbound bus stop was proposed to remain nearside, with either a 130-foot long nearside bus bulb extending into 19th Avenue or boarding island on 19th Avenue. The modified project would widen the sidewalk along the west side of 19th Avenue from Winston Drive for a length of up to 230 feet north by narrowing the southbound right-turn lane. The existing sidewalk is 10 feet wide. It would be widened by 3 to 5 feet resulting in an up to 15-foot wide sidewalk. Muni buses would continue to stop within the narrowed southbound right-turn lane. In order to improve pedestrian safety, the modified project would remove the existing channelizing island at the northwest corner of the intersection that currently allows southbound free right turns. A no turn on red restriction would be added for southbound traffic to reduce vehicle encroachment into the crosswalk.
- i. 19th Avenue and Junipero Serra Boulevard: In the TEP EIR, the northbound bus stop was proposed to remain farside with the installation of a new 65-foot long bus bulb. The modified project will not modify the northbound stop or include a bus bulb at this location.

2. Lane Modifications

In order to improve pedestrian safety, the modified project would remove existing channelizing islands that currently allow free right turns (corner radii would be tightened to maintain reasonable pedestrian crossing distances and discourage high-speed right-turning vehicles) at the following locations:

- a. 19th Avenue and Ocean Avenue (northwest and southeast corners), removing free right turns in the northbound and southbound directions.
- b. 19th Avenue and Winston Drive (northwest corner), removing free right turns in the southbound direction.
- c. 19th Avenue and Holloway Avenue (northeast corner), removing free right turns in the westbound direction.

3. Parking and Turn Restrictions

In order to improve pedestrian safety, the modified project would implement red zones to improve visibility between motorists and pedestrians at the locations identified below. In a number of instances, the red zone would be implemented where a bus zone is being removed due to stop consolidation, and parking would not be added where the TEP EIR had previously anticipated that parking would be added. In other instances, the implementation of these red zones would require the removal of additional parking spaces.

- a. 19th Avenue and Irving Street – 40-foot northbound and southbound nearside red zones would be implemented in conjunction with bus zone removals, preventing the addition of two parking spaces in each direction as proposed in the TEP EIR.

- b. 19th Avenue and Kirkham Street – a 30-foot southbound nearside red zone would be implemented in conjunction with bus zone removal, preventing the addition of one parking space as proposed in the TEP EIR.
- c. 19th Avenue and Lawton Street – a 40-foot northbound nearside red zone would be implemented in conjunction with bus zone relocation to the farside of the intersection described under the Transit Stop Changes Section, resulting in the same net parking impacts as what was proposed in the TEP EIR and a 25-foot southbound nearside red zone would be implemented, removing one additional parking space compared to what was proposed in the TEP EIR.
- d. 19th Avenue and Moraga Street – a 20-foot southbound nearside red zone would be implemented in conjunction with bus zone removal, removing one additional parking space compared to what was proposed in the TEP EIR.
- e. 19th Avenue and Noriega Street – a 40-foot northbound nearside red zone would be implemented in conjunction with bus zone relocation to the farside of the intersection, preventing the addition of one parking space as proposed in the TEP EIR.
- f. 19th Avenue and Pacheco Street – a 40-foot northbound nearside red zone would be implemented in conjunction with bus zone removal, preventing the addition of one parking space as proposed in the TEP EIR and a 40-foot southbound nearside red zone would be implemented, resulting in no change to parking spaces analyzed in the TEP EIR.
- g. 19th Avenue and Quintara Street – a 32-foot southbound nearside red zone would be implemented, removing one additional parking space compared to what was proposed in the TEP EIR.
- h. 19th Avenue and Rivera Street – a 40-foot northbound nearside red zone would be implemented in conjunction with bus zone relocation to the farside of the intersection described under the Transit Stop Changes Section, removing two additional parking spaces compared to what was proposed in the TEP EIR and a 40-foot southbound nearside red zone would be implemented, removing two additional parking spaces compared to what was proposed in the TEP EIR.
- i. 19th Avenue and Santiago Street – a 35-foot northbound nearside red zone would be implemented, removing one additional parking space compared to what was proposed in the TEP EIR and a 40-foot southbound nearside red zone would be implemented in conjunction with bus zone removal, preventing the addition of two parking spaces as proposed in the TEP EIR.
- j. 19th Avenue and Ulloa Street – a 40-foot northbound nearside red zone would be implemented, removing two additional parking spaces compared to what was proposed in the TEP EIR and a 30-foot southbound nearside red zone would be implemented in conjunction with bus zone removal, preventing the addition of one parking space as proposed in the TEP EIR.
- k. 19th Avenue and Vicente Street – a 25-foot northbound nearside red zone would be implemented in conjunction with bus zone relocation to the farside of the intersection, preventing the addition of one parking space as proposed in the TEP EIR and a 40-foot southbound nearside red zone would be implemented, removing two additional parking spaces compared to what was proposed in the TEP EIR (one parking space would be removed at all times and parking would be restricted during non-business hours at one passenger loading zone space).
- l. 19th Avenue and Wawona Street - a 40-foot southbound nearside red zone would be implemented on 19th Avenue in conjunction with bus zone removal, preventing the addition of one parking space as proposed in the TEP EIR and a 20-foot eastbound nearside red zone would be implemented on Wawona Street,

removing one additional parking space compared to what was proposed in the TEP EIR.

- m. 19th Avenue and Sloat Boulevard – a 40-foot northbound nearside red zone would be implemented on 19th Avenue, removing two additional parking spaces compared to what was proposed in the TEP EIR.
- n. 19th Avenue and Ocean Avenue - 40-foot northbound and southbound nearside red zones would be implemented in conjunction with the removal of existing channelizing islands described under the Lane Modifications Section, resulting in the same net parking impacts as what was proposed in the TEP EIR.
- o. 19th Avenue and Eucalyptus Drive - 40-foot northbound and southbound nearside red zones would be implemented on 19th Avenue in conjunction with bus zone relocations to the farside of the intersection, preventing the addition of two parking spaces in each direction as proposed in the TEP EIR.

4. Pedestrian Improvements

- a. In order to improve pedestrian safety by reducing pedestrian crossing distances, slowing turning vehicles, and improving visibility between pedestrians and vehicle drivers, pedestrian bulbs were proposed in the TEP at several intersections extending into 19th Avenue. These pedestrian bulbs would generally extend 5 feet beyond the crosswalk and be 6 feet in width. At some locations, the modified project would extend pedestrian bulbs across driveways or otherwise lengthen bulbs – the anticipated locations include:
 - i. 19th Avenue and Irving Street – a farside pedestrian bulb on the northeast corner would be extended up to 40 feet long, removing one additional parking space compared to what was proposed in the TEP EIR.
 - ii. 19th Avenue and Santiago Street – a farside pedestrian bulb on the southwest corner of 19th Avenue would be extended by up to 40 feet, removing one additional parking space compared to what was proposed in the TEP EIR.
 - iii. 19th Avenue and Wawona Street – a farside pedestrian bulb on the northeast corner would be extended southerly by up to 105 feet across both the north and south crosswalks along the east side of this t-intersection, removing two additional parking spaces compared to what was proposed in the TEP EIR.
- b. In order to improve pedestrian safety by reducing pedestrian crossing distances, slowing turning vehicles, and improving visibility between pedestrians and vehicle drivers, the modified project would add pedestrian bulbs extending into cross streets at the locations identified below. These pedestrian bulbs would generally extend 5 feet beyond the existing crosswalk at these intersections and be 4-6 feet in width. At some locations, these bulbs would be longer in order to extend across driveways or to provide an accessible loading area where there are existing bus stops. At some locations, these bulbs would be wider than six feet where adjacent lanes are wider than 10 feet.
 - i. 19th Avenue and Irving Street – a 5-foot long nearside pedestrian bulb extending into Irving Street on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR and a 40-foot long nearside pedestrian bulb extending into

- Irving Street on the southwest corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR.
- ii. 19th Avenue and Kirkham Street – 5-foot long nearside pedestrian bulbs extending into Kirkham Street on the northeast and southwest corners would be added, resulting in no parking impacts on the northeast corner and removing one additional parking space on the southwest corner compared to what was proposed in the TEP EIR.
 - iii. 19th Avenue and Lawton Street - 5-foot long nearside pedestrian bulbs extending into Lawton Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR.
 - iv. 19th Avenue and Moraga Street – a 5-foot long nearside pedestrian bulb extending into Moraga Street on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR.
 - v. 19th Avenue and Noriega Street – a 5-foot long nearside pedestrian bulb extending into Noriega Street on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR.
 - vi. 19th Avenue and Ortega Street – 5-foot long nearside pedestrian bulbs extending into Ortega Street on the northeast and southwest corners would be added, resulting in no parking impacts on the northeast corner and removing one additional parking space on the southwest corner compared to what was proposed in the TEP EIR.
 - vii. 19th Avenue and Pacheco Street – a 5-foot long nearside pedestrian bulb extending into Pacheco Street on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR and a 13-foot long nearside pedestrian bulb extending into Pacheco Street on the southwest corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR.
 - viii. 19th Avenue and Quintara Street – 10-foot long nearside pedestrian bulbs extending into Quintara Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR (these pedestrian bulbs would be designed to serve the front door of buses on Muni routes 48 Quintara-24th Street and 66 Quintara).
 - ix. 19th Avenue and Rivera Street – 5-foot long nearside pedestrian bulbs extending into Rivera Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR.
 - x. 19th Avenue and Santiago Street – a 25-foot long nearside pedestrian bulb extending into Santiago Street on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR and a 30-foot long nearside pedestrian bulb extending into Santiago Street on the southwest corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR.
 - xi. 19th Avenue and Taraval Street – 5-foot long nearside pedestrian bulbs extending into Taraval Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR. The pedestrian bulb on

northeast corner would be constructed with paint and safe-hit posts as a temporary pedestrian bulb in order not to preclude future installation of a new boarding platform for the L Taraval line.

- xii. 19th Avenue and Ulloa Street – 5-foot long nearside pedestrian bulbs extending into Ulloa Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR.
 - xiii. 19th Avenue and Vicente Street – 5-foot long nearside pedestrian bulbs extending into Vicente Street on the northeast and southwest corners would be added, removing one additional parking space on each corner compared to what was proposed in the TEP EIR.
 - xiv. 19th Avenue and Sloat Boulevard – a 10-foot long nearside pedestrian bulb extending into Sloat Boulevard on the southwest corner would be added in place of an existing 100-foot bus zone, adding four additional parking spaces compared to what was proposed in the TEP EIR (this pedestrian bulb would be designed to serve the front door of buses on Muni route 23 Monterey). A 25-foot farside pedestrian bulb extending into Sloat Boulevard on the northwest corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR. A 5-foot long farside pedestrian bulb extending into Sloat Boulevard on the southeast corner would be added, resulting in no parking impacts.
 - xv. 19th Avenue and Ocean Avenue – 5-foot long nearside pedestrian bulbs extending into Ocean Avenue on the northeast and southwest corners would be added, removing two additional parking spaces on the northeast corner and one additional parking space on the southwest corner compared to what was proposed in the TEP EIR.
 - xvi. 19th Avenue and Eucalyptus Drive – a 5-foot long nearside pedestrian bulb extending into Eucalyptus Drive on the northeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR and a 10-foot long nearside pedestrian bulb extending into Eucalyptus Drive on the southwest corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR (this pedestrian bulb would be designed to serve the front door of buses on Muni route 17 Parkmerced).
 - xvii. 19th Avenue and Holloway Avenue – a 5-foot long farside pedestrian bulb extending into Holloway Avenue on the southeast corner would be added, removing one additional parking space compared to what was proposed in the TEP EIR and a 10-foot long nearside pedestrian bulb extending into 19th Avenue on the southeast corner, resulting in no parking impacts (this pedestrian bulb would be designed to serve the front door of buses on Muni route 29 Sunset).
- c. The modified project would not include a pedestrian bulb extending into 19th Avenue at Wawona Street on the southwest corner, due to the lack of a parking lane and that the southbound travel lanes along this segment of 19th Avenue are narrow.



May 5, 2015

Liz Rutman, PhD, PE
San Francisco County Transportation Authority
1455 Market Street, 22nd Floor
San Francisco, CA 94103

Subject: Focused Transportation Analysis for 19th Avenue Bulb-Outs

Dear Liz:

This letter presents the traffic operations analysis associated with transit and pedestrian safety improvements on 19th Avenue. The improvements include the removal of several channelized right-turns and "pork chop" islands at three intersections along 19th Avenue and the shortening of one northbound left turn lane from 19th Avenue to Winston Drive (herein, referred to as the "project").

As presented below, the removal of channelized right-turns and "pork chop" islands and the shortening of the left-turn lane would not significantly worsen traffic operations or increase vehicle queues at the three study intersections under Existing Plus Project or Cumulative Plus Project Conditions.

ANALYSIS APPROACH

To establish Existing conditions for this traffic operations analysis, vehicle traffic, pedestrian, and bicycle counts were collected on Wednesday, November 5th, 2014¹, at the following study intersections for AM (7-9 AM) and PM (4-6PM) peak periods:

- A. 19th Avenue / Ocean Avenue
- B. 19th Avenue / Winston Drive
- C. 19th Avenue / Holloway Avenue

The traffic counts were reviewed against other recent traffic counts collected at these locations. Traffic counts collected as a part of the City's Transit Effectiveness Project (TEP) at 19th Avenue / Winston Drive from November 8, 2011 were 25 percent higher on the eastbound approach and 40

¹ The traffic counts were collected on a day with typical school schedules at San Francisco State University and Lowell High School. No special events were planned on this date at Stonestown Galleria.



percent higher on the westbound approach compared to the traffic counts from 2014.² Therefore, the traffic counts from the TEP were used for this study for the purposes of a conservative traffic analysis.

The traffic operations analysis was conducted using the Synchro modeling software using methods consistent with the methods presented in Chapters 16 of the 2000 Highway Capacity Manual for isolated signalized intersections. Synchro is appropriate for this study because the study intersections operate independently of each other and the proposed pedestrian and transit improvements are unlikely to create new vehicle queues that extend between intersections. The outputs of this analysis include AM and PM peak hour intersection level of service (LOS), vehicle delay, volume to capacity (V/C) ratio, and 95th percentile vehicle queues for movements or lane groups at the three study intersections.

Existing peak hour counts, lane configurations, and signal timings were coded into Synchro to create a model representing Existing conditions. The approaches to the existing channelized right-turn lanes on northbound and southbound 19th Avenue at Ocean Avenue and on eastbound Winston Drive are relatively wide, although no formally striped right-turn lanes are provided. To account for the fact that turning vehicles can bypass short vehicle queues in the curbside through lanes, the channelized right-turn lanes were modeled with short (40 foot) lanes to better replicate actual observed behavior. The other channelized right-turns on southbound 19th Avenue at Winston Drive and on westbound Holloway Avenue include dedicated right-turn lanes, and the modeling reflects those lanes. In addition to these inputs, the study intersections were coded with appropriate bus blockages, parking turnover, and other considerations presented in the *Draft Guidelines for Synchro Intersection LOS Analysis* (San Francisco Planning Department, October 2012). Traffic analysis assumptions and Synchro output sheets are presented in **Appendix A**.

The AM and PM peak hour Existing conditions Synchro models were updated with the transit and pedestrian safety improvements proposed as part of the project to create Existing Plus Project

² San Francisco Planning Department. 2014. Transit Effectiveness Project Final EIR, March 27, 2014, Available online at <http://tepeir.sfplanning.org>. Accessed April 3, 2014. Case No. 2011.0558E. The document and supporting information may also be viewed at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA in case file 2011.0558E.



models. Specifically, the project includes the following changes to the roadway network. The proposed changes are presented in **Appendix B**.³

- Removal of the channelized right-turn lanes and “pork chop” islands on the northwest and southeast corners at 19th Avenue / Ocean Avenue.
- Removal of the channelized right-turn lane and “pork chop” island on the northwest corner at 19th Avenue / Winston Drive (Stonestown Galleria entrance).
- Addition of a traffic signal phase for concurrent northbound left-turn and eastbound right-turn movements at 19th Avenue / Winston Drive (i.e., an overlap phase for the eastbound right-turn movement). This change would require restricting U-turns at the northbound left-turn on 19th Avenue at Winston Drive.
- Shortening of the inside northbound left-turn lane at 19th Avenue / Winston Drive from 250 feet to 110 feet. This improvement is proposed as a part of the City’s Transit Effectiveness Project (TEP) and was analyzed in the TEP Project EIR to minimize transit delay for the M Ocean View by shortening a portion of the leftmost left-turn lane, thereby limiting the stacking length available to non-transit vehicles to queue in front of a transit vehicle.
- Removal of the channelized right-turn lane and “pork chop” island in northeast corner at 19th Avenue / Holloway Avenue.
- Addition of a far-side transit bulb-out on northbound 19th Avenue north of Holloway Avenue to allow the 28 19th Avenue to stop in the curb-side travel lane.

The results of the Existing and Existing Plus Project analysis are presented below.

EXISTING ANALYSIS

Tables 1 and **2** present the Existing and Existing Plus Project traffic operations results for the three study intersections. **Table 3** presents the Existing and Existing Plus Project 95th percentile vehicle queues for the three study intersections. A discussion of the findings for each study intersection is presented below.

³ The designs presented in **Appendix B** include the removal of the channelized right-turn lane and “pork chop” island on the southwest corner at 19th Avenue / Winston Drive (Stonestown Galleria entrance). This element of the project has been removed since the completion of the designs in **Appendix B**.



TABLE 1: AM PEAK HOUR TRAFFIC OPERATIONS

Approach	Lane Group ¹	Existing Conditions			Existing Plus Project Conditions		
		Delay ²	V/C ³	LOS ⁴	Delay ²	V/C ³	LOS ⁴
1. 19th Avenue / Ocean Avenue							
Northbound	T/R	14.4	0.58	B	14.5	0.58	B
Southbound	T/R*	26.2	0.93	C	26.2	0.93	C
Eastbound	L	37.8	0.57	D	37.8	0.57	D
	T	30.4	0.57	C	30.4	0.57	C
	R	21.3	0.05	C	21.3	0.05	C
Westbound	L/T/R*	67.0	0.97	E	67.0	0.97	E
Overall Intersection		26.7	0.94	C	26.7	0.94	C
2. 19th Avenue / Winston Drive							
Northbound	L*	39.3	0.66	D	39.4	0.66	D
	T/R	26.8	0.81	C	27.0	0.81	C
Southbound	T*	>80.0	1.16	F	>80.0	1.17	F
	R	13.4	0.04	B	13.5	0.06	B
Eastbound	L	39.1	0.30	D	39.1	0.30	D
	T	33.4	0.31	C	33.4	0.31	C
	R	36.2	0.35	D	24.2	0.33	D
Westbound	L/T/R*	42.5	0.70	D	42.5	0.70	D
Overall Intersection		64.2	0.96	E	65.6	0.96	E
3. 19th Avenue / Holloway Avenue							
Northbound	T/R	20.9	0.79	C	21.2	0.80	C
Southbound	T*	72.5	1.10	E	70.0	1.10	E
	R	17.2	0.24	B	17.5	0.24	B
Eastbound	L/T/R	29.8	0.59	C	29.8	0.59	C
Westbound	T*	29.1	0.59	C	29.1	0.59	C
	R	21.5	0.14	C	21.5	0.14	C
Overall Intersection		47.4	0.90	D	47.7	0.90	D

Notes:

1. Lane groups: T = Through movement, R = Right movement, L = Left movement. When no turn lanes are present, the movements are shown as combined lane groups (e.g. T/R = shared through/right lanes). Asterisk (*) denotes the critical lane group for each intersection.
2. Delay reported as seconds per vehicle. For signalized intersections, a combined weighted average delay for the various movements within the intersection is reported.
3. Volume to Capacity (V/C) ratio.
4. LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000.

Source: Fehr & Peers, 2015.



TABLE 2: PM PEAK HOUR TRAFFIC OPERATIONS

Approach	Lane Group ¹	Existing Conditions			Existing Plus Project Conditions		
		Delay ²	V/C ³	LOS ⁴	Delay ²	V/C ³	LOS ⁴
1. 19th Avenue / Ocean Avenue							
Northbound	T/R	16.1	0.72	B	16.1	0.72	B
Southbound	T/R*	26.5	0.85	C	26.5	0.85	C
Eastbound	L	30.4	0.29	C	30.4	0.29	C
	T	34.3	0.55	C	34.3	0.55	C
	R	24.7	0.03	C	24.7	0.03	C
Westbound	L/T/R*	62.7	0.91	E	62.7	0.91	E
Overall Intersection		25.4	0.87	C	25.4	0.87	C
2. 19th Avenue / Winston Drive							
Northbound	L*	70.1	0.88	E	70.3	0.89	E
	T/R	31.3	0.97	C	31.2	0.97	C
Southbound	T*	>80.0	1.17	F	>80.0	1.18	F
	R	21.9	0.38	C	21.9	0.38	C
Eastbound	L*	>80.0	0.97	F	>80.0	0.97	F
	T	40.8	0.68	D	40.8	0.68	D
	R	53.5	0.79	D	29.1	0.61	C
Westbound	L/T/R	39.7	0.67	D	39.7	0.67	D
Overall Intersection		68.5	1.06	E	68.5	1.06	E
3. 19th Avenue / Holloway Avenue							
Northbound	T/R	22.1	0.85	C	22.5	0.85	C
Southbound	T*	42.8	1.05	D	43.6	1.05	D
	R	4.2	0.21	A	4.5	0.21	A
Eastbound	L/T/R*	75.3	0.96	E	75.3	0.96	E
Westbound	T	32.6	0.52	C	32.6	0.52	C
	R	24.0	0.03	C	24.0	0.03	C
Overall Intersection		35.1	1.02	D	35.7	1.02	D

Notes:

1. Lane groups: T = Through movement, R = Right movement, L = Left movement. When no turn lanes are present, the movements are shown as combined lane groups (e.g. T/R = shared through/right lanes). Asterisk (*) denotes the critical lane group for each intersection.
2. Delay reported as seconds per vehicle. For signalized intersections, a combined weighted average delay for the various movements within the intersection is reported.
3. Volume to Capacity (V/C) ratio.
4. LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000.

Source: Fehr & Peers, 2015.



TABLE 3: PEAK HOUR 95TH PERCENTILE VEHICLE QUEUES

Approach	Lane Group ¹	Storage Capacity	AM Peak Hour		PM Peak Hour	
			Existing	Plus Project	Existing	Plus Project
1. 19th Avenue / Ocean Avenue						
Northbound	T/R	400	231	231	345	34
Southbound	T/R	660	510	510	381	381
Eastbound	L	230	120	120	62	62
	T	230	208	208	207	207
	R	130	27	27	21	21
Westbound	L/T/R	240	425	425	382	382
2. 19th Avenue / Winston Drive						
Northbound	L	250 / 110 ²	104	104	174	172
	T/R	2,000	390	391	516	513
Southbound	T	1,420	690	694	722	726
	R	150	4	4	113	113
Eastbound	L	225	48	48	204	204
	T	225	73	73	174	174
	R	225	98	119	298	266
Westbound	L/T/R	85	143	143	184	184
3. 19th Avenue / Holloway Avenue						
Northbound	T/R	490	342	344	442	446
Southbound	T	2,000	508	503	579	577
	R	90	36	38	11	13
Eastbound	L/T/R	150	193	193	350	350
Westbound	T	100	218	218	192	192
	R	90	33	33	16	16

Notes: **Bold** = Exceeds existing storage length of turn movement; Storage capacity and queues expressed in feet.

- Lane groups: T = Through movement, R = Right movement, L = Left movement. When no turn lanes are present, the movements are shown as combined lane groups (e.g. T/R = shared through/right lanes).
- Existing storage capacity at Winston Drive is 250 feet. The Proposed Project will decrease storage capacity of the inner turn lane to 110 feet. The storage capacity of the outer turn lane would remain at 250 feet. As described in the below "Winston Drive" section, the vehicle queue of 172 feet would exceed the storage capacity of the inner turn lane but would not exceed the storage capacity of the outer turn lane.

Source: Fehr & Peers, 2015.

Ocean Avenue

19th Avenue includes three through lanes in each direction with yield controlled channelized right-turn lanes onto Ocean Avenue. Left-turns are not permitted from 19th Avenue to Ocean Avenue. Ocean Avenue includes one through lane in each direction and dedicated right- and left-turn lanes on the eastbound approach. All intersection movements currently operate at LOS D or better during the AM and PM peak hours, except the westbound approach which operates at LOS E during both



peak hours. Existing 95th percentile vehicle queues do not exceed the existing storage capacity at 19th Avenue / Ocean Avenue except for the westbound approach of Ocean Avenue. The storage capacity is 240 feet on this approach and the 95th percentile vehicle queues extend beyond Lagunitas Drive during the AM and PM peak hour.

The proposed removal of the channelized right-turns and “pork chop” islands on 19th Avenue at Ocean Avenue would slightly reduce the vehicle capacity and increase queues on southbound 19th Avenue. However, traffic operations on northbound and southbound 19th Avenue would remain at LOS C or better after implementation of the proposed improvements and overall intersection would remain the same (LOS C). While 95th percentile queues would increase by up nearly 30 feet on 19th Avenue, the vehicle queues would not exceed the storage capacity on 19th Avenue.

Winston Drive

At Winston Drive, 19th Avenue includes three through lanes in each direction and a right-turn pocket with a yield controlled channelized turn lane and “pork chop” island on the southbound approach. Two northbound left-turn lanes provide access onto westbound Winston Drive (into Stonestown Galleria). No left-turns are allowed from southbound 19th Avenue. Winston Drive includes two through lanes in each direction. Eastbound Winston Drive has a dedicated left-turn lane, shared through-left-turn lane, a through lane, and a yield controlled channelized right-turn lane with a short informal turn pocket and “pork chop” island. The overall intersection LOS is E, with several movements operating at LOS E or F, including the northbound left (PM peak hour), southbound through (AM and PM peak hours), and eastbound left movement (PM peak hour). The remaining turning movements currently operate at LOS D or better during the AM and/or PM peak hours. Existing 95th percentile vehicle queues exceed the existing storage capacity at 19th Avenue / Winston Drive on the westbound approach of Winston Drive during the AM and PM peak hours and the eastbound approach during the PM peak hour. The storage capacity is only 85 and 225 feet on these approaches, respectively, and 95th percentile vehicle queues extend beyond Stonecrest Drive and 20th Avenue.

The proposed removal of the channelized right-turn on southbound 19th Avenue at Winston Drive would slightly reduce the vehicle capacity and increase vehicle delay on the southbound 19th Avenue. Per City of San Francisco standards, for an intersection that operates at LOS E or LOS F under existing conditions, there may be a significant adverse impact depending upon the magnitude of the project’s contribution to the worsening of delay. As presented in the TEP EIR, an infrastructure change would cause a significant impact if the overall intersection V/C would increase



by 10 percent or more. The project would not increase the overall intersection V/C during the AM or PM peak hours. Therefore, the project would not significantly impact the traffic operations at this intersection. The removal of the channelized right-turn would also slow turning movements for trucks from southbound 19th Avenue to westbound Winston Drive. However, the proposed curb would continue to accommodate right-turns for these vehicles.

Under Existing Plus Project conditions, 95th percentile queues at the northbound left-turn movement would be approximately 100 and 170 feet during the AM and PM peak hours, respectively. The 95th percentile queues would exceed the storage capacity of the inner left-turn lane (i.e., the lane closest to the centerline), which would be reduced from 250 to 110 feet under the project. Therefore, the 95th percentile vehicle queues would exceed the inner left-turn lane storage capacity by approximately 60 feet. This vehicle queue would shift to the outer left-turn lane, increasing the 95th percentile queues in this lane to approximately 240 feet. This vehicle queue would not exceed the storage capacity of the existing 250 foot outer left-turn lane. The reduced turn-pocket is not expected to worsen average vehicle delay for northbound-left turning vehicles as the queues would not exceed the turn-pocket during most signal cycles. 95th percentile vehicle queues on the westbound and eastbound approaches would exceed the storage capacity during the AM and or PM peak hour. Therefore, existing vehicle queues would extend further beyond Stonecrest Drive and 20th Avenue compared to existing conditions. 95th percentile queues on the remaining movements would not exceed the existing storage capacities.

The northbound and southbound 19th Avenue signal timings would be adjusted to ensure that a similar number of vehicles turning left from northbound 19th Avenue onto Winston Drive westbound (into the Stonestown Galleria) could make the turn as the existing condition.⁵ This signal timing adjustment ensures that the Proposed Project does not reduce the capacity of this turn movement. The proposed length of the inner turn lane has been designed to accommodate the average number of cars that complete a left-turn per signal cycle, based on weekday AM and PM peak and weekend midday observations conducted by SFMTA staff in October 2012. Therefore, while the proposal to shorten the inner left-turn lane as a part of this project would reduce the amount of queuing space, it would not modify the capacity of the left-turn signal phase.

⁵ As described in the TEP EIR. San Francisco Planning Department. 2014. Transit Effectiveness Project Final EIR, March 27, 2014, Available online at <http://tepeir.sfplanning.org>. Accessed April 3, 2014. Case No. 2011.0558E. The document and supporting information may also be viewed at the Planning Department, 1650 Mission Street, Suite 400, San Francisco, CA in case file 2011.0558E.



Holloway Avenue

At Holloway Avenue, 19th Avenue includes three through lanes in each direction and a right-turn pocket on the southbound approach. Left turns are not permitted from 19th Avenue. Holloway Avenue includes one through lane in each direction and a right-turn pocket with a channelized right-turn and “pork chop” island on the westbound approach. All intersection movements currently operate at LOS D or better during the AM and PM peak hours, except the eastbound approach which operates at LOS E during the PM peak hour. Existing 95th percentile vehicle queues currently extend beyond the next downstream side street stop controlled intersections on Holloway Avenue during the AM and PM peak hours. These side streets are Varela Avenue in the eastbound direction and Denslowe Drive in the westbound direction, which are 150 and 110 feet from 19th Avenue respectively. The existing vehicle queues do not extend far enough to block upstream signalized intersections.

The removal of the channelized right-turn and “pork chop” island on westbound Holloway Avenue was found to have no effect on vehicle capacity and queues. The westbound right-turn pocket would remain under existing plus Project conditions; therefore, the capacity of this turn movement with the project in place would be similar to existing conditions. The proposed improvements at 19th Avenue / Holloway Avenue would not cause a noticeable change to traffic operations at this study intersection.

CUMULATIVE ANALYSIS

Forecasted traffic volumes for this cumulative conditions analysis are based on Year 2035 turning movement volumes presented in the TEP EIR for the Travel Time Reduction Program (TTRP) Expanded Alternative (“Expanded Alternative”). An analysis of the proposed changes at the intersection of 19th Avenue / Winston Drive under Cumulative Plus Project Conditions is presented below. As presented previously, the removal of channelized right-turns and “pork chop” islands on 19th Avenue would not substantially worsen traffic operations or vehicle queues on 19th Avenue at Ocean Avenue and Holloway Avenue under Existing Plus Project conditions. Vehicle delay and queues would be identical in the AM and PM peak hour with and without the project at 19th Avenue / Ocean Avenue. The project would increase vehicle delay by less than one second and queues by less than 10 feet in the AM and PM peak hours at 19th Avenue / Holloway Avenue. Therefore, these



proposed changes would not substantially affect operations at these intersections under Cumulative Plus Project Conditions.

Cumulative Conditions without the project ("Cumulative No Project") includes the geometric changes proposed under the TEP Expanded Alternative. This scenario includes the following geometric improvements at 19th Avenue / Winston Drive:

- Shortening of the inside northbound left-turn lane from 250 feet to 110 feet.
- Addition of a traffic signal phase for concurrent northbound left-turn and eastbound right-turn movements.

In addition to these improvements, Cumulative Plus Project conditions includes the removal of the channelized right-turn lane and "pork chop" island on the northwest corner.

Table 4 present the Cumulative No Project and Cumulative Plus Project traffic operations results for the intersection of 19th Avenue / Winston Drive. **Table 5** presents the Cumulative No Project and Cumulative Plus Project 95th percentile vehicle queues for 19th Avenue / Winston Drive. The intersection of 19th Avenue / Winston Drive is projected to operate at LOS F under Cumulative No Project conditions in the AM and PM peak hours. The project would not increase the overall intersection V/C during the AM or PM peak hours. Therefore, the project would not significantly impact traffic operations at this intersection.

Under Cumulative Plus Project conditions, 95th percentile queues at the northbound left-turn movement would be approximately 160 and 310 feet during the AM and PM peak hours, respectively. The 95th percentile queues would exceed the storage capacity of the inner left-turn lane (i.e., the lane closest to the centerline) but not the outer left-turn lane during the AM peak hour. During the PM peak hour, the 95th percentile queues would exceed the storage capacity of both left-turn lanes, extending approximately 260 feet beyond the storage capacity of the outer left-turn lane.⁶ These 95th percentile queues would worsen queues on northbound 19th Avenue. However, as presented in **Table 5**, these queues are not expected to extend to the next downstream signalized intersection 2,000 feet to the south at Holloway Avenue.

⁶ Including the 200 feet of excess vehicle queues in the inner lane and 60 feet excess queues in the outer lane.



TABLE 4: 2035 CUMULATIVE PEAK HOUR TRAFFIC OPERATIONS AT 19TH AVENUE / WINSTON DRIVE

Approach	Lane Group ¹	Cumulative No Project Conditions ²			Cumulative Plus Project Conditions		
		Delay ³	V/C ⁴	LOS ⁵	Delay	V/C	LOS
AM Peak Hour							
Northbound	L*	48	0.83	D	49	0.83	D
	T/R	30	0.88	C	30	0.88	C
Southbound	T*	>80	1.31	F	>80	1.32	F
	R	13	0.06	B	13	0.06	B
Eastbound	L	77	0.63	E	77	0.63	E
	T	37	0.52	D	37	0.52	D
	R	42	0.53	D	42	0.53	D
Westbound	L/T/R*	>80	1.16	F	>80	1.16	F
Overall Intersection		>80	1.19	F	>80	1.19	F
PM Peak Hour							
Northbound	L*	>80	1.29	F	>80	1.29	F
	T/R	73	1.10	E	73	1.10	E
Southbound	T*	>80	1.26	F	>80	1.27	F
	R	39	0.80	D	39	0.80	D
Eastbound	L*	>80	2.62	F	>80	2.62	F
	T	>80	2.42	F	>80	2.42	F
	R	>80	1.07	F	>80	1.07	F
Westbound	L/T/R	>80	1.71	F	>80	1.71	F
Overall Intersection		>80	1.67	F	>80	1.67	F

Notes: Vehicle delay is rounded to the nearest whole number for Cumulative Conditions to reflect the uncertainty associated with projecting future year traffic conditions.

1. Lane groups: T = Through movement, R = Right movement, L = Left movement. When no turn lanes are present, the movements are shown as combined lane groups (e.g. T/R = shared through/right lanes). Asterisk (*) denotes the critical lane group for each intersection.
2. The analysis presented in the TEP did not include the existing short informal right-turn pocket at 19th Avenue / Winston Drive for conservative analysis purpose. Therefore, the operations presented in the TEP EIR are similar to the Cumulative Plus Project Conditions presented in this table.
3. Delay reported as seconds per vehicle. For signalized intersections, a combined weighted average delay for the various movements within the intersection is reported.
4. Volume to Capacity (V/C) ratio.
5. LOS based on average intersection delay, based on the methodology in the Highway Capacity Manual, 2000.

Source: Fehr & Peers, 2015.

95th percentile vehicle queues on the westbound and eastbound approaches would exceed the storage capacity for all movements during the PM peak hour and would exceed the storage capacity on the westbound approach in the AM peak hour. Therefore, cumulative vehicle queues would extend further beyond Stonecrest Drive and 20th Avenue compared to existing conditions.



95th percentile queues on the remaining movements would not exceed the existing storage capacities.

TABLE 5: PEAK HOUR 95 TH PERCENTILE VEHICLE QUEUES						
Approach	Lane Group ¹	Storage Capacity	AM Peak Hour		PM Peak Hour	
			Cumulative	Plus Project	Cumulative	Plus Project
2. 19th Avenue / Winston Drive						
Northbound	L	250 / 110 ²	160	160	310	310
	T/R	2,000	430	430	640	640
Southbound	T	1,420	830	830	800	810
	R	150	<10	<10	350	350
Eastbound	L	225	80	80	280	280
	T	225	110	110	450	450
	R	225	170	170	430	430
Westbound	L/T/R ³	85	310	310	570	570

Notes: **Bold** = Exceeds existing storage length of turn movement; Storage capacity and queues expressed in feet. Vehicle queues are rounded to the nearest 10 for Cumulative Conditions to reflect the uncertainty associated with projecting future year traffic conditions.

1. Lane groups: T = Through movement, R = Right movement, L = Left movement. When no turn lanes are present, the movements are shown as combined lane groups (e.g. T/R = shared through/right lanes).
2. Existing storage capacity at Winston Drive is 250 feet. The TEP TRRP Expanded Alternative will decrease storage capacity of the inner turn lane to 110 feet. The storage capacity of the outer turn lane would remain at 250 feet.
3. Queues for a L/TL/R configuration were found to be longer compared to L/T/R.

Source: Fehr & Peers, 2015.



CONCLUSION

This analysis indicates that the removal of channelized right-turns and “pork chop” islands on 19th Avenue would not significantly worsen traffic operations or vehicle queues on 19th Avenue during Existing or Cumulative Plus Project Conditions. The proposal to shorten the inner left-turn pocket on northbound 19th Avenue would reduce the amount of queuing space at Winston Drive; however, it would not modify the capacity of the left-turn signal phase or cause queues to exceed the existing storage capacity of the outer left-turn lane during Existing Plus Project Conditions. Under Cumulative Plus Project Conditions, the 95th percentile queues would exceed the storage capacity of both left-turn lanes during the PM peak hour, extending approximately 260 feet beyond the storage capacity of the outer left-turn lane. However, these queues are not expected to extend to the next downstream signalized intersection 2,000 feet to the south at Holloway Avenue.

Please feel free to call Matt Goyne at (415) 348-0300 if you have any questions on this letter.

Sincerely,

FEHR & PEERS

A handwritten signature in black ink that reads "Matt Goyne". The signature is written in a cursive, flowing style and is positioned below the typed name.

Matt Goyne, PE
Project Manager

SF14-0785



APPENDIX A

TABLE A-1: SYNCHRO HCM 2000 ADJUSTMENTS

Factor	Value	Source
Area type	CBD	SF Guidelines and Field Observations
Lane width	11 feet	SF Guidelines and Field Observations
Grade	0%	SF Guidelines and Field Observations
Heavy vehicles	2%	SF Guidelines and Field Observations
Parking Maneuvers	5	SF Guidelines and Field Observations: When on-street parking present
Buses Blockages	6-11	SF Guidelines and Field Observations: Based on number of scheduled buses when bus stops present
Pedestrians	Counts	Field Observations
Bicycles	Counts	Field Observations

Source: Fehr & Peers, 2014; *Draft Guidelines for Synchro Intersection LOS Analysis*, San Francisco Planning Department
 October 2012

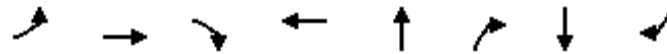
Existing Conditions

Synchro Results

Queues

1: 19th Ave & Ocean

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	106	265	52	427	1430	26	2181	214
v/c Ratio	0.57	0.57	0.13	0.97	0.58	0.03	0.93	0.30
Control Delay	40.0	31.2	8.5	65.9	14.7	3.0	28.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	31.2	8.5	65.9	14.7	3.0	28.2	9.8
Queue Length 50th (ft)	51	126	2	228	188	0	405	46
Queue Length 95th (ft)	#120	208	27	#425	231	10	#510	90
Internal Link Dist (ft)		229		1134	667		665	
Turn Bay Length (ft)	230		130			40		40
Base Capacity (vph)	185	467	411	441	2452	756	2356	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.57	0.13	0.97	0.58	0.03	0.93	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: 19th Ave & Ocean

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	262	51	24	205	194	0	1416	26	0	2159	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7	5.7	5.7		5.7			5.0	5.0		7.0	7.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.91	1.00		0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.96		0.99			1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.99	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		0.94			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1531	1418	1155		1309			4424	1339		4424	1304
Flt Permitted	0.35	1.00	1.00		0.97			1.00	1.00		1.00	1.00
Satd. Flow (perm)	563	1418	1155		1275			4424	1339		4424	1304
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	106	265	52	24	207	196	0	1430	26	0	2181	214
RTOR Reduction (vph)	0	0	32	0	21	0	0	0	12	0	0	27
Lane Group Flow (vph)	106	265	20	0	406	0	0	1430	14	0	2181	187
Confl. Peds. (#/hr)	15		30	30		15			7			27
Confl. Bikes (#/hr)			4			2						3
Parking (#/hr)		5	5	5	5	5						
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	30.3	30.3	30.3		30.3			51.0	51.0		49.0	49.0
Effective Green, g (s)	30.3	30.3	30.3		30.3			51.0	51.0		49.0	49.0
Actuated g/C Ratio	0.33	0.33	0.33		0.33			0.55	0.55		0.53	0.53
Clearance Time (s)	5.7	5.7	5.7		5.7			5.0	5.0		7.0	7.0
Lane Grp Cap (vph)	185	467	380		419			2452	742		2356	694
v/s Ratio Prot		0.19						0.32			c0.49	
v/s Ratio Perm	0.19		0.02		c0.32				0.01			0.14
v/c Ratio	0.57	0.57	0.05		0.97			0.58	0.02		0.93	0.27
Uniform Delay, d1	25.5	25.4	21.1		30.4			13.5	9.2		19.8	11.7
Progression Factor	1.00	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	12.3	4.9	0.3		36.6			1.0	0.0		7.7	1.0
Delay (s)	37.8	30.4	21.3		67.0			14.5	9.3		27.6	12.7
Level of Service	D	C	C		E			B	A		C	B
Approach Delay (s)		31.1			67.0			14.4			26.2	
Approach LOS		C			E			B			C	

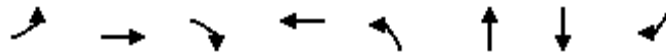
Intersection Summary

HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2: 19th Ave & Winston Dr

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	31	157	193	352	295	1595	2392	66
v/c Ratio	0.30	0.31	0.56	0.70	0.66	0.81	1.16	0.12
Control Delay	40.6	33.8	18.7	41.5	39.7	27.1	102.4	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	33.8	18.7	41.5	39.7	27.1	102.4	0.9
Queue Length 50th (ft)	16	42	30	95	69	334	~595	0
Queue Length 95th (ft)	48	73	98	143	m104	390	#691	4
Internal Link Dist (ft)		1677		410		377	587	
Turn Bay Length (ft)	225		35		250			150
Base Capacity (vph)	103	506	346	500	448	1973	2064	561
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.31	0.56	0.70	0.66	0.81	1.16	0.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations	↖	↔↑	↗		↔↑			↖↗	↔↑↑			↔↑↑
Volume (vph)	35	151	191	23	281	45	80	212	1547	32	0	2368
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5			6.5	5.0			5.0
Lane Util. Factor	0.91	0.91	1.00		0.95			0.97	0.91			0.91
Frpb, ped/bikes	1.00	1.00	0.99		0.95			1.00	1.00			1.00
Flpb, ped/bikes	0.80	0.99	1.00		1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85		0.98			1.00	1.00			1.00
Flt Protected	0.95	1.00	1.00		1.00			0.95	1.00			1.00
Satd. Flow (prot)	1119	2931	1299		2874			2987	4225			4424
Flt Permitted	0.48	0.94	1.00		0.92			0.95	1.00			1.00
Satd. Flow (perm)	562	2762	1299		2655			2987	4225			4424
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	35	153	193	23	284	45	81	214	1563	32	0	2392
RTOR Reduction (vph)	0	0	109	0	13	0	0	0	2	0	0	0
Lane Group Flow (vph)	31	157	84	0	339	0	0	295	1593	0	0	2392
Confl. Peds. (#/hr)	333						333			20	100	
Confl. Bikes (#/hr)			1							2		
Bus Blockages (#/hr)	0	0	11	0	0	0	0	0	0	0	0	0
Parking (#/hr)									5	5		
Turn Type	Perm	NA	Perm	Perm	NA		Prot	Prot	NA			NA
Protected Phases		4			8		5	5	2			6
Permitted Phases	4		4	8								
Actuated Green, G (s)	16.5	16.5	16.5		16.5			13.5	42.0			42.0
Effective Green, g (s)	16.5	16.5	16.5		16.5			13.5	42.0			42.0
Actuated g/C Ratio	0.18	0.18	0.18		0.18			0.15	0.47			0.47
Clearance Time (s)	6.5	6.5	6.5		6.5			6.5	5.0			5.0
Lane Grp Cap (vph)	103	506	238		486			448	1971			2064
v/s Ratio Prot								c0.10	0.38			c0.54
v/s Ratio Perm	0.06	0.06	0.06		c0.13							
v/c Ratio	0.30	0.31	0.35		0.70			0.66	0.81			1.16
Uniform Delay, d1	31.8	31.8	32.1		34.4			36.1	20.6			24.0
Progression Factor	1.00	1.00	1.00		1.00			0.91	1.15			1.00
Incremental Delay, d2	7.4	1.6	4.1		8.1			6.5	3.2			77.4
Delay (s)	39.1	33.4	36.2		42.5			39.3	26.8			101.4
Level of Service	D	C	D		D			D	C			F
Approach Delay (s)		35.3			42.5				28.7			99.0
Approach LOS		D			D				C			F

Intersection Summary

HCM 2000 Control Delay	64.2	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	110.0%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

3/12/2015

Movement	SBR
▲▲▲ Lane Configurations	7
Volume (vph)	65
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frbp, ped/bikes	0.92
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	1065
Flt Permitted	1.00
Satd. Flow (perm)	1065
Peak-hour factor, PHF	0.99
Adj. Flow (vph)	66
RTOR Reduction (vph)	35
Lane Group Flow (vph)	31
Confl. Peds. (#/hr)	100
Confl. Bikes (#/hr)	10
Bus Blockages (#/hr)	10
Parking (#/hr)	5
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	42.0
Effective Green, g (s)	42.0
Actuated g/C Ratio	0.47
Clearance Time (s)	5.0
Lane Grp Cap (vph)	497
v/s Ratio Prot	
v/s Ratio Perm	0.03
v/c Ratio	0.06
Uniform Delay, d1	13.2
Progression Factor	1.00
Incremental Delay, d2	0.2
Delay (s)	13.4
Level of Service	B
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Queues

3: Holloway Ave & 19th Ave

3/12/2015



Lane Group	EBT	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	244	288	47	1726	2415	138
v/c Ratio	0.59	0.59	0.22	0.80	1.10	0.27
Control Delay	30.8	30.0	13.6	21.1	74.0	12.7
Queue Delay	0.0	0.0	0.0	30.3	0.0	0.0
Total Delay	30.8	30.0	13.6	51.4	74.0	12.7
Queue Length 50th (ft)	112	133	6	277	~564	29
Queue Length 95th (ft)	193	218	33	342	m#508	m36
Internal Link Dist (ft)	584	428		256	772	
Turn Bay Length (ft)			90			90
Base Capacity (vph)	417	488	216	2171	2190	504
Starvation Cap Reductn	0	0	0	540	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.59	0.22	1.06	1.10	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Holloway Ave & 19th Ave

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕↕↕			↕↕↕	↕
Volume (vph)	48	122	67	19	260	46	0	1574	100	0	2343	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Util. Factor		1.00			1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		0.98			1.00	0.46		1.00			1.00	0.80
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.99			1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1344			1437	563		4188			4240	938
Flt Permitted		0.88			0.97	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1192			1396	563		4188			4240	938
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	49	126	69	20	268	47	0	1623	103	0	2415	138
RTOR Reduction (vph)	0	0	0	0	0	20	0	8	0	0	0	20
Lane Group Flow (vph)	0	244	0	0	288	28	0	1718	0	0	2415	118
Confl. Peds. (#/hr)			73			1738			36			190
Confl. Bikes (#/hr)			4			21			3			4
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Parking (#/hr)		2	2		2	2		5	5		5	5
Turn Type	Perm	NA		Perm	NA	Perm		NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)		31.5			31.5	31.5		46.5			46.5	46.5
Effective Green, g (s)		31.5			31.5	31.5		46.5			46.5	46.5
Actuated g/C Ratio		0.35			0.35	0.35		0.52			0.52	0.52
Clearance Time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Grp Cap (vph)		417			488	197		2163			2190	484
v/s Ratio Prot								0.41			c0.57	
v/s Ratio Perm		0.20			c0.21	0.05						0.13
v/c Ratio		0.59			0.59	0.14		0.79			1.10	0.24
Uniform Delay, d1		23.9			24.0	20.0		17.8			21.8	12.0
Progression Factor		1.00			1.00	1.00		1.00			0.98	1.37
Incremental Delay, d2		5.9			5.2	1.5		3.1			51.1	0.7
Delay (s)		29.8			29.1	21.5		20.9			72.5	17.2
Level of Service		C			C	C		C			E	B
Approach Delay (s)		29.8			28.1			20.9			69.5	
Approach LOS		C			C			C			E	

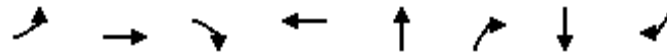
Intersection Summary

HCM 2000 Control Delay	47.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: 19th & Ocean

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	54	238	26	349	1870	47	2213	153
v/c Ratio	0.29	0.55	0.07	0.92	0.72	0.06	0.85	0.20
Control Delay	31.7	35.1	12.1	63.3	16.5	4.8	27.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	35.1	12.1	63.3	16.5	4.8	27.7	13.5
Queue Length 50th (ft)	26	127	2	207	289	4	433	56
Queue Length 95th (ft)	62	207	21	#382	345	19	m381	m47
Internal Link Dist (ft)		228		1353	585		615	
Turn Bay Length (ft)	230		130			40		40
Base Capacity (vph)	189	429	364	381	2610	787	2610	778
Starvation Cap Reductn	0	0	0	0	0	0	5	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.55	0.07	0.92	0.72	0.06	0.85	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: 19th & Ocean

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	238	26	36	175	138	0	1870	47	0	2213	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7	5.7	5.7		5.7			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96		0.97			1.00	0.95		1.00	0.94
Flpb, ped/bikes	0.98	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		0.95			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1501	1418	1152		1298			4424	1314		4424	1289
Flt Permitted	0.40	1.00	1.00		0.94			1.00	1.00		1.00	1.00
Satd. Flow (perm)	627	1418	1152		1232			4424	1314		4424	1289
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	238	26	36	175	138	0	1870	47	0	2213	153
RTOR Reduction (vph)	0	0	15	0	8	0	0	0	12	0	0	18
Lane Group Flow (vph)	54	238	11	0	341	0	0	1870	35	0	2213	135
Confl. Peds. (#/hr)	52		26	26		52			30			52
Confl. Bikes (#/hr)			10			5			2			2
Parking (#/hr)		5	5	5	5	5						
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	30.3	30.3	30.3		30.3			59.0	59.0		59.0	59.0
Effective Green, g (s)	30.3	30.3	30.3		30.3			59.0	59.0		59.0	59.0
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.59	0.59		0.59	0.59
Clearance Time (s)	5.7	5.7	5.7		5.7			5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	189	429	349		373			2610	775		2610	760
v/s Ratio Prot		0.17						0.42			c0.50	
v/s Ratio Perm	0.09		0.01		c0.28				0.03			0.11
v/c Ratio	0.29	0.55	0.03		0.91			0.72	0.05		0.85	0.18
Uniform Delay, d1	26.6	29.2	24.5		33.6			14.6	8.6		16.8	9.4
Progression Factor	1.00	1.00	1.00		1.00			1.00	1.00		1.59	1.96
Incremental Delay, d2	3.8	5.1	0.2		29.1			1.7	0.1		0.3	0.0
Delay (s)	30.4	34.3	24.7		62.7			16.3	8.7		27.0	18.4
Level of Service	C	C	C		E			B	A		C	B
Approach Delay (s)		32.8			62.7			16.1			26.5	
Approach LOS		C			E			B			C	

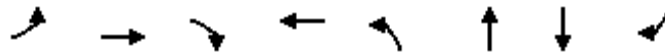
Intersection Summary

HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Queues

2: 19th Ave & Winston Dr

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	116	374	375	439	383	1753	2233	223
v/c Ratio	0.96	0.68	0.85	0.68	0.88	0.97	1.17	0.46
Control Delay	112.2	41.4	39.1	39.1	70.5	32.4	112.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	41.4	39.1	39.1	70.5	32.4	112.5	13.4
Queue Length 50th (ft)	80	119	131	129	114	403	~626	46
Queue Length 95th (ft)	#204	174	#298	184	m#174	m#516	#722	113
Internal Link Dist (ft)		2075		410		377	594	
Turn Bay Length (ft)	225		35		250			150
Base Capacity (vph)	121	550	441	647	433	1815	1902	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.68	0.85	0.68	0.88	0.97	1.17	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBU	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Volume (vph)	159	316	364	27	345	53	55	317	1654	47	0	2166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5			6.5	5.0			5.0
Lane Util. Factor	0.91	0.91	1.00		0.95			0.97	0.91			0.91
Frbp, ped/bikes	1.00	1.00	0.98		0.96			1.00	1.00			1.00
Flpb, ped/bikes	0.83	0.98	1.00		1.00			1.00	1.00			1.00
Frt	1.00	1.00	0.85		0.98			1.00	1.00			1.00
Flt Protected	0.95	0.99	1.00		1.00			0.95	1.00			1.00
Satd. Flow (prot)	1161	2866	1284		2879			2987	4216			4424
Flt Permitted	0.40	0.78	1.00		0.90			0.95	1.00			1.00
Satd. Flow (perm)	493	2248	1284		2599			2987	4216			4424
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.98	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	164	326	375	28	356	55	56	327	1705	48	0	2233
RTOR Reduction (vph)	0	0	127	0	11	0	0	0	3	0	0	0
Lane Group Flow (vph)	116	374	248	0	428	0	0	383	1750	0	0	2233
Confl. Peds. (#/hr)	439					439				64		
Confl. Bikes (#/hr)			14							3		
Bus Blockages (#/hr)	0	0	11	0	0	0	0	0	0	0	0	0
Parking (#/hr)									5	5		
Turn Type	Perm	NA	Perm	Perm	NA		Prot	Prot	NA			NA
Protected Phases		4			8		5	5	2			6
Permitted Phases	4		4	8								
Actuated Green, G (s)	24.5	24.5	24.5		24.5			14.5	43.0			43.0
Effective Green, g (s)	24.5	24.5	24.5		24.5			14.5	43.0			43.0
Actuated g/C Ratio	0.24	0.24	0.24		0.24			0.14	0.43			0.43
Clearance Time (s)	6.5	6.5	6.5		6.5			6.5	5.0			5.0
Lane Grp Cap (vph)	120	550	314		636			433	1812			1902
v/s Ratio Prot								c0.13	0.42			c0.50
v/s Ratio Perm	c0.24	0.17	0.19		0.16							
v/c Ratio	0.97	0.68	0.79		0.67			0.88	0.97			1.17
Uniform Delay, d1	37.3	34.2	35.3		34.1			41.9	27.8			28.5
Progression Factor	1.00	1.00	1.00		1.00			1.21	0.67			1.00
Incremental Delay, d2	73.6	6.6	18.1		5.6			19.4	12.8			84.2
Delay (s)	111.0	40.8	53.5		39.7			70.1	31.3			112.7
Level of Service	F	D	D		D			E	C			F
Approach Delay (s)		55.7			39.7				38.2			104.5
Approach LOS		E			D				D			F

Intersection Summary

HCM 2000 Control Delay	68.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	124.5%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

HCM Signalized Intersection Capacity Analysis
 2: 19th Ave & Winston Dr

3/12/2015

Movement	SBR
▲▲▲ Lane Configurations	▲
Volume (vph)	216
Ideal Flow (vphpl)	1900
Total Lost time (s)	5.0
Lane Util. Factor	1.00
Frbp, ped/bikes	0.84
Flpb, ped/bikes	1.00
Frt	0.85
Flt Protected	1.00
Satd. Flow (prot)	992
Flt Permitted	1.00
Satd. Flow (perm)	992
Peak-hour factor, PHF	0.97
Adj. Flow (vph)	223
RTOR Reduction (vph)	62
Lane Group Flow (vph)	161
Confl. Peds. (#/hr)	203
Confl. Bikes (#/hr)	16
Bus Blockages (#/hr)	6
Parking (#/hr)	5
Turn Type	Perm
Protected Phases	
Permitted Phases	6
Actuated Green, G (s)	43.0
Effective Green, g (s)	43.0
Actuated g/C Ratio	0.43
Clearance Time (s)	5.0
Lane Grp Cap (vph)	426
v/s Ratio Prot	
v/s Ratio Perm	0.16
v/c Ratio	0.38
Uniform Delay, d1	19.4
Progression Factor	1.00
Incremental Delay, d2	2.5
Delay (s)	21.9
Level of Service	C
Approach Delay (s)	
Approach LOS	
Intersection Summary	

Queues

3: Holloway Ave & 19th Ave

3/12/2015



Lane Group	EBT	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	293	223	22	2013	2515	135
v/c Ratio	0.96	0.52	0.10	0.85	1.05	0.24
Control Delay	77.4	33.4	9.0	22.4	45.1	3.3
Queue Delay	0.0	0.0	0.0	47.0	0.0	0.0
Total Delay	77.4	33.4	9.0	69.4	45.1	3.3
Queue Length 50th (ft)	182	116	0	366	~653	8
Queue Length 95th (ft)	#350	192	16	442	m578	m12
Internal Link Dist (ft)	1219	428		239	772	
Turn Bay Length (ft)			90			85
Base Capacity (vph)	306	427	224	2376	2395	569
Starvation Cap Reductn	0	0	0	688	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.52	0.10	1.19	1.05	0.24

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Holloway Ave & 19th Ave

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗		↕↕↕			↕↕↕	↗
Volume (vph)	77	120	93	25	196	22	0	1884	109	0	2490	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Util. Factor		1.00			1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		0.97			1.00	0.53		1.00			1.00	0.83
Flpb, ped/bikes		0.91			1.00	1.00		1.00			1.00	1.00
Frt		0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1213			1434	654		4193			4240	978
Flt Permitted		0.79			0.94	1.00		1.00			1.00	1.00
Satd. Flow (perm)		973			1356	654		4193			4240	978
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	78	121	94	25	198	22	0	1903	110	0	2515	135
RTOR Reduction (vph)	0	0	0	0	0	15	0	7	0	0	0	17
Lane Group Flow (vph)	0	293	0	0	223	7	0	2006	0	0	2515	118
Confl. Peds. (#/hr)	1166		59			1166			36			167
Confl. Bikes (#/hr)			20			10			1			7
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	6
Parking (#/hr)		2	2		2	2		5	5		5	5
Turn Type	Perm	NA		Perm	NA	Perm		NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)		31.5			31.5	31.5		56.5			56.5	56.5
Effective Green, g (s)		31.5			31.5	31.5		56.5			56.5	56.5
Actuated g/C Ratio		0.32			0.32	0.32		0.56			0.56	0.56
Clearance Time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Grp Cap (vph)		306			427	206		2369			2395	552
v/s Ratio Prot								0.48			c0.59	
v/s Ratio Perm		c0.30			0.16	0.01						0.12
v/c Ratio		0.96			0.52	0.03		0.85			1.05	0.21
Uniform Delay, d1		33.6			28.1	23.7		18.1			21.8	10.8
Progression Factor		1.00			1.00	1.00		1.00			0.59	0.34
Incremental Delay, d2		41.7			4.5	0.3		4.0			30.1	0.6
Delay (s)		75.3			32.6	24.0		22.1			42.8	4.2
Level of Service		E			C	C		C			D	A
Approach Delay (s)		75.3			31.8			22.1			40.9	
Approach LOS		E			C			C			D	

Intersection Summary

HCM 2000 Control Delay	35.1	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

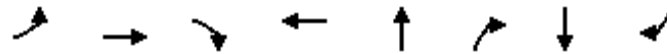
Existing Plus Project Conditions

Synchro Results

Queues

1: 19th Ave & Ocean

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	106	265	52	427	1430	26	2181	214
v/c Ratio	0.57	0.57	0.13	0.97	0.58	0.03	0.93	0.30
Control Delay	40.0	31.2	8.5	65.9	14.7	3.0	28.2	9.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.0	31.2	8.5	65.9	14.7	3.0	28.2	9.8
Queue Length 50th (ft)	51	126	2	228	188	0	405	46
Queue Length 95th (ft)	#120	208	27	#425	231	10	#510	90
Internal Link Dist (ft)		229		1134	667		670	
Turn Bay Length (ft)	230		130			40		40
Base Capacity (vph)	185	467	411	441	2452	756	2356	721
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.57	0.13	0.97	0.58	0.03	0.93	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

HCM Signalized Intersection Capacity Analysis

1: 19th Ave & Ocean

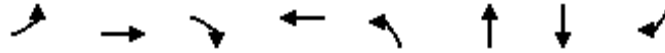
3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	105	262	51	24	205	194	0	1416	26	0	2159	212
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7	5.7	5.7		5.7			5.0	5.0		7.0	7.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.91	1.00		0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.96		0.99			1.00	0.97		1.00	0.95
Flpb, ped/bikes	0.99	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		0.94			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1531	1418	1155		1309			4424	1339		4424	1304
Flt Permitted	0.35	1.00	1.00		0.97			1.00	1.00		1.00	1.00
Satd. Flow (perm)	563	1418	1155		1275			4424	1339		4424	1304
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	106	265	52	24	207	196	0	1430	26	0	2181	214
RTOR Reduction (vph)	0	0	32	0	21	0	0	0	12	0	0	27
Lane Group Flow (vph)	106	265	20	0	406	0	0	1430	14	0	2181	187
Confl. Peds. (#/hr)	15		30	30		15			7			27
Confl. Bikes (#/hr)			4			2						3
Parking (#/hr)		5	5	5	5	5						
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	30.3	30.3	30.3		30.3			51.0	51.0		49.0	49.0
Effective Green, g (s)	30.3	30.3	30.3		30.3			51.0	51.0		49.0	49.0
Actuated g/C Ratio	0.33	0.33	0.33		0.33			0.55	0.55		0.53	0.53
Clearance Time (s)	5.7	5.7	5.7		5.7			5.0	5.0		7.0	7.0
Lane Grp Cap (vph)	185	467	380		419			2452	742		2356	694
v/s Ratio Prot		0.19						0.32			c0.49	
v/s Ratio Perm	0.19		0.02		c0.32				0.01			0.14
v/c Ratio	0.57	0.57	0.05		0.97			0.58	0.02		0.93	0.27
Uniform Delay, d1	25.5	25.4	21.1		30.4			13.5	9.2		19.8	11.7
Progression Factor	1.00	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Incremental Delay, d2	12.3	4.9	0.3		36.6			1.0	0.0		7.7	1.0
Delay (s)	37.8	30.4	21.3		67.0			14.5	9.3		27.6	12.7
Level of Service	D	C	C		E			B	A		C	B
Approach Delay (s)		31.1			67.0			14.4			26.2	
Approach LOS		C			E			B			C	

Intersection Summary

HCM 2000 Control Delay	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	92.0	Sum of lost time (s)	12.7
Intersection Capacity Utilization	114.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	31	157	193	352	295	1595	2392	66
v/c Ratio	0.30	0.31	0.43	0.70	0.66	0.82	1.17	0.12
Control Delay	40.6	33.8	19.8	41.5	39.8	27.4	106.3	0.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	40.6	33.8	19.8	41.5	39.8	27.4	106.3	0.9
Queue Length 50th (ft)	16	42	64	95	69	335	~598	0
Queue Length 95th (ft)	48	73	119	143	m104	391	#694	4
Internal Link Dist (ft)		1677		410		377	587	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	103	506	451	500	448	1957	2048	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.30	0.31	0.43	0.70	0.66	0.82	1.17	0.12

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis
2: 19th Ave & Winston Dr

Existing Plus Project AM
5/5/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	35	151	191	23	281	45	292	1547	32	0	2368	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99		0.95		1.00	1.00			1.00	0.87
Flpb, ped/bikes	0.80	0.99	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.98		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1119	2931	1308		2874		2987	4191			4389	1018
Flt Permitted	0.48	0.94	1.00		0.92		0.95	1.00			1.00	1.00
Satd. Flow (perm)	562	2762	1308		2655		2987	4191			4389	1018
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	35	153	193	23	284	45	295	1563	32	0	2392	66
RTOR Reduction (vph)	0	0	16	0	13	0	0	2	0	0	0	35
Lane Group Flow (vph)	31	157	177	0	339	0	295	1593	0	0	2392	31
Confl. Peds. (#/hr)	333					333			20			191
Confl. Bikes (#/hr)			1						2			5
Bus Blockages (#/hr)	0	0	11	0	0	0	0	6	0	0	6	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.5	16.5	30.0		16.5		13.5	42.0			42.0	42.0
Effective Green, g (s)	16.5	16.5	30.0		16.5		13.5	42.0			42.0	42.0
Actuated g/C Ratio	0.18	0.18	0.33		0.18		0.15	0.47			0.47	0.47
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	103	506	530		486		448	1955			2048	475
v/s Ratio Prot			0.05				c0.10	0.38			c0.55	
v/s Ratio Perm	0.06	0.06	0.09		c0.13							0.03
v/c Ratio	0.30	0.31	0.33		0.70		0.66	0.81			1.17	0.06
Uniform Delay, d1	31.8	31.8	22.5		34.4		36.1	20.7			24.0	13.2
Progression Factor	1.00	1.00	1.00		1.00		0.91	1.14			1.00	1.00
Incremental Delay, d2	7.4	1.6	1.7		8.1		6.5	3.4			81.3	0.3
Delay (s)	39.1	33.4	24.2		42.5		39.4	27.0			105.3	13.5
Level of Service	D	C	C		D		D	C			F	B
Approach Delay (s)		29.2			42.5			28.9			102.8	
Approach LOS		C			D			C			F	

Intersection Summary

HCM 2000 Control Delay	65.6	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.96		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	108.2%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Queues

3: Holloway Ave & 19th Ave

3/12/2015



Lane Group	EBT	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	244	288	47	1726	2415	138
v/c Ratio	0.59	0.59	0.22	0.80	1.10	0.27
Control Delay	30.8	30.0	13.6	21.4	74.4	12.9
Queue Delay	0.0	0.0	0.0	31.5	0.0	0.0
Total Delay	30.8	30.0	13.6	52.9	74.4	12.9
Queue Length 50th (ft)	112	133	6	279	~563	30
Queue Length 95th (ft)	193	218	33	344	m#503	m38
Internal Link Dist (ft)	584	428		256	772	
Turn Bay Length (ft)			90			90
Base Capacity (vph)	417	488	216	2153	2190	504
Starvation Cap Reductn	0	0	0	527	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.59	0.22	1.06	1.10	0.27

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Holloway Ave & 19th Ave

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↕		↕↕↕			↕↕↕	↕
Volume (vph)	48	122	67	19	260	46	0	1574	100	0	2343	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Util. Factor		1.00			1.00	1.00		0.91			0.91	1.00
Frpb, ped/bikes		0.98			1.00	0.46		1.00			1.00	0.80
Flpb, ped/bikes		1.00			1.00	1.00		1.00			1.00	1.00
Frt		0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.99			1.00	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1344			1437	563		4154			4240	938
Flt Permitted		0.88			0.97	1.00		1.00			1.00	1.00
Satd. Flow (perm)		1192			1396	563		4154			4240	938
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	49	126	69	20	268	47	0	1623	103	0	2415	138
RTOR Reduction (vph)	0	0	0	0	0	20	0	8	0	0	0	20
Lane Group Flow (vph)	0	244	0	0	288	28	0	1718	0	0	2415	118
Confl. Peds. (#/hr)			73			1738			36			190
Confl. Bikes (#/hr)			4			21			3			4
Bus Blockages (#/hr)	0	0	0	0	0	0	0	6	0	0	0	6
Parking (#/hr)		2	2		2	2		5	5		5	5
Turn Type	Perm	NA		Perm	NA	Perm		NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)		31.5			31.5	31.5		46.5			46.5	46.5
Effective Green, g (s)		31.5			31.5	31.5		46.5			46.5	46.5
Actuated g/C Ratio		0.35			0.35	0.35		0.52			0.52	0.52
Clearance Time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Grp Cap (vph)		417			488	197		2146			2190	484
v/s Ratio Prot								0.41			c0.57	
v/s Ratio Perm		0.20			c0.21	0.05						0.13
v/c Ratio		0.59			0.59	0.14		0.80			1.10	0.24
Uniform Delay, d1		23.9			24.0	20.0		17.9			21.8	12.0
Progression Factor		1.00			1.00	1.00		1.00			1.00	1.39
Incremental Delay, d2		5.9			5.2	1.5		3.3			51.3	0.8
Delay (s)		29.8			29.1	21.5		21.2			73.0	17.5
Level of Service		C			C	C		C			E	B
Approach Delay (s)		29.8			28.1			21.2			70.0	
Approach LOS		C			C			C			E	

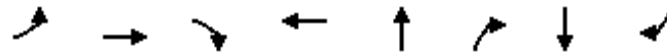
Intersection Summary

HCM 2000 Control Delay	47.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	118.2%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues
1: 19th & Ocean

3/12/2015



Lane Group	EBL	EBT	EBR	WBT	NBT	NBR	SBT	SBR
Lane Group Flow (vph)	54	238	26	349	1870	47	2213	153
v/c Ratio	0.29	0.55	0.07	0.92	0.72	0.06	0.85	0.20
Control Delay	31.7	35.1	12.1	63.3	16.5	4.8	27.7	13.5
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	31.7	35.1	12.1	63.3	16.5	4.8	27.7	13.5
Queue Length 50th (ft)	26	127	2	207	289	4	433	56
Queue Length 95th (ft)	62	207	21	#382	345	19	m381	m47
Internal Link Dist (ft)		228		1353	585		615	
Turn Bay Length (ft)	230		130			40		40
Base Capacity (vph)	189	429	364	381	2610	787	2610	778
Starvation Cap Reductn	0	0	0	0	0	0	5	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.29	0.55	0.07	0.92	0.72	0.06	0.85	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

1: 19th & Ocean

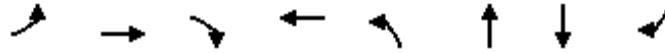
3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	54	238	26	36	175	138	0	1870	47	0	2213	153
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	5.7	5.7	5.7		5.7			5.0	5.0		5.0	5.0
Lane Util. Factor	1.00	1.00	1.00		1.00			0.91	1.00		0.91	1.00
Frpb, ped/bikes	1.00	1.00	0.96		0.97			1.00	0.95		1.00	0.94
Flpb, ped/bikes	0.98	1.00	1.00		1.00			1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.85		0.95			1.00	0.85		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.99			1.00	1.00		1.00	1.00
Satd. Flow (prot)	1501	1418	1152		1298			4424	1314		4424	1289
Flt Permitted	0.40	1.00	1.00		0.94			1.00	1.00		1.00	1.00
Satd. Flow (perm)	627	1418	1152		1232			4424	1314		4424	1289
Peak-hour factor, PHF	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj. Flow (vph)	54	238	26	36	175	138	0	1870	47	0	2213	153
RTOR Reduction (vph)	0	0	15	0	8	0	0	0	12	0	0	18
Lane Group Flow (vph)	54	238	11	0	341	0	0	1870	35	0	2213	135
Confl. Peds. (#/hr)	52		26	26		52			30			52
Confl. Bikes (#/hr)			10			5			2			2
Parking (#/hr)		5	5	5	5	5						
Turn Type	Perm	NA	Perm	Perm	NA			NA	Perm		NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8					2			6
Actuated Green, G (s)	30.3	30.3	30.3		30.3			59.0	59.0		59.0	59.0
Effective Green, g (s)	30.3	30.3	30.3		30.3			59.0	59.0		59.0	59.0
Actuated g/C Ratio	0.30	0.30	0.30		0.30			0.59	0.59		0.59	0.59
Clearance Time (s)	5.7	5.7	5.7		5.7			5.0	5.0		5.0	5.0
Lane Grp Cap (vph)	189	429	349		373			2610	775		2610	760
v/s Ratio Prot		0.17						0.42			c0.50	
v/s Ratio Perm	0.09		0.01		c0.28				0.03			0.11
v/c Ratio	0.29	0.55	0.03		0.91			0.72	0.05		0.85	0.18
Uniform Delay, d1	26.6	29.2	24.5		33.6			14.6	8.6		16.8	9.4
Progression Factor	1.00	1.00	1.00		1.00			1.00	1.00		1.59	1.96
Incremental Delay, d2	3.8	5.1	0.2		29.1			1.7	0.1		0.3	0.0
Delay (s)	30.4	34.3	24.7		62.7			16.3	8.7		27.0	18.4
Level of Service	C	C	C		E			B	A		C	B
Approach Delay (s)		32.8			62.7			16.1			26.5	
Approach LOS		C			E			B			C	

Intersection Summary

HCM 2000 Control Delay	25.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.87		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	10.7
Intersection Capacity Utilization	113.3%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	116	374	375	439	384	1753	2233	223
v/c Ratio	0.96	0.68	0.72	0.68	0.89	0.97	1.18	0.46
Control Delay	112.2	41.4	29.5	39.1	70.7	32.3	116.5	13.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	112.2	41.4	29.5	39.1	70.7	32.3	116.5	13.4
Queue Length 50th (ft)	80	119	165	129	115	403	~630	46
Queue Length 95th (ft)	#204	174	266	184	m#172	m#513	#726	113
Internal Link Dist (ft)		2075		410		377	594	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	121	550	520	647	433	1815	1887	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.68	0.72	0.68	0.89	0.97	1.18	0.46

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

Existing Plus Project PM

5/5/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	159	316	364	27	345	53	372	1654	47	0	2166	216
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99		0.96		1.00	1.00			1.00	0.84
Flpb, ped/bikes	0.83	0.98	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.98		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.99	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1161	2866	1300		2879		2987	4216			4389	992
Flt Permitted	0.40	0.78	1.00		0.90		0.95	1.00			1.00	1.00
Satd. Flow (perm)	493	2248	1300		2599		2987	4216			4389	992
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	164	326	375	28	356	55	384	1705	48	0	2233	223
RTOR Reduction (vph)	0	0	13	0	11	0	0	3	0	0	0	62
Lane Group Flow (vph)	116	374	362	0	428	0	384	1750	0	0	2233	161
Confl. Peds. (#/hr)	439					439			64			203
Confl. Bikes (#/hr)			14						3			16
Bus Blockages (#/hr)	0	0	11	0	0	0	0	0	0	0	6	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	pm+ov	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4	5		8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	24.5	24.5	39.0		24.5		14.5	43.0			43.0	43.0
Effective Green, g (s)	24.5	24.5	39.0		24.5		14.5	43.0			43.0	43.0
Actuated g/C Ratio	0.24	0.24	0.39		0.24		0.14	0.43			0.43	0.43
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	120	550	591		636		433	1812			1887	426
v/s Ratio Prot			0.09				c0.13	0.42			c0.51	
v/s Ratio Perm	c0.24	0.17	0.19		0.16							0.16
v/c Ratio	0.97	0.68	0.61		0.67		0.89	0.97			1.18	0.38
Uniform Delay, d1	37.3	34.2	24.4		34.1		41.9	27.8			28.5	19.4
Progression Factor	1.00	1.00	1.00		1.00		1.21	0.66			1.00	1.00
Incremental Delay, d2	73.6	6.6	4.7		5.6		19.6	12.8			88.3	2.5
Delay (s)	111.0	40.8	29.1		39.7		70.3	31.2			116.8	21.9
Level of Service	F	D	C		D		E	C			F	C
Approach Delay (s)		45.2			39.7			38.2			108.2	
Approach LOS		D			D			D			F	

Intersection Summary

HCM 2000 Control Delay	68.5	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	119.8%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

3: Holloway Ave & 19th Ave

3/12/2015



Lane Group	EBT	WBT	WBR	NBT	SBT	SBR
Lane Group Flow (vph)	293	223	22	2013	2515	135
v/c Ratio	0.96	0.52	0.10	0.85	1.05	0.24
Control Delay	77.4	33.4	9.0	22.8	45.9	3.6
Queue Delay	0.0	0.0	0.0	47.0	0.0	0.0
Total Delay	77.4	33.4	9.0	69.8	45.9	3.6
Queue Length 50th (ft)	182	116	0	368	~653	9
Queue Length 95th (ft)	#350	192	16	446	m577	m13
Internal Link Dist (ft)	1219	428		239	772	
Turn Bay Length (ft)			90			85
Base Capacity (vph)	306	427	224	2356	2395	569
Starvation Cap Reductn	0	0	0	672	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.96	0.52	0.10	1.20	1.05	0.24

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

3: Holloway Ave & 19th Ave

3/12/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕	↗		↕↕↕			↕↕↕	↗
Volume (vph)	77	120	93	25	196	22	0	1884	109	0	2490	134
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Util. Factor		1.00			1.00	1.00		0.91			0.91	1.00
Frbp, ped/bikes		0.97			1.00	0.53		1.00			1.00	0.83
Flpb, ped/bikes		0.91			1.00	1.00		1.00			1.00	1.00
Frt		0.96			1.00	0.85		0.99			1.00	0.85
Flt Protected		0.99			0.99	1.00		1.00			1.00	1.00
Satd. Flow (prot)		1213			1434	654		4160			4240	978
Flt Permitted		0.79			0.94	1.00		1.00			1.00	1.00
Satd. Flow (perm)		973			1356	654		4160			4240	978
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	78	121	94	25	198	22	0	1903	110	0	2515	135
RTOR Reduction (vph)	0	0	0	0	0	15	0	7	0	0	0	17
Lane Group Flow (vph)	0	293	0	0	223	7	0	2006	0	0	2515	118
Confl. Peds. (#/hr)	1166		59			1166			36			167
Confl. Bikes (#/hr)			20			10			1			7
Bus Blockages (#/hr)	0	0	0	0	0	0	0	6	0	0	0	6
Parking (#/hr)		2	2		2	2		5	5		5	5
Turn Type	Perm	NA		Perm	NA	Perm		NA			NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8						6
Actuated Green, G (s)		31.5			31.5	31.5		56.5			56.5	56.5
Effective Green, g (s)		31.5			31.5	31.5		56.5			56.5	56.5
Actuated g/C Ratio		0.32			0.32	0.32		0.56			0.56	0.56
Clearance Time (s)		6.5			6.5	6.5		5.5			5.5	5.5
Lane Grp Cap (vph)		306			427	206		2350			2395	552
v/s Ratio Prot								0.48			c0.59	
v/s Ratio Perm		c0.30			0.16	0.01						0.12
v/c Ratio		0.96			0.52	0.03		0.85			1.05	0.21
Uniform Delay, d1		33.6			28.1	23.7		18.3			21.8	10.8
Progression Factor		1.00			1.00	1.00		1.00			0.61	0.37
Incremental Delay, d2		41.7			4.5	0.3		4.2			30.3	0.6
Delay (s)		75.3			32.6	24.0		22.5			43.6	4.5
Level of Service		E			C	C		C			D	A
Approach Delay (s)		75.3			31.8			22.5			41.6	
Approach LOS		E			C			C			D	

Intersection Summary

HCM 2000 Control Delay	35.7	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	1.02		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	121.4%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

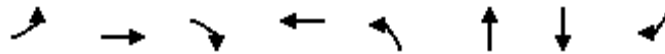
Cumulative No Project Conditions

Synchro Results

Queues

2: 19th Ave & Winston Dr

5/5/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	36	257	343	566	374	1727	2707	61
v/c Ratio	0.63	0.52	0.76	1.16	0.83	0.88	1.32	0.11
Control Delay	82.1	37.4	21.1	126.1	49.7	30.9	173.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.1	37.4	21.1	126.1	49.7	30.9	173.1	0.6
Queue Length 50th (ft)	20	73	39	~199	94	368	~736	0
Queue Length 95th (ft)	#78	114	#170	#306	m#158	427	#831	2
Internal Link Dist (ft)		1677		410		377	587	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	57	498	454	489	448	1958	2048	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.52	0.76	1.16	0.83	0.88	1.32	0.11

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

5/5/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	250	340	40	460	60	370	1670	40	0	2680	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99		0.96		1.00	1.00			1.00	0.87
Flpb, ped/bikes	0.88	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.98		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1233	2942	1299		2904		2987	4189			4389	1018
Flt Permitted	0.24	0.92	1.00		0.90		0.95	1.00			1.00	1.00
Satd. Flow (perm)	315	2718	1299		2614		2987	4189			4389	1018
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	40	253	343	40	465	61	374	1687	40	0	2707	61
RTOR Reduction (vph)	0	0	216	0	11	0	0	3	0	0	0	33
Lane Group Flow (vph)	36	257	127	0	555	0	374	1724	0	0	2707	28
Confl. Peds. (#/hr)	333					333			20			191
Confl. Bikes (#/hr)			1						2			5
Bus Blockages (#/hr)	0	0	11	0	0	0	0	6	0	0	6	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.5	16.5	16.5		16.5		13.5	42.0			42.0	42.0
Effective Green, g (s)	16.5	16.5	16.5		16.5		13.5	42.0			42.0	42.0
Actuated g/C Ratio	0.18	0.18	0.18		0.18		0.15	0.47			0.47	0.47
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	57	498	238		479		448	1954			2048	475
v/s Ratio Prot							c0.13	0.41			c0.62	
v/s Ratio Perm	0.11	0.09	0.10		c0.21							0.03
v/c Ratio	0.63	0.52	0.53		1.16		0.83	0.88			1.32	0.06
Uniform Delay, d1	33.9	33.1	33.3		36.8		37.2	21.8			24.0	13.2
Progression Factor	1.00	1.00	1.00		1.00		0.91	1.15			1.00	1.00
Incremental Delay, d2	43.0	3.8	8.3		92.9		14.8	5.5			148.3	0.2
Delay (s)	76.9	36.9	41.5		129.6		48.5	30.4			172.3	13.4
Level of Service	E	D	D		F		D	C			F	B
Approach Delay (s)		41.7			129.6			33.6			168.8	
Approach LOS		D			F			C			F	

Intersection Summary

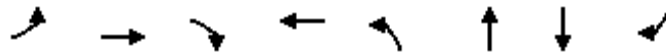
HCM 2000 Control Delay	105.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.19		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

2: 19th Ave & Winston Dr

4/7/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	144	650	443	886	557	2000	2402	402
v/c Ratio	2.62	2.42dl	1.05	1.70	1.29	1.10	1.26	0.82
Control Delay	797.4	342.8	84.9	352.2	184.4	75.1	150.4	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	797.4	342.8	84.9	352.2	184.4	75.1	150.4	34.2
Queue Length 50th (ft)	~170	~334	~236	~442	~230	~544	~708	167
Queue Length 95th (ft)	#275	#452	#430	#568	m#313	m#641	#804	#353
Internal Link Dist (ft)		2075		410		377	594	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	55	388	421	520	433	1814	1902	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.62	1.68	1.05	1.70	1.29	1.10	1.26	0.82

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

4/7/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	490	430	40	750	70	540	1880	60	0	2330	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.98		0.97		1.00	1.00			1.00	0.84
Flpb, ped/bikes	0.94	0.99	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.99		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.99	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1317	2878	1284		2948		2987	4213			4424	992
Flt Permitted	0.16	0.55	1.00		0.71		0.95	1.00			1.00	1.00
Satd. Flow (perm)	226	1586	1284		2099		2987	4213			4424	992
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	289	505	443	41	773	72	557	1938	62	0	2402	402
RTOR Reduction (vph)	0	0	107	0	7	0	0	3	0	0	0	62
Lane Group Flow (vph)	144	650	336	0	879	0	557	1997	0	0	2402	340
Confl. Peds. (#/hr)	439					439			64			203
Confl. Bikes (#/hr)			14						3			16
Bus Blockages (#/hr)	0	0	11	0	0	0	0	0	0	0	0	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	24.5	24.5	24.5		24.5		14.5	43.0			43.0	43.0
Effective Green, g (s)	24.5	24.5	24.5		24.5		14.5	43.0			43.0	43.0
Actuated g/C Ratio	0.24	0.24	0.24		0.24		0.14	0.43			0.43	0.43
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	55	388	314		514		433	1811			1902	426
v/s Ratio Prot							c0.19	0.47			c0.54	
v/s Ratio Perm	c0.64	0.41	0.26		0.42							0.34
v/c Ratio	2.62	2.42dl	1.07		1.71		1.29	1.10			1.26	0.80
Uniform Delay, d1	37.8	37.8	37.8		37.8		42.8	28.5			28.5	24.7
Progression Factor	1.00	1.00	1.00		1.00		1.20	0.68			1.00	1.00
Incremental Delay, d2	777.8	315.0	70.4		328.0		142.9	53.8			122.7	14.4
Delay (s)	815.5	352.7	108.2		365.7		194.4	73.2			151.2	39.1
Level of Service	F	F	F		F		F	E			F	D
Approach Delay (s)		319.0			365.7			99.6			135.1	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	180.7	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	135.6%	ICU Level of Service	H
Analysis Period (min)	15		

dl Defacto Left Lane. Recode with 1 though lane as a left lane.

c Critical Lane Group

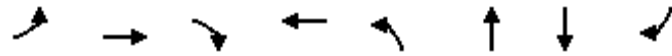
Cumulative Plus Project Conditions

Synchro Results

Queues

2: 19th Ave & Winston Dr

4/28/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	36	358	343	566	374	1727	2707	61
v/c Ratio	0.63	0.72	0.85	1.26	0.83	0.88	1.32	0.11
Control Delay	82.1	43.6	35.0	166.8	49.7	30.9	173.1	0.6
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	82.1	43.6	35.0	166.8	49.7	30.9	173.1	0.6
Queue Length 50th (ft)	20	106	77	~212	94	368	~736	0
Queue Length 95th (ft)	#78	157	#231	#320	m#158	427	#831	2
Internal Link Dist (ft)		1677		410		377	587	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	57	500	405	449	448	1958	2048	539
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.63	0.72	0.85	1.26	0.83	0.88	1.32	0.11

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

4/28/2015



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	40	350	340	40	460	60	370	1670	40	0	2680	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.99		0.96		1.00	1.00			1.00	0.87
Flpb, ped/bikes	0.88	1.00	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.98		1.00	1.00			1.00	0.85
Flt Protected	0.95	1.00	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1233	2944	1299		2904		2987	4189			4389	1018
Flt Permitted	0.24	0.93	1.00		0.82		0.95	1.00			1.00	1.00
Satd. Flow (perm)	315	2729	1299		2396		2987	4189			4389	1018
Peak-hour factor, PHF	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99	0.99
Adj. Flow (vph)	40	354	343	40	465	61	374	1687	40	0	2707	61
RTOR Reduction (vph)	0	0	167	0	11	0	0	3	0	0	0	33
Lane Group Flow (vph)	36	358	176	0	555	0	374	1724	0	0	2707	28
Confl. Peds. (#/hr)	333					333			20			191
Confl. Bikes (#/hr)			1						2			5
Bus Blockages (#/hr)	0	0	11	0	0	0	0	6	0	0	6	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	16.5	16.5	16.5		16.5		13.5	42.0			42.0	42.0
Effective Green, g (s)	16.5	16.5	16.5		16.5		13.5	42.0			42.0	42.0
Actuated g/C Ratio	0.18	0.18	0.18		0.18		0.15	0.47			0.47	0.47
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	57	500	238		439		448	1954			2048	475
v/s Ratio Prot							c0.13	0.41			c0.62	
v/s Ratio Perm	0.11	0.13	0.14		c0.23							0.03
v/c Ratio	0.63	0.72	0.74		1.27		0.83	0.88			1.32	0.06
Uniform Delay, d1	33.9	34.5	34.7		36.8		37.2	21.8			24.0	13.2
Progression Factor	1.00	1.00	1.00		1.00		0.91	1.15			1.00	1.00
Incremental Delay, d2	43.0	8.5	18.4		136.4		14.8	5.5			148.3	0.2
Delay (s)	76.9	43.1	53.1		173.2		48.5	30.4			172.3	13.4
Level of Service	E	D	D		F		D	C			F	B
Approach Delay (s)		49.4			173.2			33.6			168.8	
Approach LOS		D			F			C			F	

Intersection Summary

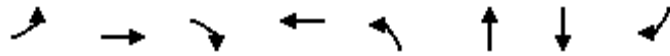
HCM 2000 Control Delay	108.9	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.22		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	121.9%	ICU Level of Service	H
Analysis Period (min)	15		

c Critical Lane Group

Queues

2: 19th Ave & Winston Dr

4/28/2015



Lane Group	EBL	EBT	EBR	WBT	NBL	NBT	SBT	SBR
Lane Group Flow (vph)	144	650	443	886	557	2000	2402	402
v/c Ratio	2.62	2.42dl	1.05	1.70	1.29	1.10	1.27	0.82
Control Delay	797.4	342.8	84.9	352.2	184.4	75.0	154.8	34.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	797.4	342.8	84.9	352.2	184.4	75.0	154.8	34.2
Queue Length 50th (ft)	~170	~334	~236	~442	~230	~544	~712	167
Queue Length 95th (ft)	#275	#452	#430	#568	m#310	m#638	#808	#353
Internal Link Dist (ft)		2075		410		377	594	
Turn Bay Length (ft)	225		35		110			150
Base Capacity (vph)	55	388	421	520	433	1814	1887	488
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	2.62	1.68	1.05	1.70	1.29	1.10	1.27	0.82

Intersection Summary

- ~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
- # 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
- m Volume for 95th percentile queue is metered by upstream signal.
- dl Defacto Left Lane. Recode with 1 though lane as a left lane.

HCM Signalized Intersection Capacity Analysis

2: 19th Ave & Winston Dr

4/28/2015



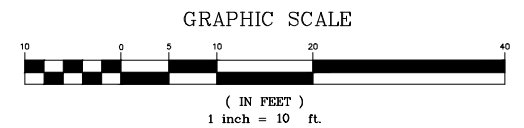
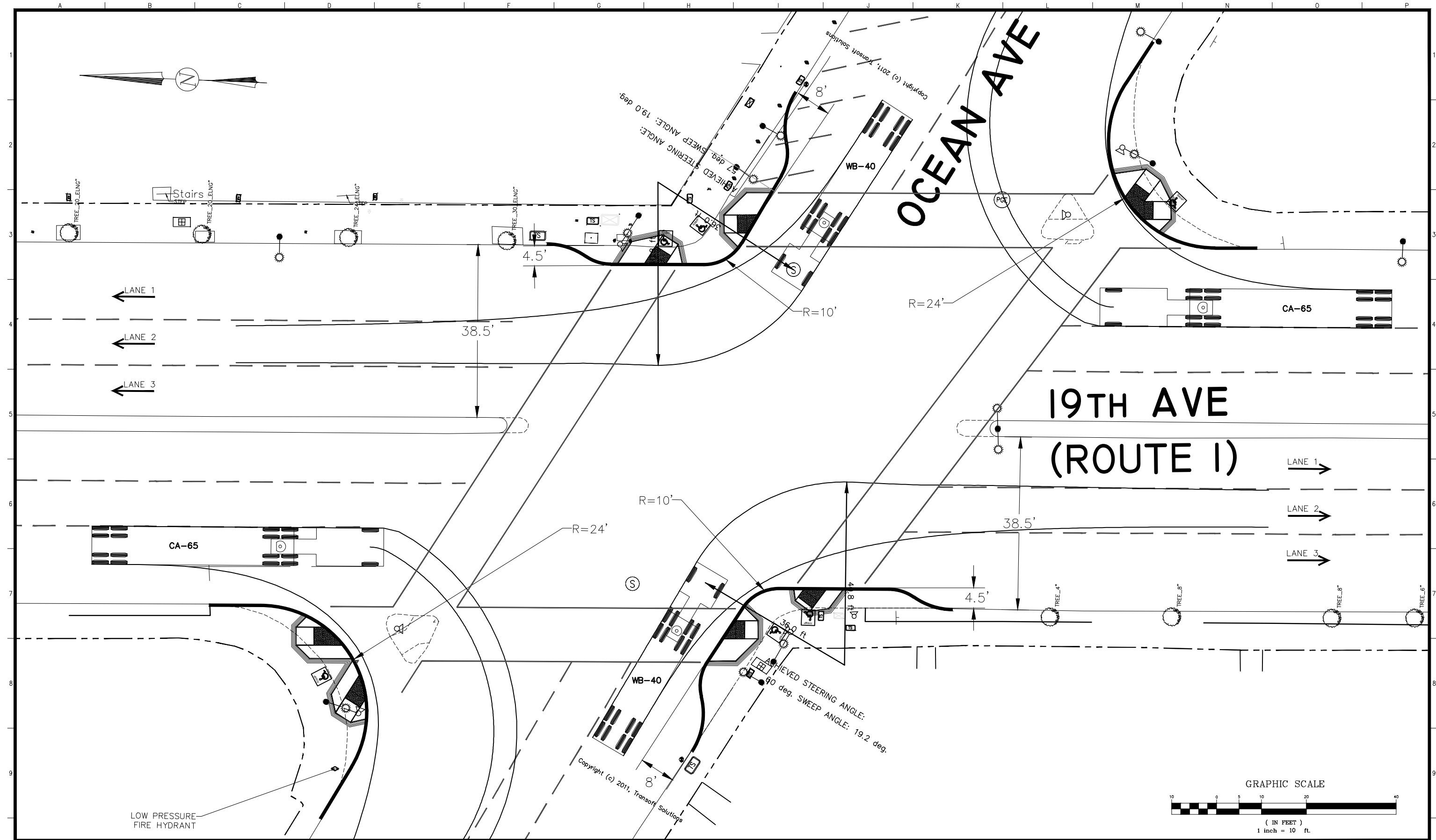
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	280	490	430	40	750	70	540	1880	60	0	2330	390
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Util. Factor	0.91	0.91	1.00		0.95		0.97	0.91			0.91	1.00
Frbp, ped/bikes	1.00	1.00	0.98		0.97		1.00	1.00			1.00	0.84
Flpb, ped/bikes	0.94	0.99	1.00		1.00		1.00	1.00			1.00	1.00
Frt	1.00	1.00	0.85		0.99		1.00	1.00			1.00	0.85
Flt Protected	0.95	0.99	1.00		1.00		0.95	1.00			1.00	1.00
Satd. Flow (prot)	1317	2878	1284		2948		2987	4213			4389	992
Flt Permitted	0.16	0.55	1.00		0.71		0.95	1.00			1.00	1.00
Satd. Flow (perm)	226	1586	1284		2099		2987	4213			4389	992
Peak-hour factor, PHF	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	289	505	443	41	773	72	557	1938	62	0	2402	402
RTOR Reduction (vph)	0	0	107	0	7	0	0	3	0	0	0	62
Lane Group Flow (vph)	144	650	336	0	879	0	557	1997	0	0	2402	340
Confl. Peds. (#/hr)	439					439			64			203
Confl. Bikes (#/hr)			14						3			16
Bus Blockages (#/hr)	0	0	11	0	0	0	0	0	0	0	6	6
Parking (#/hr)								5	5			5
Turn Type	Perm	NA	Perm	Perm	NA		Prot	NA			NA	Perm
Protected Phases		4			8		5	2			6	
Permitted Phases	4		4	8								6
Actuated Green, G (s)	24.5	24.5	24.5		24.5		14.5	43.0			43.0	43.0
Effective Green, g (s)	24.5	24.5	24.5		24.5		14.5	43.0			43.0	43.0
Actuated g/C Ratio	0.24	0.24	0.24		0.24		0.14	0.43			0.43	0.43
Clearance Time (s)	6.5	6.5	6.5		6.5		6.5	5.0			5.0	5.0
Lane Grp Cap (vph)	55	388	314		514		433	1811			1887	426
v/s Ratio Prot							c0.19	0.47			c0.55	
v/s Ratio Perm	c0.64	0.41	0.26		0.42							0.34
v/c Ratio	2.62	2.42dl	1.07		1.71		1.29	1.10			1.27	0.80
Uniform Delay, d1	37.8	37.8	37.8		37.8		42.8	28.5			28.5	24.7
Progression Factor	1.00	1.00	1.00		1.00		1.20	0.68			1.00	1.00
Incremental Delay, d2	777.8	315.0	70.4		328.0		142.9	53.7			127.1	14.4
Delay (s)	815.5	352.7	108.2		365.7		194.4	73.0			155.6	39.1
Level of Service	F	F	F		F		F	E			F	D
Approach Delay (s)		319.0			365.7			99.5			138.9	
Approach LOS		F			F			F			F	

Intersection Summary

HCM 2000 Control Delay	182.1	HCM 2000 Level of Service	F
HCM 2000 Volume to Capacity ratio	1.67		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.0
Intersection Capacity Utilization	135.6%	ICU Level of Service	H
Analysis Period (min)	15		
dl Defacto Left Lane. Recode with 1 though lane as a left lane.			
c Critical Lane Group			



APPENDIX B – PROJECT DRAWINGS

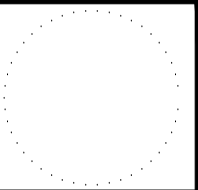


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& FILE NO. OF SURVEYS



INFRASTRUCTURE DIVISION
 DEPARTMENT OF PUBLIC WORKS
 CITY AND COUNTY OF SAN FRANCISCO



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 DRAWN: DATE: D.C. 12/13
 CHECKED: DATE: C.Y. 12/13

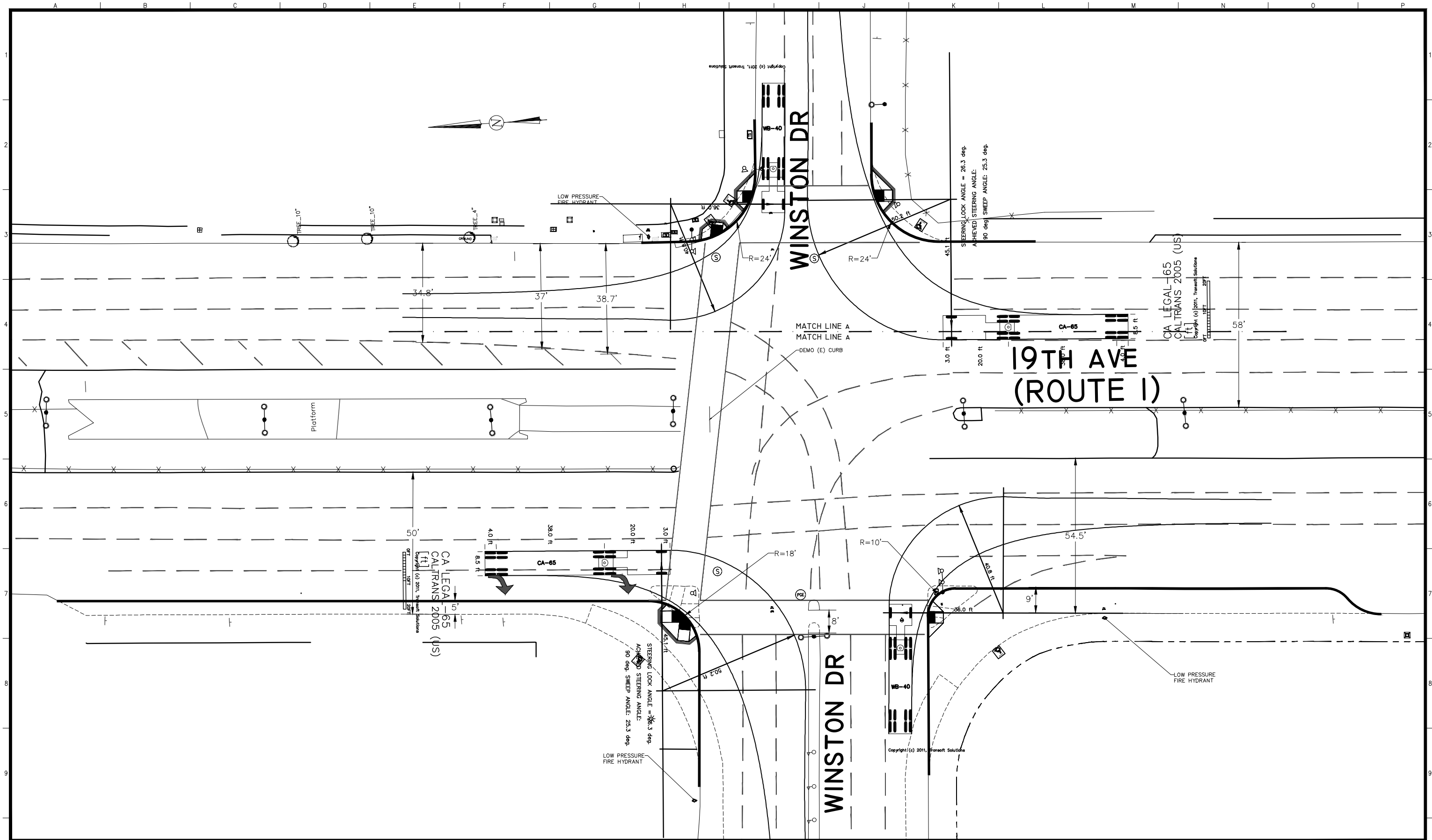
APPROVED
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 23 OF XX

19TH AVENUE BUS AND PEDESTRIAN
 BULB-OUTS
 19TH AVENUE & OCEAN AVE
 PROPOSED BULB-OUTS PLAN VIEW

CONTRACT NO. 2353J
 DRAWING NO. R-18
 FILE NO. XXXXX
 REV. NO. XX

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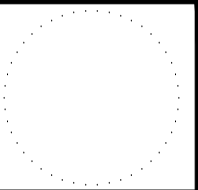


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INFRASTRUCTURE DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF SAN FRANCISCO



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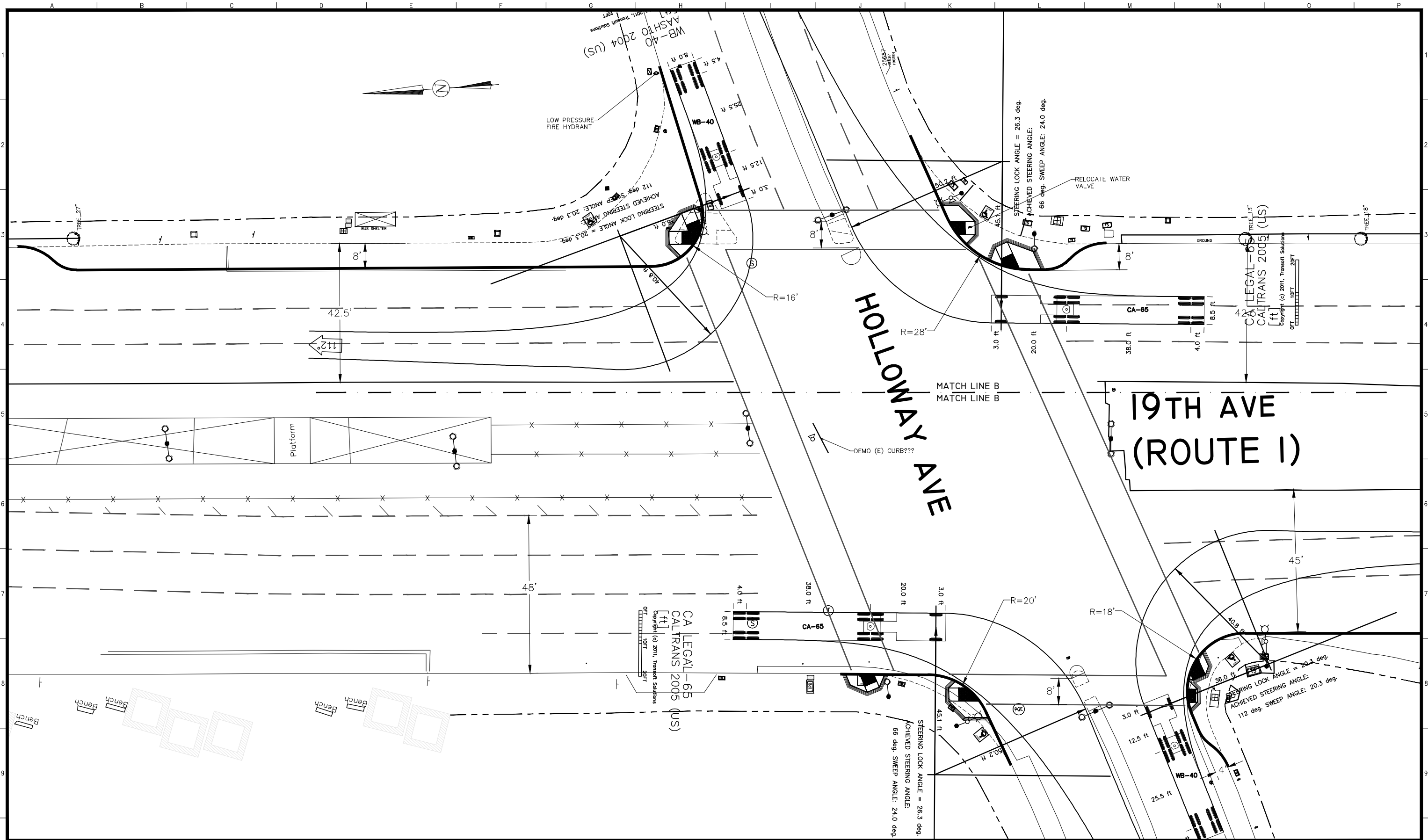
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19TH AVENUE BUS AND PEDESTRIAN
 BULB-OUTS
 19TH AVENUE & WINSTON DRIVE
 PROPOSED BULB-OUTS PLAN VIEW

CONTRACT NO.	2353J
DRAWING NO.	XXXX
FILE NO.	XXXXX
REV. NO.	XX

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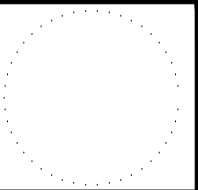


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INFRASTRUCTURE DIVISION
DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF SAN FRANCISCO



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19TH AVENUE BUS AND PEDESTRIAN BULB-OUTS

19TH AVENUE & HOLLOWAY AVE PROPOSED BULB-OUTS PLAN VIEW

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REV. NO.	XX

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Americans with disabilities as the Americans with Disabilities Act of 1990 (ADA) does. The current project proposes the construction of pedestrian and transit bulb-outs. These bulb-outs along with shelters and other facilities will be in full compliance with ADA requirements.

9. OTHER CONSIDERATIONS AS APPROPRIATE

9A. Permits

Permits that would be required under the project are summarized in Table 9.1

Table 9.1. Anticipated Permits and Approvals

Agency	Approval or Permit
SF Public Works/ISCOTT	Encroachment permit required for work within public right-of-way
SF Public Works/BSSR	The geometrics of street, pavement markings, use of streets and sidewalks must be approved by the SF Public Works Bureau of Street Use and Mapping, along with review proposed construction staging and access.
SF Public Works/SFMTA	The SF Public Works will need to approve proposed alterations to street lighting circuitry and/or traffic signals.
SF Public Works/BSM	The SF Public Works must approve an excavation permit, requiring compliance with the Article 2.4 and Director's Order No. 176, 707, Excavation in the Public Right-of-Way.
SF Public Works/BSES	Approves tree removals and replanting in Public Right-of-Way
SF Public Works	The Director of Public Works must approve nighttime construction work permits. The approved Night Noise Permits allows the permitted to work between the hours of 8 P.M. and 7 A. M. with inspection monitoring in place. However, after 10 P.M., the noise level must not exceed 5 dBA above the ambient noise.
SF Public Works	Approves street excavation work.
San Francisco Planning Department	Recommends to the Board of Supervisors any required General Plan Amendments.
San Francisco Planning Department	Determines consistency of project with General Plan, if Board of Supervisors approval of any sidewalk and median width changes is required.
San Francisco Arts Commissions	Approves design of public structures
SFPUC, SFFD, PG&E, SF Public Works	Coordination with utility providers regarding temporary or permanent relocation of utilities (including sewer line) through NOI and other filings with the San Francisco Street Construction Coordination Center and participation in the Committee for Utility Liaison on Construction and other Projects (CULCOP). Also, coordination with the San Francisco Fire Department regarding the Auxiliary Water Supply System.

SFPUC/Hetch Hetchy/PG&E	Permits required for OCS Support Pole/Streetlight and related duct bank replacement. Approval by the SFPUC of minimum allowable clearances to wires and work requirements near overhead lines per State of California General Order No. 95
SFPUC	Approval of minimum allowable clearances to wires and work requirements near overhead lines per State of California General Order No. 95
SFPUC	Approves discharge for release of any construction wastewater, including groundwater, into the City's Combined Sewer System.
SFPUC	Determines compliance with National Pollutant Discharge Elimination System (NPDES) Permit requirements for construction activities including contractor's preparation of a Storm Water Pollution Prevention Plan (SWPPP)
Caltrans	Access Control Properties Review and Encroachment Permit.
Caltrans	Approves Project Study Report/Project Report, including conceptual design of project.
Caltrans	Plans approvals for traffic and electrical work.
Caltrans	A Lead Compliance Plan approved by Caltrans will be required prior to the start of construction or soil-disturbance activities if an Aerially Deposited Lead (ADL) Survey identifies soil contains extractable lead concentrations that meet the definition of hazardous materials.
Caltrans	Cooperative Agreement for Construction
Caltrans	Maintenance Agreements
Caltrans	Right-of-Way Certification
Caltrans	Utility Permits
San Francisco Bay Area Regional Water Quality Control Board (RWQCB)	Receives General Construction Activity Stormwater Permit. A Notice of Intent (NOI) to construct, which includes the SWPPP, must be filled out with the San Francisco Bay RWQCB at least 30 days prior to any soil-disturbing activities.
MTC	Air Quality Conformity Determination
CA Fire Marshall	Construction on State ROW - Fire & Life Safety
San Francisco Board of Supervisors	Approves sidewalk and grade changes.
SHPO	Finding of Effort Determination
CPUC	Deviations from GO Standards.

Attachment 5

CUMULATIVE IMPACTS

Coordinated Projects Descriptions

In keeping with the City's Complete Streets Policy and in anticipation of the repaving of 19th Avenue from Junipero Serra Boulevard to Lincoln Way by the California Department of Transportation (CalTrans),¹ San Francisco Municipal Transportation Agency (SFMTA), San Francisco Public Works (Public Works), and San Francisco Public Utilities Commission (SFPUC) are coordinating the timing of various infrastructure repair, maintenance and upgrade projects within this segment of the 19th Avenue right-of-way such that construction-related disruption to the public would be minimized. The subject projects and responsible agencies include the following. A detailed project description is provided as Attachment 4 to this TEP Abbreviated CEQA Checklist:

1. SFMTA: Transit effectiveness and pedestrian safety enhancements in the Modified TTRP.28_1 project including
 - a. Bus and pedestrian bulb-outs,
 - b. Removal of channelizing islands and tightened corner radii, and
 - c. 19th Avenue northbound left-turn lane modification at Winston Drive,
 - d. Red zone (no parking) striping
2. SFPUC: Water distribution system replacement, new installation, and upgrades.
3. SFPUC: Wastewater system replacement.
4. SFPUC: Auxiliary Water Supply System (AWSS) improvements – a. pipeline crossings underneath 19th Avenue at five locations (Lawton Street, Pacheco Street, Santiago Street, Ulloa Street, and Ocean Avenue), and also the replacement of existing 12-inch pipe with 20-inch pipe along Irving Street between 9th and 19th Avenues and along 19th Avenue between Irving and Kirkham Streets.
5. SFMTA: Rail replacement of the M-Ocean View tracks crossing 19th Avenue at Rossmoor Drive (approximately 300 feet of curved track located on 19th Avenue between the cross streets of Buckingham Way and Eucalyptus Drive).
6. SFMTA: Modification (realignment) of the crosswalk on 19th Avenue at Junipero Serra Boulevard;
7. SFMTA: Signal modifications.

San Francisco's coordinated 19th Avenue projects would be constructed along 19th Avenue between Junipero Serra Boulevard and Lincoln Way with some work occurring on side streets. The projects would be constructed in sequence with the likelihood of overlapping construction activities. However, the Planning Department is conducting environmental review for each project separately since each of these projects has independent utility under the California Environmental Quality Act (CEQA). To determine independent utility for the purpose of CEQA, the criteria look at whether each of the projects relies on the other to the extent to where one would not be built without the other and

¹ The limits for the repaving of State Highway 1 by CalTrans extend from 19th Avenue at Junipero Serra Boulevard to Ruckman Avenue in the Presidio. However, the City is proposing infrastructure projects only for 19th Avenue between Junipero Serra Boulevard and Lincoln Way.

whether each has independent significance, i.e. is usable and is a reasonable expenditure even if no additional improvements from the related projects are ever made. In this case, the projects are related geographically i.e. would occur in geographic proximity to one another within the 19th Avenue right of way, but are not related in terms of their function. As stated above, these projects would be completed independently from one another but for the need to minimize disruption to the public with respect to construction activities along the 19th Avenue corridor between Junipero Serra Boulevard and Lincoln Way. Following completion of these projects, CalTrans would conduct final repaving of 19th Avenue (State Highway 1) to its standards.

The Transit Effectiveness Project Environmental Impact Report (TEP EIR) was certified on March 27, 2014 (Planning Department Case no. 2011.0558E). Since certification of the TEP EIR, the TEP projects have been renamed Muni Forward. The project level environmental impacts resulting from the transit and pedestrian improvements on 19th Avenue between Junipero Serra Boulevard and Lincoln Way and certain side streets proposed as part of Muni Forward Modified TTRP.28_1 for the 28/28L 19th Avenue and 19th Avenue Limited bus routes, are within the scope of the analysis provided in the TEP EIR as demonstrated in this TEP Abbreviated CEQA Checklist.

The environmental impacts of the other projects proposed for the 19th Avenue right-of-way (300-ft rail replacement for the M Oceanview street car on 19th Avenue at Rossmoor Drive, realignment of a crosswalk across 19th Avenue at Junipero Serra Boulevard, sewer replacement, water line repair/replacement, emergency water line installation, and street repaving) are being reviewed separately under CEQA.² In addition, SFMTA would modify signals at five intersections, which is part of a larger CalTrans signal upgrade project being reviewed for CEQA by CalTrans.

The potential for cumulative environmental impacts related to these coordinated infrastructure projects would primarily result from construction activities and would be limited to construction-related transportation, construction-related air quality and construction-related noise. Potential cumulative impacts related to these topics are addressed below. The operational independence of the systems supported by the above specified projects (transit, pedestrian, water, wastewater, auxiliary water system supply, and signal modifications) means there would be no potential for cumulative effects with respect to other environmental topics.

Cumulative Context for the Modified TTRP.28_1

Other projects within the vicinity of 19th Avenue considered for this cumulative environmental analysis include Muni Forward (TEP) proposals that cross 19th Avenue, Public Works and SFPUC projects along Irving Street that also cross 19th Avenue, and an SFMTA pilot for its Commuter Shuttle Program. Public Works is implementing the Irving Streetscape Sidewalk and Pedestrian Improvement Project, which would cross 19th Avenue at Irving Street.³ In coordination with this project, SFPUC would conduct water, wastewater, and auxiliary water supply system repair, replacement, and upgrade activities

² Specifics for the other individual proposals are provided for informational purposes only. Detailed project descriptions are being developed during the projects' separate environmental evaluations and may differ from the descriptions provided herein.

³ The Irving Streetscape Sidewalk and Pedestrian Improvement Project received project level environmental review on March 18, 2015 pursuant to the Mitigated Negative Declaration prepared for the Better Streets Plan, Case Number 2007.1238E.

along Irving Street similar to those for 19th Avenue.⁴ Following the work to perform these coordinated infrastructure projects, Public Works would repave Irving Street. Construction of the Irving Street projects is anticipated to be completed by July 2016 and would not overlap with the coordinated 19th Avenue projects. Therefore, there would be no potential for cumulative environmental impacts as a result of the Irving Street projects in combination with the City's coordinated 19th Avenue projects. In addition, the SFMTA is conducting a pilot for its Commuter Shuttle Program that currently allows permitted employer shuttles to utilize bus zones on certain San Francisco streets for loading and unloading of passengers. The SFMTA Commuter Shuttle Program is a citywide program that is undergoing its own environmental review for permanent implementation following the pilot study.⁵ The project involves curbside designation of peak period bus zones and does not involve construction activities. Therefore, there is no potential for the Commuter Shuttle Program to result in cumulative construction-related impacts in combination with 19th Avenue coordinated projects. However, the Commuter Shuttle Program would result in the removal of parking and potential cumulative parking impacts are discussed below.

Muni Forward projects proposed for the L Taraval (TTRP.L), N Judah (TTRP.N), and the 71 Haight-Noriega (TTRP.71)⁶ would cross 19th Avenue at Taraval Street, Judah Street, and Lincoln Way, respectively. Under the TTRP.L, the SFMTA would construct boarding islands on Taraval Street at 18th Avenue. A farside boarding island would be installed in the outbound direction, and a nearside boarding island would be installed in the inbound direction. Under the TTRP.N, the SFMTA the existing nearside inbound and outbound boarding islands would be extended to 220 feet and 225 feet in length, respectively. The TTRP.71_2 was covered at a programmatic level in the TEP EIR for the segment that crosses 19th Avenue at Lincoln Way and a specific design is unknown at this time. Cumulative construction and operational impacts of the Muni Forward projects were addressed in the TEP EIR. Construction activities for these TTRP projects would not overlap with the construction timeline along 19th Avenue itself. The TTRP.L and the TTRP.N would be constructed ahead of the coordinated 19th Avenue projects and the TTRP.71_2 would be developed and constructed later. There would be no potential for cumulative construction impacts as a result of these Muni Forward projects that cross 19th Avenue.⁷

Cumulative Impact Analysis

Implementation of the SFMTA's pedestrian improvement to realign the crosswalk on 19th Avenue at Junipero Serra Boulevard would be limited to the restriping of the crosswalk and modification of curb ramps and signal poles, as needed. It would result in no other construction activities. The rail replacement of approximately 300-feet of existing track for the M Oceanview streetcar line on 19th

⁴ These SFPUC project are undergoing separate environmental review under the following San Francisco Planning Department case numbers: Irving Street Water Main Replacements - 2015-004795ENV; Irving Street Sewer Replacements – 2015-004799ENV; and Irving Street AWSS Replacements – 2015-004802ENV.

⁵ The Commuter Shuttle Program Pilot received a Class 6 categorical exemption from environmental review for an 18-month pilot. The SFMTA is anticipated to seek environmental review to permanently implement this program.

⁶ Renamed under Muni Forward as the 7R-Haight-Noriega Rapid.

⁷ Email and spreadsheet from T. Tapia, SFMTA, dated March 19, 2015 regarding anticipated construction schedule for Muni Forward TTRP projects.

Avenue at Rossmoor Drive would entail removing the rail track, installing new track for the M Oceanview line in place, and the replacement of two overhead contact system (OCS) poles and associated OCS wires. Construction activities associated with this project would be limited to weekend days and would be completed within 3 months.

The Muni Forward proposal for the Modified TTRP.28_1 would also not conflict with the SFPUC potable water and wastewater (sewer) projects or the improvements for the San Francisco Fire Department's Auxiliary Water Supply System (AWSS). For each segment, the subsurface SFPUC infrastructure projects would be completed ahead of the transit and pedestrian improvements to be implemented on the roadway surface as well as the signal modifications. After the work is completed for a certain segment, CalTrans would conduct final pavement renovation.

The new water and sewer pipelines would be installed using open trench construction procedures ("cut and cover"). In open-trench construction, the first step is to make saw cuts around the pavement to be excavated. The pavement is then broken up and hauled to a facility for recycling (to comply with the San Francisco Construction and Demolition Debris Ordinance). A trench about 100-120 feet long will be opened at one time for the water main work, depending on the space available. After the base of the trench is compacted, a sand layer is placed, the water main is installed and the trench backfilled with imported sand and/or native soil to the bottom of the pavement base. Water mains are typically installed three to four feet below finished street grade. About 200-250 feet of water main can typically be installed in a five-day workweek. In addition to the distribution water main smaller pipelines "laterals" are installed to connect service to the individual properties along the alignment. Each one of the sewer repairs will take approximately two to three days to complete. Collection system sewers are typically installed 8 to 10 feet below finished street grade. Total excavation for water main replacements would be approximately 6,500 cubic yards. Currently, approximately 500 linear feet of main sewer replacement has been identified. Additionally Wastewater Collection Systems Operation staff is conducting condition assessment of approximately 27,300 linear feet of main sewer pipelines along the project limits. After this assessment is completed, additional sewer replacement work may be identified and added on to the current sewer replacement work scope listed above. Furthermore, sewer work may be required due to the new pedestrian and bus bulb out work. This sewer work is currently being coordinated with the SFMTA and Public Works. Once the pipeline work has been completed, the Muni Forward improvements in conjunction with the identified signal modifications would be made. Following that, temporary pavement replacement would occur in anticipation of final pavement renovation by CalTrans.

Project Duration and Schedule

The coordinated projects would be initiated upon completion of the environmental review process and construction contract approval and award. The proposed construction activities would be completed in approximately 18 months (545 calendar days). Project activities would primarily be conducted between 8:00 am to 5:00 p.m. Monday through Friday. Restrictions on commute hours construction may limit activity to 9:00 am to 3:00 pm. Early morning, evening and weekend work may be required and will be coordinated between SFPUC, Public Works, and SFMTA in accordance with the construction

Transportation Management Plan (TMP) to be developed for this work. See the Cumulative Construction-related Transportation discussion below.

As previously discussed, the aforementioned projects are being coordinated by various City agencies to minimize construction-related effects that these projects would have if implemented individually over time.

Cumulative Construction-related Transportation Impacts

As described in the TEP EIR, generally within San Francisco, because construction activities are temporary and limited in duration and are required to be conducted in accordance with City requirements, construction-related transportation impacts of the Muni Forward projects would be considered less than significant. Construction of Muni Forward, including the Modified TTRP.28_1, would comply with the requirements set forth in the SFMTA's Blue Book (Parking and Traffic Regulations for Working in San Francisco Streets) as well as those required by CalTrans.

Construction of the modified TTRP.28_1 project would require the temporary closure of travel lanes or sidewalks, or the temporary removal of on-street parking. Construction staging and delivery vehicles may temporarily impede traffic flow on 19th Avenue and surrounding streets. Construction is likely to require temporary street closures and traffic diversion. During the construction period, temporary and intermittent traffic and transit impacts may result from truck movements to and from the construction site. In general, parking lane, travel lane, and sidewalk closures are subject to review and approval by the City's Transportation Advisory Staff Committee (TASC) which consists of representatives from City departments including the SFMTA, Public Works, Fire, Police, Public Health, the Port, and the Taxi Commission. The TASC review and approval process takes into consideration other construction projects in the vicinity; pedestrian, transit and traffic operations; and specific land uses on 19th Avenue.

The other City projects besides Muni Forward TTRP.28_1 being coordinated along 19th Avenue would be subject to the same TASC review and approval process. The construction contractor would be responsible for identifying staging locations which would take place either on or off City streets. Equipment, materials and work crew members would temporarily occupy on-street parking spaces along the project alignment or on adjacent streets. Work crew passenger vehicles may be parked on side streets or in other areas to minimize use of on-street parking spaces along the project alignment. Access to residences and businesses will be maintained at all times, and every effort will be made to minimize impacts to roadway access.

In addition, a transportation management plan (TMP) is being developed for the coordinated 19th Avenue projects that would address temporary traffic control during construction activities. Specifically, the construction activities would proceed approximately two blocks and three intersections at a time. During some of the construction period, there may be more than one area of construction activity occurring simultaneously along the 19th Avenue corridor in an effort to complete the overall construction more quickly. The TMP will identify specific lane closures and transit

operational changes; needed detours and other travel changes for drivers, transit, bicyclists, and pedestrians; and specific strategies that will be implemented to achieve those detours and other travel changes. The TMP for these construction activities will be developed and refined during the design phase for these projects and would be coordinated with other major projects in the area. The TMP will be approved by both Caltrans and SFMTA, and will include the SFMTA's process for accepting and addressing complaints.

The TMP will include measures to ensure coordination with transit operators, emergency services, and neighborhood and special interest groups. It will consider construction strategies and contract incentives to ensure that construction is completed on schedule and that planned TMP measures are implemented. The TMP will include California Highway Patrol (CHP) and local law enforcement involvement and the development of contingency plans for unforeseen events or incidents. The TMP will include a public information program and briefing for local public officials to disseminate project information and notices of upcoming traffic lane closures and detours.

Improvement Measure I-TR-1: Construction Measures on pp. 4.2-70-71 of the TEP EIR would apply to the Modified TTRP.28_1 project and would further reduce the less-than-significant construction-related transportation impacts. These measures are proposed to reduce potential conflicts between construction activities and pedestrians, transit, and autos, including construction truck traffic management. Implementation of this improvement measure would require that the SFMTA avoid truck trips/deliveries during the peak commute periods, provide project construction updates for adjacent businesses and residents, and encourage carpool and transit access for construction workers. Implementation of this improvement measure would further reduce the magnitude of this less-than-significant construction-related transportation impact, and would not result in any secondary transportation-related impacts.

I-TR-1 – Construction Measures: During the construction of all TEP (Muni Forward) projects, the SFMTA shall require the following:

- 1) Construction contractors shall be prohibited from scheduling any truck trips, such as concrete mixers, heavy construction equipment and materials delivery, etc., to the construction sites during the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak commute periods.
- 2) All construction activities shall adhere to the provisions in the City of San Francisco's Regulations for Working in San Francisco Streets (Blue Book), including those addressing sidewalk and lane closures. To minimize construction impacts on nearby businesses and residents, the SFMTA shall alert motorists, bicyclists, and nearby property owners of upcoming construction through its existing website and other available means, such as distribution of flyers, emails, and portable message or informational signs. Information provided shall include contact name(s) for the SFMTA project manager, public information officer, and/or the SFMTA General Enforcement Division contact number (311).
- 3) Construction contractors shall encourage construction workers to use carpooling and transit to the construction site in order to minimize parking demand.

The SFPUC has also identified specific Standard Construction Measures (Attachment 6) with which all SFPUC construction projects must comply. The measures are intended to minimize disruption in the neighborhoods where construction activities would occur. The measures include neighborhood notice, review of seismic and geotechnical studies, on-site air and water quality measures during construction, dewatering (if necessary, and in compliance with local standards and discharge permit requirements), traffic control, noise, hazardous materials, biological resources, cultural resources, and adequate restoration of project site conditions following construction.

Implementation of the TMP and compliance with the above identified measures would minimize disruption to the public and address public safety during construction activities related to the coordinated City projects within the 19th Avenue right of way. Additionally, although there would be travel delays during construction and travelers would be inconvenienced by detours and lane closures, the construction related to these coordinated projects along 19th Avenue would be intermittent and temporary in duration and would thus not result in any permanent environmental effects.

For all of the above reasons, the cumulative transportation-related construction impact would be less than significant.

Cumulative Construction-related Noise and Vibration

Commercial, institutional, and residential uses are located along 19th Avenue between Junipero Serra Boulevard and Lincoln Way. Nineteenth Avenue is State Highway 1 and a high traffic volume street. It includes surface operation of Muni diesel buses (the 28 19th Avenue and 28L 19th Avenue Limited) along the project limits and the operation of a light rail route (M Oceanview line) along a portion which generate traffic noise. The operational noise and vibration impacts due to increases in transit service proposed by the SFMTA's Muni Forward Service Improvements were evaluated in the TEP EIR and found to result in less than significant noise and vibration impacts, Impacts NO-3 and NO-4 on TEP EIR pp. 4.3-35 to 4.3-51 and would not contribute to cumulative noise and vibration impacts as a result of the construction of the City's coordinated 19th Avenue Projects.

Temporary construction-related noise impacts were evaluated in the TEP EIR by using published noise emission levels for the types of construction equipment that are expected to be used to construct Service-related Capital Improvements, TTRPs comprised of TPS Toolkit elements, and Service Improvements (curb ramps), and by determining if the noise levels from construction equipment usage would exceed 80 dBA at 100 feet. Temporary, construction-related vibration impacts were evaluated by using published vibration levels for the types of construction equipment that would be expected to generate vibration and would be used to construct Service-related Capital Improvements, TTRPs comprised of TPS Toolkit elements and Service Improvements (curb ramps). The types of construction equipment used 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 was calculated and compared against the FTA's building vibration damage criteria.

The construction projects proposed under Muni Forward, including those in the Modified TTRP.28_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.

All 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 the Director of Public Works or the Director of the Department of Building Inspection. 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 *San Francisco Public Works Code* and, if performed within the street right-of-way, traffic permits from the SFMTA. These agencies coordinate improvements within the public right-of-way in order to minimize disruption to transit, traffic, and surrounding land uses.

Cumulative noise and vibration impacts could occur if several construction projects occur within the immediate area of one another as is the case with the City's coordinated 19th Avenue Projects. 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, development projects may be located along the alignment and, as a result, construction activities from both the development project and Muni Forward improvements could be performed concurrently and adjacent to one another as in this instance. Since the noise and vibration impacts from construction of the Muni Forward in conjunction with the other coordinated 19th Avenue Projects would be temporary as the construction moves along the route alignment, the cumulative noise and vibration impact at any single receptor location would be short-term.

Development projects' construction activities would also be required to comply with the San Francisco Noise Ordinance, which limits the noise from construction equipment, and due to the additive properties of noise, the noise from two or more construction projects using equipment producing similar noise levels would not result in a substantial noise increase when added together. Construction activities proposed as part of the Muni Forward Modified TTRP.28_1 would only include the demolition of existing 'pork chops' at Winston, Holloway and Ocean Avenues, and the construction of transit and pedestrian bulbs and curb ramps, as required. The period of time to construct most of the individual elements would be 15 days or less. However, the noise and vibration analysis in the TEP EIR considered that some of the proposed Service-related Capital Improvements, TTRPs, or curb ramps would be located near each other; therefore, construction could occur for two to three months within one work area.

Therefore, while construction activities from individual Muni Forward projects and other SFMTA and SFPUC projects may occur at the same time or in sequence, the noise impacts would not be cumulatively considerable. Since none of the construction activities proposed under Muni Forward include activities such as pile driving or underground tunneling that would produce substantial

vibration impacts, the operation of typical construction equipment would not be expected to contribute considerably to cumulative vibration impacts. In addition, since the construction activities proposed would be temporary, they would not have a cumulative impact with future construction projects.

Cumulative Construction-related Air Quality

Regional air quality impacts are by their very nature cumulative impacts. Emissions from past, present and future projects contribute to adverse regional air quality impacts on a cumulative basis. 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. The project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute substantially to an air quality violation or result in a cumulatively considerable net increase in criteria air pollutants. Therefore, if a project's emissions are below the project-level thresholds, the project would not be considered to result in a considerable contribution to cumulative regional air quality impacts.

Construction emissions as a result of the Muni Forward (TEP) projects would result from the installation of TPS Toolkit elements along the TTRP corridors, including the painting of transit-only lanes, installation of transit bulbs, pedestrian bulbs, pedestrian refuge islands, transit boarding islands, traffic circles, traffic signals, sidewalk expansions, and accessible platforms; the installation of Service-related Capital Improvements; and curb ramps to support the Service Improvements. In some cases, construction would involve the expansion or removal of existing transit supportive infrastructure. In general, construction associated with the Muni Forward projects would result in dust generated by earth-moving activities and air pollutants emitted by construction equipment exhaust, which would have a short-term effect on air quality. These short-term effects on air quality were analyzed in the Air Quality Impact Report (AQTR) prepared for Muni Forward (TEP EIR).

Since Muni Forward proposes the construction of a large number of individual transit supportive infrastructure facilities (for instance, there are over 100 transit bulbs proposed under the TTRP Moderate Alternative throughout the City), the proposed construction activities were categorized under five general types of construction activity to aid in the air quality impact evaluation: Curb Work, Non-Curb Work, Traffic Signal Installations, Overhead Wire Expansion installations, and the installation of Accessible Platforms. These general types of construction activities were used to estimate emissions from maximum construction scenarios that could occur within a contiguous area. Average daily emissions of criteria pollutants and precursors were estimated by multiplying the emissions from the maximum construction scenario by the total number of Muni Forward construction projects that would be expected to occur simultaneously.

As specified in this TEP Abbreviated CEQA Checklist, the two blocks of the Modified TTRP.28_1 Expanded Alternative with the greatest concentration of construction activity would be located on 19th

Avenue between Holloway Avenue and Eucalyptus Drive. The construction activity associated with proposed transit and pedestrian bulbs constructed within this segment of the Modified Expanded TTRP.28_1 would not be as great as that for the maximum construction scenarios presented in the TEP EIR for the TTRP.9 or the TTRP.5. Therefore, the construction air quality impacts of the Modified Expanded TTRP.28_1 would be within the air quality analysis in the TEP EIR and would be less than significant, even in consideration of up to three concurrent work sites along 19th Avenue.

The proposed project construction equipment and vehicles for the Modified TTRP.28_1 and other coordinated City projects would comply with the City's Clean Construction Ordinance (meet the Tier 2 engine standards, Level 3 VDECS Diesel Particulate Filters, and use of Biodiesel (B20) fuel).

The construction emissions resulting from the maximum construction scenario were also modeled to determine whether the thresholds for health risk would be exceeded. As referenced on TEP EIR pp. 4.4-41 to 4.4-43 the thresholds for health risk would not be exceeded as a result of the maximum construction scenarios for the TEP proposals. As the construction activities for the Modified Expanded TTRP.28_1 are within the air quality analysis in the TEP EIR, there would be no significant impact with respect to construction air quality health risks.

As stated above, 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. The project-level thresholds for criteria air pollutants are based on levels at which new sources are not anticipated to contribute substantially to an air quality violation or result in a cumulatively considerable net increase in criteria air pollutants. Each of the City coordinated 19th Avenue projects would be responsible for evaluating its air quality impacts and demonstrating whether or not it would result in a considerable contribution to cumulative regional air quality impacts. In addition, air quality modeling of the Muni Forward maximum construction scenarios demonstrated that there would be no significant air quality impact with respect to construction health risk as a result of any portion of the Muni Forward construction.

Because the construction emissions of the Modified TTRP.28_1 would be less than those evaluated in the TEP EIR for the maximum construction scenarios, the potential air quality impact of the Muni Forward Modified TTRP.28_1 project is within the scope of the analysis analyzed in the TEP EIR and would not be considered to result in a considerable contribution to cumulative construction air quality impacts.

Cumulative Parking Impacts

With respect to cumulative parking impacts, in addition to the 55 parking spaces that would be removed as a result of the Modified TTRP.28_1 on 19th Avenue and certain side streets between Junipero Serra Boulevard and Lincoln Way, the SFMTA proposes a Commuter Shuttle Program that would establish passenger loading and unloading zones along 19th Avenue for permitted employer

shuttles resulting in the removal of 15 additional parking spaces along this segment of the 19th Avenue corridor.

SFMTA's Commuter Shuttle Program is currently a pilot program. As part of the pilot program, beginning in August 2014, permitted employer commute shuttle stops were established along 19th Avenue at the following existing Muni stop locations:

- Kirkham Street - northbound farside and southbound nearside.
- Noriega Street - northbound nearside and southbound farside.
- Wawona Street - northbound nearside and southbound nearside.
- Winston Drive - northbound farside.
- Buckingham Way - southbound nearside.

The Modified TTRP.28_1 project would alter or remove some of the existing Muni stops along 19th Avenue that have been designated for shared use by permitted employer shuttles and Muni buses. At locations where permitted commuter shuttles would no longer be able to utilize Muni stops, the Commuter Shuttle Program would create part-time passenger loading/unloading zones for permitted employer commuter shuttles to utilize on weekdays from 6 am to 10 am in the southbound direction and from 4 pm to 8 pm in the northbound direction at the following locations:

- Kirkham Street – northbound and southbound nearside. To implement nearside peak hour bus zones⁸ in both the northbound and southbound directions that would serve permitted employer commuter shuttle buses. These peak hour bus zones would result in the loss of one parking space in the southbound direction between 6 am and 10 am and the loss of one parking space in the northbound direction between 4 pm and 8 pm. At other times besides these hours, these zones would be available for general parking.
- Noriega Street – northbound and southbound nearside. As part of the Commuter Shuttle Program, nearside peak hour bus zones would be implemented in both the northbound and southbound directions that would serve permitted employer commuter shuttle buses. These peak hour bus zones would not result in any parking changes in the northbound direction but would result in the loss of two parking spaces in the southbound direction between 6 am and 10 am. At other times besides these hours, these part-time bus zones would be available for general parking.
- Wawona Street – northbound nearside and southbound midblock. The SFMTA Commuter Shuttle Program would implement part-time peak hour bus zones midblock between Vicente and Wawona streets in the southbound direction and nearside in the northbound direction. These peak hour bus zones would result in the loss of six parking spaces in the southbound direction midblock between Vicente and Wawona streets between 6 am and 10 am and the loss of five parking spaces in the northbound direction between 4 pm and 8 pm. At other times besides these hours, the space occupied by these zones would be available for general parking.

⁸ These bus zones for the commuter shuttle program would not be available for parking on weekdays at the following times: in the southbound direction between 6 am and 10 am; and in the northbound direction between 4 pm and 8 pm. At other times, these parking spaces would be available for general parking.

In total, the changes required to accommodate ongoing operation of the SFMTA's Commuter Shuttle Program would result in the net removal of up to 15 parking spaces on a part-time basis on 19th Avenue between Junipero Serra Boulevard and Lincoln Way.

The removal of 70 parking spaces, some on a part-time basis, along the 19th Avenue corridor between Junipero Serra Boulevard and Lincoln Way as a result of the Modified TTRP.28_1 in combination with the SFMTA Commuter Shuttle Program would not be considered substantial. Therefore, there would be no significant cumulative parking impact along 19th Avenue between Junipero Serra Boulevard and Lincoln Way.

Conclusion

In light of the above, the TTRP.28_1 project modification would not result in any cumulative construction impacts related to transportation, noise, or air quality as a result of coordinating construction activities with the other City right of way projects on 19th Avenue between Junipero Serra Boulevard and Lincoln Way. In addition, there would be no cumulative parking impact with respect to the Modified TTRP.28_1 in combination with part-time parking removal proposed by the San Francisco Commuter Shuttle Program. Therefore, the Modified TTRP.28_1 would not contribute considerably to any significant cumulative environmental impacts.



SAN FRANCISCO PUBLIC UTILITIES COMMISSION

Susan Leal, General Manager
1155 Market St., 11th Floor, San Francisco, CA 94103
Tel. (415) 554-3160 • Fax (415) 554-3161



February 7, 2007

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SUSAN LEAL
GENERAL MANAGER

TO: Michael Carlin
Tom Franza
Barbara Hale
Harlan Kelly
Julie Labonte
Irina Torrey
Ivy Fine
Tony Winnicker

FROM: Susan Leal, General Manager 
Tony Irons, Deputy General Manager 

RE: Standard Measures to be Included in Construction Contracts and
Project Implementation

On August 16, 2006, I directed that the San Francisco Public Utilities Commission ("SFPUC") should implement its construction, maintenance and repair projects to disrupt the surrounding neighborhoods, resources and uses as little as possible. To that end, I directed each construction contract or project to include specific construction measures in the contract or project implementation procedures, as appropriate. On December 12, 2006 Irina Torrey, Manager of the Bureau of Environmental Management provided a clarification to that direction. This memo provides an amendment to the direction that I provided on August 16, 2006 and incorporates Irina Torrey's clarification of December 12, 2006. This direction should be followed in the implementation of SFPUC projects.

Thank you for your cooperation.

Attachment

cc: Laura Spanjian
Kate Stacy
Paul Maltzer

Construction Measures

1. Neighborhood Notice: The SFPUC will provide reasonable advance notification to the businesses, owners and residents of adjacent areas potentially affected by the Water System Improvement Program (WSIP) projects about the nature, extent and duration of construction activities. Interim updates should be provided to such neighbors to inform them of the status of the construction.

Where schools would be affected, the SFPUC will coordinate with school facility managers to schedule construction for time periods with the least impact on school activities and facilities to ensure student safety and to minimize disruption to educational and recreational uses of the school property.

2. Seismic and Geotechnical Studies: Projects will incorporate review of existing information and, if necessary, new engineering investigations to provide relevant geotechnical information about the particular site and project, including a characterization of the soils at the site, and the potential for subsidence and other ground failure. Construction will address any recommendations by such geotechnical reports to ensure seismic stability and reliability of the proposed project. All SFPUC projects must be designed for seismic reliability and minimum potential water loss and property damage. All components of the water system improvement program must be designed to continue water service during a major earthquake.

3. On-Site Air and Water Quality Measures during Construction: All construction contractors must take measures to minimize fugitive dust and dirt emissions resulting from the construction, and implement measures to minimize any construction effects on local air and water quality, including a local storm drain system or watercourse. These measures could include preparation of a Stormwater Pollution Prevention Plan (SWPPP), if required by the Bay Area Regional Water Quality Control Board. At a minimum, construction contractors should undertake the following measures, as applicable, to minimize any adverse effects:

- Erosion and sedimentation controls tailored to the site and project
- Dust control plan
- Placement of straw rolls around each of the nearby stormwater inlets;
- Preservation of existing vegetation;
- Installation of silt fences;
- Use of wind erosion control (e.g. – geotextile or plastic covers on stockpiled soil);
- Sweeping of nearby streets at least once a day; and/or;
- Stabilization of site ingress/egress locations to minimize erosion.
- Spraying the disturbed areas of the site, or any stockpiled soil, with water to minimize fugitive dust emissions.

4. Groundwater: If groundwater is encountered during any excavation activities, the construction contractor shall prepare a dewatering plan so that water is discharged

to the stormwater system in compliance with the local standards and discharge permit requirements.

5. Traffic: Each contractor shall prepare a traffic control plan which will minimize the impacts on traffic and on-street parking on any streets affected by construction of the proposed project. As appropriate, SFPUC or the contractor will consult with local traffic and transit agencies.

6. Noise: The contractor will comply with local noise ordinances regulating construction noise to the extent feasible, and will undertake efforts to minimize noise disruption to nearby neighbors and sensitive receptors during construction.

7. Hazardous materials: Appropriate measures will be implemented to characterize and dispose of hazardous materials should they be encountered during excavation and construction. Contract specifications will mandate full compliance with all applicable local, state and federal regulations related to the identification, transportation and disposal of hazardous materials/soils. As necessary, a spill prevention and countermeasure plan will be prepared.

A qualified environmental professional will conduct any necessary site assessment. The site assessment would include a regulatory database review to identify permitted hazardous materials and environmental cases in the vicinity of each project no more than three months before construction, and a review of appropriate standard information sources to determine the potential for soil or groundwater contamination to occur. Follow-up sampling would be conducted as necessary to characterize soil and groundwater quality prior to construction and, if needed, site investigations or remedial activities would be performed in accordance with applicable laws. The environmental professional would prepare a report documenting the activities performed, summarize the results and make recommendations for appropriate handling of any contaminated materials during construction. A contingency plan would also be prepared identifying measures to be taken should unanticipated contamination be identified during construction. Construction contractors will conduct asbestos and lead abatement in accordance with established regulations.

8. Biological Resources: As an initial matter, SFPUC project managers will screen the project site and area to determine whether biological resources may be affected by construction activities. In the event further investigation is necessary, the SFPUC will comply with all requirements for investigation, analysis and protection of biological resources. A qualified biologist must conduct any required biological screening survey. The biologist will review standard information sources to determine special status species with the potential to occur on the project site. The biologist would carry out a site survey by walking or driving over the project site, as appropriate, to note the general resources and whether any habitat for special-status species is present. The biologist would then document the survey with a brief letter report or memo, setting forth the date of the visit, whether habitat for special-status species is present, providing a map or description showing where sensitive areas exist within the site, and identifying any appropriate avoidance measures.

9. Cultural Resources: As an initial matter, SFPUC project managers will screen the project site and area to determine whether cultural resources, including archaeological and other historical resources, may be affected by construction activities. In the event further investigation is necessary, the SFPUC will comply with all requirements for investigation, analysis and protection of cultural resources.

Please bear in mind that CEQA considers paleontological resources to be "cultural resources." Any screening for cultural resources would include screening for archaeological, paleontological and historic resources. For projects requiring excavation, deep grading, well drilling or tunneling into geologic material at sites identified as having high potential for encountering paleontological resources, a state-registered professional geologist or qualified professional paleontologist will conduct a site-specific evaluation of the paleontological sensitivity. The assessment will include a report of findings for the SFPUC.

A qualified archaeologist, historian or paleontologist will conduct all cultural resources survey and screening work. Screening surveys for cultural resources would include a cultural resources records search to be conducted at the appropriate office member of the California Historical Resources Information System. A field survey will be conducted if determined necessary after the cultural resources records search. Any impacts on identified cultural resources will be avoided to the extent feasible.

Any initial historic resource screening will identify historic resources on the project site as well as adjacent to the project site.

It is possible that project work may affect accidentally discovered buried or submerged cultural resources. Any contractor must distribute the Planning Department archaeological resource "ALERT" sheet to any person involved in soil-disturbing activities. If there is any indication of an archaeological or a paleontological resource during the soils disturbing activity of the project, the contractor shall immediately suspend any soils disturbing activities in the area and notify the SFPUC of such discovery. The SFPUC will then work with the Planning Department's Environmental Review Officer to determine what additional measures should be implemented, based on reports from a qualified archaeological or paleontological consultant.

10. Project Site: The SFPUC will conduct construction activities on SFPUC-owned lands to the extent feasible and minimize the need for use of non-SFPUC-owned land during construction. In cases where construction easement or staging areas are needed on non-SFPUC land, the SFPUC will restore these areas to their prior condition so that the owner may return them to their prior use, unless otherwise arranged with the property owner. The site will be maintained to be clean and orderly. Construction staging areas will be sited away from public view where possible. Nighttime lighting will be directed away from residential areas.

Upon project completion, the construction contractor will return the SFPUC project site to its general condition before construction, including re-grading of the site and re-vegetation of disturbed areas.

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM

04-SF-001 Dist.-Co.-Rte. (or Local Agency)	0.7/5.9 P.M./P.M.	0J700 E.A/Project No.	041400027 Federal-Aid Project No. (Local Project)/Project No.
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PROJECT DESCRIPTION:

This project proposes to upgrade and interconnect traffic signals along 19th avenue (State Route 1) in the City of San Francisco from Junipero Sera Blvd. to Lake St. The purpose of this project is to improve the traffic operations, enhance safety, and extend the service life of the Traffic Signal System to a minimum of 20 years on SR 1. This project is needed to upgrade the existing traffic system to current standard. Traffic signals will be replaced, electrical equipment (i.e. pullboxes, electrical cabinets, loop detectors, etc.) will be installed to integrate the traffic system. To install these items, permanent easements will be acquired from the City of San Francisco.

CEQA COMPLIANCE (for State Projects only)

Based on an examination of this proposal and supporting information, the following statements are true and exceptions do not apply (See 14 CCR 15300 et seq.):

- If this project falls within exempt class 3, 4, 5, 6 or 11, it does not impact an environmental resource of hazardous or critical concern where designated, precisely mapped and officially adopted pursuant to law.
- There will not be a significant cumulative effect by this project and successive projects of the same type in the same place, over time.
- There is not a reasonable possibility that the project will have a significant effect on the environment due to unusual circumstances.
- This project does not damage a scenic resource within an officially designated state scenic highway.
- This project is not located on a site included on any list compiled pursuant to Govt. Code § 65962.5 ("Cortese List").
- This project does not cause a substantial adverse change in the significance of a historical resource.

CALTRANS CEQA DETERMINATION (Check one)

Exempt by Statute. (PRC 21080[b]; 14 CCR 15260 et seq.)

Based on an examination of this proposal, supporting information, and the above statements, the project is:

- Categorically Exempt. Class 2.** (PRC 21084; 14 CCR 15300 et seq.)
- Categorically Exempt. General Rule exemption.** [This project does not fall within an exempt class, but it can be seen with certainty that there is no possibility that the activity may have a significant effect on the environment (CCR 15061[b][3].)]

Kathy Boltz
Print Name: Environmental Branch Chief

NANDINI N. SHRIDHAR
Print Name: Project Manager/DLA Engineer

Kathy Boltz 4/17/2015
Signature Date

Nandini Shridhar 4/21/15
Signature Date

NEPA COMPLIANCE

In accordance with 23 CFR 771.117, and based on an examination of this proposal and supporting information, the State has determined that this project:

- does not individually or cumulatively have a significant impact on the environment as defined by NEPA and is excluded from the requirements to prepare an Environmental Assessment (EA) or Environmental Impact Statement (EIS), and
- has considered unusual circumstances pursuant to 23 CFR 771.117(b).

CALTRANS NEPA DETERMINATION (Check one)

- 23 USC 326:** The State has determined that this project has no significant impacts on the environment as defined by NEPA, and that there are no unusual circumstances as described in 23 CFR 771.117(b). As such, the project is categorically excluded from the requirements to prepare an environmental assessment or environmental impact statement under the National Environmental Policy Act. The State has been assigned, and hereby certifies that it has carried out the responsibility to make this determination pursuant to Chapter 3 of Title 23, United States Code, Section 326 and a Memorandum of Understanding dated June 07, 2013, executed between the FHWA and the State. The State has determined that the project is a Categorical Exclusion under:
- 23 CFR 771.117(c): activity (c)(8)
 - 23 CFR 771.117(d): activity (d)(__)
 - Activity __ listed in Appendix A of the MOU between FHWA and the State

23 USC 327: Based on an examination of this proposal and supporting information, the State has determined that the project is a CE under 23 USC 327.

Kathy Boltz
Print Name: Environmental Branch Chief

NANDINI N. SHRIDHAR
Print Name: Project Manager/DLA Engineer

Kathy Boltz 4/17/2015
Signature Date

Nandini Shridhar 4/21/15
Signature Date

Date of Categorical Exclusion Checklist completion: 4/16/15

Date of ECR or equivalent : 4/17/15;

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM
Continuation Sheet

Continued from page 1:

Project Description:

This project proposes to upgrade and interconnect traffic signals along 19th Avenue (State Route 1) in the City of San Francisco. The purpose of this project is to improve the traffic operations, enhance safety, and extend the service life of the Traffic Signal System to a minimum of 20 years on SR 1. This project is needed to upgrade the existing traffic system to current standard.

The following locations will be upgraded to Caltrans signal standards:

1. 19th Avenue and Crespi Drive (PM 0.88)
2. 19th Avenue and Winston Drive (PM 1.35)
3. 19th Avenue and Rossmoor Drive (PM 1.60)
4. 19th Avenue and Sloat Boulevard (PM 1.89)
5. 19th Avenue and Wawona Street (PM 2.09)
6. 19th Avenue and Moraga Street (PM 3.40)
7. Park Presidio Boulevard and Lake Street (PM 5.88)

At the 19th Avenue and Rossmoor Drive intersection, there is currently a stop sign in place. This will be replaced with a traffic signal.

The following work is proposed:

1. Each intersection will include 2 traffic signals at each corner to upgrade the facility to current Caltrans standards. The new signal poles will have a maximum diameter of 16 in. and height of 39ft 3in. Each traffic signal will have a mast arm with new standard signs attached. The mast arms length will be a maximum length of 65 ft. The maximum dimensions of the signal pole foundation will be at a maximum of 13-ft deep with a diameter of 3 ½ ft.
2. At each intersection, loop detectors will be installed in the pavement at a maximum of 2 inches deep on both SR 1 and local streets.
3. Fiber optic conduit will be placed between Fulton St (PM 5.02) and Lake St. (PM 5.88) and between Holloway Ave. (PM 0.94) to Junipero Sera Blvd. (PM 0.68). The trenches would have maximum dimensions of 3ft deep and 4in wide.
4. New electrical cabinets will be installed at each intersection. The cabinets will be a maximum height of 66.78in, width of 24.25in, and length of 30.25in. The foundation of these electrical cabinets will be a maximum width of 4ft 2in, length of 9ft 9in, and depth of 2ft.
5. Pull-boxes at each traffic signal will be placed underground. The top of the pull-box will be flushed with the surrounding grade. The dimensions of the pull-boxes will be at a maximum of 2ft deep, 1ft 10in wide, and 2ft 10in long. Pull-boxes will also be placed along SR 1 between Fulton St and Lake St. These pull-boxes will be placed approximately 1000ft apart and located at a maximum distance of 10ft from the edge of curb.
6. Tree trimming may be required at each location to enhance the visibility of signals to motorists.
7. Staging areas for equipment must be located away from the project site and not along SR 1. The exact locations will be determined during the Design phase.

Possible equipment that may be used for the proposed work is listed as follows:

- Rockwheel
- Asphalt Paver
- Asphalt Roller
- Backhoe/Bobcat

CATEGORICAL EXEMPTION/CATEGORICAL EXCLUSION DETERMINATION FORM
Continuation Sheet

04-SF-001	0.7/5.9	0J700	0414000027
Dist.-Co.-Rte. (or Local Agency)	P.M./P.M.	E.A/Project No.	Federal-Aid Project No. (Local Project)/Project No.

- Ready mix trucks
- Scraper/Sweeper
- Trailer

8. Each location will have work outside the State right-of-way. Permanent easements will be obtained from the City of San Francisco for the installation of new signal poles, electrical cabinets, and pull boxes.

Conditions of Approval:

- During the nesting season (February 15 to September 1) a Caltrans biologist will conduct preconstruction nest surveys for in the project area no more than 3 days prior to construction activities to survey for potential to impact nesting birds. No work can occur within 300 ft. of all raptors and owls and 50 ft of all other nongame and migratory birds.
- Design will coordinate with Landscape Architecture during PS&E to determine locations of the electrical cabinets.
- In locations where roadside trees are present and directly adjacent to areas where electrical conduit is to be installed, directional drilling, as opposed to open trenching shall be used to place the conduit. This method avoids pruning of tree roots and potential impacts to street trees that could otherwise occur with open trenching. Additionally, trunk protection and ESA fencing within the dripline of the tree will be considered.
- Electrical Cabinets shall be installed on side streets where possible, and painted dark green to match existing electrical cabinets.
- Prior to construction, the Caltrans Architectural Historian will erect ESA barrier (bright marking paint) near the entrances of the Sigmund Stern Grove and Pine Lake Park. The ESA marking will prevent any construction activities near the park.

Environmental Commitments Record for EA 04-0J700_ / ID 0414000027

Last updated 6/16/2015

SF 1 Upgrade Signals
 SF-001-R0.7/5.9
 Current Project Phase: K

EP: Eric DeNardo 510-286-5645

CL:

RE:

Permits									
Permit	Agency	Date Submitted	Date Received	Expiration	Requirements Completed Name	Task Completed Name	Task Completed Date	Remarks/Due Date	Comments
Commitments									
PS&E/Before RTL									
Landscape									
Design will coordinate with Landscape Architecture during PS&E to determine locations of the electrical cabinets.									
Construction									
Biology									
During the nesting season (February 15 to September 1) a Caltrans biologist will conduct preconstruction nest surveys for in the project area no more than 3 days prior to construction activities to survey for potential to impact nesting birds. No work can occur within 300 ft. of all raptors and owls and 50 ft of all other nongame and migratory birds.									
Cultural Resources									
Prior to construction, the Caltrans Architectural Historian will erect ESA barrier (bright marking paint) near the entrances of the Sigmund Stern Grove and Pine Lake Park. The ESA marking will prevent any construction activities near the park.									
Landscape									
Any tree trimming necessary for proper functioning new signs and street lights shall be kept to the minimum necessary. If any trees on the traffic side need trimming, the trimming shall be a smooth taper downward towards the trunk.									
Electrical Cabinets shall be installed on side streets where possible, and painted dark green to match existing electrical cabinets.									
Existing planting areas will be avoided to the maximum extent possible. Any vegetation damaged outside Caltrans' right of way will be replaced.									

Environmental Commitments Record for EA 04-0J700_ / ID 0414000027

Last updated 6/16/2015

SF 1 Upgrade Signals

SF-001-R0.7/5.9

Current Project Phase: K

EP: Eric DeNardo

CL:

RE:

510-286-5645

Task and Brief Description	Source	SSP/ NSSP	Responsible Staff	Action to Comply	Task Completed Name	Date	Remarks/Due Date
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In locations where roadside trees are present and directly adjacent to areas where electrical conduit is to be installed, directional drilling, as opposed to open trenching shall be used to place the conduit. This method avoids pruning of free roots and potential impacts to street trees that could otherwise occur with open trenching. Additionally, trunk protection and ESA fencing within the dripline of the tree will be considered.

Contractor, RE

VIA

SAN FRANCISCO
MUNICIPAL TRANSPORTATION AGENCY
BOARD OF DIRECTORS

RESOLUTION No. 14-041

WHEREAS, The Strategic Plan requires that the SFMTA, in the context of the "Transit First" policy, make transit and other non-personal vehicle-oriented transportation modes the preferred means of travel; and

WHEREAS, The Transit Effectiveness Project (TEP) is a major SFMTA initiative to improve Muni and help meet the Strategic Plan's mode shift goals; and

WHEREAS, The goals of the TEP are to improve Muni travel speed, reliability and safety, make Muni a more attractive transportation mode, improve cost-effectiveness of Muni operations and assist in implementing the City's Transit First policy; and

WHEREAS, The SFMTA applied to the Planning Department for environmental review of the TEP under the California Environmental Quality Act, Public Resources Code Sections 21000 *et seq.*, (CEQA), on June 25, 2011, and the Planning Department determined that an Environmental Impact Report (EIR) was required and provided public notice of that determination by publication in a newspaper of general circulation on November 9, 2011; and

WHEREAS, On July 10, 2013, the Planning Department published the Transit Effectiveness Project Draft Environmental Impact Report (DEIR) and provided public notice in a newspaper of general circulation of the availability of the DEIR for public review and comment and of the date and time of the Planning Commission public hearing on the DEIR; this notice was mailed to the Department's list of persons requesting such notice; and

WHEREAS, Notices of availability of the DEIR and of the date and time of the public hearing were posted at the San Francisco County Clerk's Office, on transit vehicles, and on the Planning Department's web site on July 10, 2013, and copies were provided to all public libraries within San Francisco; and

WHEREAS, On July 10, 2013, copies of the DEIR were mailed or otherwise delivered to a list of persons requesting it, to those noted on the distribution list in the DEIR, and to government agencies, the latter both directly and through the State Clearinghouse; and

WHEREAS, The Planning Commission held a duly advertised public hearing on the DEIR on August 15, 2013 and received public comment on the DEIR; the period for acceptance of written comments ended on September 17, 2013; and

PAGE 2.

WHEREAS, The Planning Department prepared responses to comments on environmental issues received at the public hearing and in writing during the 67 day public review period for the DEIR, prepared revisions to the text of the DEIR in response to comments received or based on additional information that became available during the public review period, and corrected errors in the DEIR. This material was presented in a Responses to Comments document, published on March 13, 2014; and

WHEREAS, The Planning Department prepared a Final Environmental Impact Report (FEIR), consisting of the DEIR, any consultations and comments received during the review process, any additional information that became available, the Responses to Comments document, and the Supplemental Service Variants Memorandum dated March 13, 2014, all as required by law; and

WHEREAS, Environmental review files have been made available for review by the SFMTA Board and the public. (Planning Department File No. 2011.0558E.) These files are available for public review at the Planning Department at 1650 Mission Street, Suite 400, and are part of the record before the SFMTA Board; and

WHEREAS, On March 27, 2014, the Planning Commission reviewed and considered the FEIR and found that its contents and the procedures through which the FEIR was prepared, publicized, and reviewed complied with the provisions of CEQA, the CEQA Guidelines, and Chapter 31 of the San Francisco Administrative Code; and

WHEREAS, The Planning Commission found that the FEIR reflects the independent judgment and analysis of the City and County of San Francisco, is adequate, accurate and objective, and that the Responses to Comments document, the Supplemental Service Variants Memorandum, and all relevant errata contain no significant revisions to the DEIR, and certified the completion of the FEIR in compliance with CEQA and the CEQA Guidelines; and

WHEREAS, The Planning Commission's CEQA certification motion is on file with the Secretary to the SFMTA Board of Directors and is incorporated herein by this reference; now, therefore be it

RESOLVED, That the SFMTA Board of Directors approves the Service Policy Framework as identified in the FEIR and incorporated herein by this reference; and be it further

RESOLVED, That the SFMTA Board of Directors approves the Transit Preferential Streets "Toolkit" as identified in the FEIR and incorporated herein by this reference; and be it further

RESOLVED, That the SFMTA Board of Directors approves at a programmatic and conceptual level the Service Improvements, Service-Related Capital Improvements and both the Moderate and Expanded Travel Time Reduction Proposals Alternatives identified in the FEIR and incorporated herein by this reference; and be it further

PAGE 3.

RESOLVED, That, in taking this approval action, the SFMTA Board of Directors adopts CEQA Findings, which include rejecting alternatives identified in the FEIR as infeasible and adopting a statement of overriding considerations, attached to this Resolution as Enclosure A and incorporated herein by this reference; and be it further

RESOLVED, That the SFMTA Board of Directors adopts the Mitigation Monitoring and Reporting Program (MMRP) attached to this Resolution as Enclosure B; and be it further

RESOLVED, That the SFMTA Board authorizes the Director of Transportation to direct staff to continue with obtaining otherwise necessary approvals and to carry out the actions to implement the Project.

I certify that the foregoing resolution was adopted by the Municipal Transportation Agency Board of Directors and the Parking Authority Commission at their meeting of March 28, 2014.



Secretary, Municipal Transportation Agency
Board and Parking Authority Commission

ENCLOSURE A

**TRANSIT EFFECTIVENESS PROJECT,
INCLUDING THE SERVICE POLICY FRAMEWORK,
CALIFORNIA ENVIRONMENTAL QUALITY ACT FINDINGS:
FINDINGS OF FACT, EVALUATION OF MITIGATION MEASURES AND
ALTERNATIVES, AND STATEMENT OF OVERRIDING CONSIDERATIONS
SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY
BOARD OF DIRECTORS**

In determining to approve the Transit Effectiveness Project (the "Project") described in Section I, Project Description below, the San Francisco Municipal Transportation Agency Board of Directors (the "SFMTA Board") makes and adopts the following findings of fact and decisions regarding significant impacts, mitigation measures, and alternatives, and adopts the statement of overriding considerations, based on substantial evidence in the whole record of this proceeding and under the California Environmental Quality Act ("CEQA"), California Public Resources Code Sections 21000 et seq. ("CEQA"), particularly Sections 21081 and 21081.5, the Guidelines for Implementation of CEQA ("CEQA Guidelines"), 14 California Code of Regulations Sections 15000 et seq., particularly Sections 15091 through 15093, and Chapter 31 of the San Francisco Administrative Code. These findings comprise **ENCLOSURE A** to the associated Board of Directors Resolution.

This document is organized as follows:

Section I provides a description of the Project proposed for adoption, the environmental review process for the Project, the approval actions to be taken and the location of records;

Section II identifies the impacts found not to be significant that do not require mitigation;

Section III identifies potentially significant impacts that can be avoided or reduced to less-than-significant levels through mitigation and describes the disposition of the mitigation measures;

Section IV identifies significant impacts that cannot be avoided or reduced to less-than-significant levels and describes any applicable mitigation measures as well as the disposition of the mitigation measures;

Section V evaluates the different Project alternatives and sets forth the economic, legal, social, technological, and other considerations, and incorporates by reference the reasons set forth in Section VI, that support approval of the Project and the rejection of the alternatives, or elements thereof, analyzed as infeasible; and

Section VI presents a statement of overriding considerations setting forth specific reasons in support of the Board's actions to approve the Project despite its significant and unavoidable

environmental impacts and its rejection of the alternatives not incorporated into the Project as infeasible.

The Mitigation Monitoring and Reporting Program ("MMRP") containing the mitigation measures from the Final Environmental Impact Report ("FEIR") that have been proposed for adoption is attached with these findings as **Attachment B** to the associated Board of Directors Resolution. The MMRP is required by CEQA Section 21081.6 and CEQA Guidelines Section 15091. The MMRP provides a table setting forth each mitigation measure listed in the FEIR for the Project that is required to reduce or avoid a significant adverse impact and that is made a condition of approval. The MMRP also specifies the agency responsible for implementation of each measure and establishes monitoring actions and a monitoring schedule. The full text of the mitigation measures is set forth in the MMRP.

These findings are based upon substantial evidence in the entire record before the SFMTA Board. The references set forth in these findings to certain pages or sections of the Draft Environmental Impact Report ("DEIR" or "DEIR") or the Responses to Comments document ("RTC") are for ease of reference and are not intended to provide an exhaustive list of the evidence relied upon for these findings. The DEIR and the Responses to Comments document, together with the Supplemental Service Variants Memorandum dated March 13, 2014 and Errata dated March 27, 2014, comprise the FEIR.

I. APPROVAL OF THE PROJECT

A. Project Description

The Transit Effectiveness Project (TEP) is comprised of a Service Policy Framework, Service Improvements and Service Variants, Service-related Capital Improvements, and Travel Time Reduction Proposals ("TTRPs"), including the Transit Preferential Streets Toolkit. The TEP includes locations throughout the 49-square-mile City and County of San Francisco and is a program comprised of a group of varied projects and proposals. The TEP components will be implemented on public land and within the public right-of-way throughout the City, on property largely under the jurisdiction of the San Francisco Public Works Department and the SFMTA.

The proposals that comprise the TEP vary in the level of detail provided, from highly specific redesigns, including capital improvements, along certain transportation corridors to more conceptual policy recommendations. Accordingly, and pursuant to CEQA Guidelines Sections 15161 and 15168, the FEIR analyzed portions of the TEP at a "project-level" where the amount and type of information available for those components lent itself to a detailed and specific analysis of all potential environmental impacts, and other portions were analyzed at a "program-level" (a more conceptual level) when the details about and current level of design for a

component did not allow for a project-level analysis. In particular, the Service Policy Framework, 5 of the 12 Service-related Capital Improvements, and 6 of the 17 Travel Time Reduction Proposals (TTRPs) were analyzed at a program level.

The description provided here summarizes the project description provided in the FEIR, which, as noted above, is comprised of the DEIR, the RTC, and the Supplemental Service Variant Memorandum. Please see Chapter 2 of the FEIR for a more detailed description of the TEP project.

1. The Service Policy Framework

The Service Policy Framework sets forth transit service delivery objectives that support the SFMTA Strategic Plan goals, and identifies a variety of actions to implement these objectives. The Service Policy Framework will guide how investments are made to the Muni system and is intended to improve system reliability and reduce transit travel time as well as improve customer service. These objectives include the effective allocation of transit resources, the efficient delivery of service, the improvement of service reliability and reduction in transit travel time, and an improvement in customer service. Most importantly, the Policy Framework would organize Muni transit service into four distinct transit categories:

- **Rapid Network:** These heavily used bus and rail lines form the backbone of the Muni system. With vehicles arriving frequently and transit priority enhancements along the routes, the Rapid network delivers speed and reliability whether customers are heading across town, or simply traveling a few blocks.
- **Local Network:** Also known as "Grid" routes, these long routes combine with the Rapid network to form an expansive core system that lets customers get to their destinations with no more than a short walk, or a seamless transfer.
- **Community Connectors:** Also known as "Circulators", these lightly used bus routes predominantly circulate through San Francisco's hillside residential neighborhoods, filling in gaps in coverage and connecting customers to the core network.
- **Specialized Services:** These routes augment existing service during specific times of day to serve a specific need, or serve travel demand related to special events. They include express service, owl service, and special event trips to serve sporting events, large festivals and other San Francisco activities.

2. Service Improvements and Service Variants

The Service Improvements and Service Variants include creation of new transit routes, changes in the alignment of some existing routes, elimination of underused routes or route segments, changes to headways and hours of service, changes to the day of the week for service, and

changes to the mix of local/limited/express service on several routes. The Service Improvements were developed based on a comprehensive evaluation of the overall transit network and public input from community meetings. Specifically, these proposals include:

- Increasing frequency of transit service along heavily used corridors;
- Creating new routes;
- Changing existing route alignments;
- Eliminating underutilized routes or route segments;
- Introducing larger buses on crowded routes;
- Changing the mix of local/limited/express service;
- Expanding limited services.

In addition, the SFMTA included a number of possible variants to these service changes (including recent service variants developed as part of the public outreach process and summarized in the Supplemental Service Variants Memorandum of March 13, 2014) that are proposed as part of the project to allow for flexibility in the phasing and implementation of the Service Improvements. Proposed Service Variants mostly include modifications to portions of some routes or change the type of vehicle used on some routes. In addition, many of the service variants work in concert to improve service along a particular corridor or neighborhood.

3. Service-Related Capital Improvements

Some of the Service Improvements will be supported by Service-related Capital Improvements. The Service-related Capital Improvements include the following: a) Transfer and Terminal Point Improvements, which include installation of overhead wiring and poles; installation of new switches, bypass rails, and/or transit bulbs; expansion of transit zones; and modification of sidewalks at stops to accommodate substantial passenger interchanges and/or to provide for transit vehicle layovers; b) Overhead Wire Expansion capital improvements to support service route changes for electric trolley routes and provide bypass wires to allow trolley coaches to pass one another on existing routes; c) Systemwide Capital Infrastructure projects, such as installation of new accessible platforms to improve system accessibility across the light rail network.

4. Travel Time Reduction Proposals (TTRPs), Using the Transit Preferential Streets (TPS) Toolkit

The Travel Time Reduction Proposals (TTRPs) will implement roadway and transit stop changes to reduce transit delay on the most heavily used routes that make up the backbone of the Muni system, which is referred to as the Rapid Network. The SFMTA has identified a set of 18 standard roadway and traffic engineering elements that can be used to reduce transit travel time

along a transit corridor. Collectively, these tools or elements are called the Transit Preferential Streets Toolkit ("TPS Toolkit"). The TPS Toolkit elements will be applied to 17 Rapid Network transit corridors to improve operation of the Muni system. These elements include:

- **Transit Stop Changes:** removing or consolidating transit stops; moving stop locations at intersections; adding transit bulbs; adding transit boarding islands; increasing transit stop lengths; converting flag stops to transit zones;
- **Land Modifications:** establishing transit-only lanes; establishing transit queue jump/bypass lanes; establishing dedicated turn lanes; widening travel lanes through lane reductions;
- **Parking and Turn Restrictions:** implement turning restrictions; widening travel lanes through parking restrictions; installing traffic signals at uncontrolled and two-way stop-controlled intersections; installing traffic signals at all-way stop-controlled intersections; replacing all-way stop-controls with traffic calming measures at intersections;
- **Pedestrian Improvements:** installing pedestrian refuge islands; installing pedestrian bulbs; and widening sidewalks.

The TEP proposes to apply the TPS Toolkit to 17 Rapid Network corridors throughout the City. Using the TPS Toolkit, the SFMTA has developed specific corridor designs for 11 of the 17 proposed TTRP corridors. These corridor designs were thus analyzed at a project-level in the FEIR. Project variants were also included as part of these project-level TTRPs. Three of the TTRPs (TTRP.14, TTRP.22 and TTRP.30_1) include variants with different designs on one or more segments of the route. TTRP routes with no design variants at the project level include TTRP.5, TTRP.8x, TTRP.28_1, TTRP.J, TTRP.N, TTRP.9, TTRP.71 and TTRP.L. The SFMTA developed conceptual planning for the remaining 6 TTRP corridors, for which specific corridor designs will be developed at a later stage of the project. These corridor designs were thus analyzed at a programmatic level in the FEIR.

For each of the project-level TTRPs, the SFMTA developed two specific corridor designs comprised of TPS Toolkit elements: a moderate option, referred to as the "TTRP Moderate Alternative;" and an expanded option, referred to as the "TTRP Expanded Alternative." This was done because, although the TEP program was examined in one environmental document in order to understand the full scope of its potential cumulative environmental impacts, the TEP is actually a collection of projects and proposals, which, while related, may be implemented at various times and, in many cases, independently of each other. Thus, these alternatives bracket a range of feasible options that accomplish the SFMTA's objectives for the TEP and describe and analyze the scope of potential physical environmental impacts that would result from implementing a combination of elements from both alternatives. These two alternatives are described and analyzed at an equal level of detail in the FEIR.

Under either alternative, the Service Policy Framework, the Service Improvements, Service Variants, the Service-related Capital Improvements, and the TPS Toolkit as applied to the program-level TTRP corridors would be implemented. The difference between the two alternative projects is that under the TTRP Moderate Alternative, these elements would be implemented in combination with a "moderate" number of TPS Toolkit elements along certain Rapid Network corridors, and, under the TTRP Expanded Alternative, these elements would be implemented in combination with an "expanded" number of TPS Toolkit elements along the same Rapid Network corridors.

Please note that when the DEIR was published, the SFMTA had developed project-level details for only 8 of the 17 TTRP corridors. Subsequently, SFMTA staff developed project-level details for three more of the TTRPs, using the TPS Toolkit. With this additional detail, the TTRP.L, TTRP.9, and TTRP.71_1 Moderate and Expanded Alternatives were analyzed at a project level of detail in the RTC document. These three TTRPs would have the same significant and less-than-significant impacts as the eight project-level TTRPs analyzed in the DEIR and the same mitigation measures would be applicable. Chapter 2 of the RTC document, Project Description Revisions, provides a detailed description of the three additional project-level TTRPs and a summary of their significant and less-than-significant impacts. Chapter 5 of the RTC document, DEIR Revisions, presents the results of the impact analyses of the new three project-level TTRPs as integrated into EIR Chapter 4, Environmental Setting, Impacts, and Mitigation Measures and Chapter 6, Alternatives. Thus, 11 of the 17 TTRPs are analyzed at the project-level in the FEIR. In addition, the descriptions and analyses of TTRP.N and TTRP.5 Moderate and Expanded Alternatives were updated in the FEIR based on minor design modifications to these two project components that occurred after the DEIR was published.

B. Project Objectives

The FEIR discusses several Project objectives identified by the SFMTA as Project Sponsor. The objectives are:

- To improve, to the greatest extent possible, transit speed, reliability and safety by redesigning routes; to reduce travel time along high-ridership corridors by optimizing transit stop locations, implementing traffic engineering changes, and constructing capital infrastructure projects; and to improve safety for pedestrians, bicyclists, and riders at intersections by introducing infrastructure changes (e.g. pedestrian bulbs, transit bulbs, etc.) that lead to safer transit operation.
- To make Muni a more attractive transportation mode and increase transit ridership through both attracting new riders and increasing use by current riders by: serving major origin-destination patterns, such as between regional transit connections and major employment sites; providing direct and efficient service through reduction or elimination

of circuitous route segments; reducing crowding through shifting resources to improve customer comfort and decreasing pass-ups; and redesigning routes to maximize ridership.

- To improve the cost-effectiveness and productivity of transit operations by improving network efficiency and reducing system redundancy by implementing service modifications that include route restructuring, frequency improvements, vehicle-type changes, and hours of service adjustments.
- To implement more fully the City's Transit First Policy by providing clear direction for managing transportation in San Francisco with the goals of providing service to all residents within a quarter mile of 95 percent of the Muni service area and prioritizing transit operations in high-ridership corridors over automobile delay and on-street parking.

C. Environmental Review

The San Francisco Planning Department, as lead agency, prepared a Notice of Preparation ("NOP") and Notice of Public Scoping Meetings on November 9, 2011, and held two Public Scoping Meetings on December 6 and 7, 2011.

The NOP was distributed to the State Clearinghouse and mailed to local, state, and federal agencies and to other interested parties on November 9, 2011, initiating a 30-day public comment period extending through December 9, 2011. A copy of the NOP is available in Appendix 1 in Volume 2 of the EIR. The Public Scoping Meetings were held at the SFMTA offices, One South Van Ness Avenue, in San Francisco. The purpose of the meetings was to present information about the proposed Project to the public and receive public input regarding the scope of the EIR analyses. Attendees were provided an opportunity to voice comments on concerns regarding the project; translators were available for Chinese- and Spanish-speaking attendees if needed.

Oral comments were provided by 21 individuals at the Public Scoping Meetings. During the public review period, 29 public agencies and/or other interested parties submitted comment letters to the Planning Department. Comments raised the following concerns related to physical environmental effects: aesthetics of various transit facilities, including overhead wires; the potential for impacts on archeological resources; air quality impacts related to potential increases in use of private passenger vehicles; the effects on traffic flow and potential for diversions due to new transit and pedestrian bulbs; locations of and distance between transit stops; the potential for shifts in travel modes; concern about loss of parking and loading; pedestrian safety concerns; the environmental review process; suggested use of different

approaches to the transportation impact analysis such as providing estimates of time saved; and requested variations on some service improvements.

The San Francisco Planning Department published an Initial Study on January 23, 2013. The Initial Study was distributed to the State Clearinghouse and mailed to local, state, and federal agencies and to other interested parties on January 23, 2013, initiating a 30-day public comment period extending from January 24, 2013 through February 22, 2013. A copy of the Initial Study is available in Appendix 2 in Volume 2 of the EIR.

The San Francisco Planning Department then prepared a DEIR, which describes both of the Project Alternatives; presents the environmental setting; identifies potential impacts at a program-level or a project-level of detail for both Alternatives; presents mitigation measures for impacts found to be significant or potentially significant; and summarizes the Project Alternatives and their impacts, and compares their impacts and those of the No Project Alternative. In assessing construction and operational impacts of the Project, the DEIR also considers the contribution of the Project impacts to cumulative impacts associated with the Project in combination with other past, present, and reasonably foreseeable future actions with potential for impacts on the same resources.

Each environmental issue presented in the DEIR is analyzed with respect to significance criteria that are based on the San Francisco Planning Department Environmental Planning Division ("EP") guidance regarding the environmental effects to be considered significant. EP guidance is, in turn, based on CEQA Guidelines Appendix G, with some modifications.

The Department published the DEIR on July 10, 2013. The DEIR was circulated to local, state, and federal agencies and to interested organizations and individuals for review and comment beginning on July 11, 2013 for a 67-day public review period, which ended on September 17, 2013. The San Francisco Planning Commission held a duly noticed public hearing to solicit testimony on the DEIR on August 15, 2013. The Planning Department also received written comments on the DEIR, sent through mail, hand-delivered, or by email.

The San Francisco Planning Department then prepared the Responses to Comments document ("RTC"). This document, which provides written response to each comment received on the DEIR that raises environmental issues, was published on March 12, 2014, and includes copies of all of the comments received on the DEIR and responses to those comments. The RTC provided additional updated information and clarification on issues raised by commenters, as well as Planning Department DEIR text changes. The text changes included more detailed analyses, at a project level, for three transit Travel Time Reduction Proposal (TTRPs) for both the Moderate and Expanded Alternatives that had previously been analyzed in the DEIR at a

program level: the TTRP.L (L Taraval), TTRP.9 (9/9L San Bruno), and TTRP.71_1 (71 Haight-Noriega).

On March 13, 2013, the Planning Department published a Supplemental Service Variants Memorandum, which described and analyzed additional service variants developed as part of the SFMTA's public outreach process. The Planning Department concluded that these additional service variants would have the same environmental impacts and require the same mitigation measures as the service variants already described and analyzed in the DEIR, and thus, no additional environmental review was required nor was recirculation of the DEIR required.

The Planning Commission reviewed and considered the FEIR, which is comprised of the DEIR, the RTC document and the Supplemental Service Variants Memorandum, Errata dated March 27, 2014, and all of the supporting information. In certifying the FEIR, the Planning Commission determined that it does not add significant new information to the DEIR that would require recirculation under CEQA because the FEIR contains no information revealing (1) any new significant environmental impact that would result from the project or from a new mitigation measure proposed to be implemented, (2) any substantial increase in the severity of a previously identified environmental impact, (3) any feasible project alternative or mitigation measure considerably different from others previously analyzed that would clearly lessen the environmental impacts of the project, but that was rejected by the project's proponents, or (4) that the DEIR was so fundamentally and basically inadequate and conclusory in nature that meaningful public review and comment were precluded. This SFMTA Board concurs in this determination.

D. Approval Actions

1. Planning Commission Action

On March 27, 2014 the Planning Commission certified the FEIR.

2. San Francisco Municipal Transportation Agency Board of Directors Actions

- Approval of the Transit Effectiveness Project, including the Service Policy Framework
- Approval of the implementation of certain parking and traffic measures in accordance with Section 201(c) of the Transportation Code

3. San Francisco Board of Supervisors Actions

The Planning Commission's certification of the FEIR may be appealed to the Board of Supervisors. If appealed, the Board of Supervisors will determine whether to uphold the

certification or to grant the appeal and remand the FEIR to the Planning Department for further review.

Additional actions that may be taken by the Board of Supervisors are:

- Review and approval of system changes related to any route abandonments.
- Approval of sidewalk changes, upon referral from the Department of Public Works.

4. Other San Francisco Agency Actions

- Approval by the Department of Public Works of sidewalk legislation and construction period encroachment permits.
- Approval by the San Francisco Recreation and Park Commission of property encroachments, if required.
- Approval by the San Francisco Planning Department of any required General Plan Referrals

5. Other—Local, State, and Federal Agencies

Implementation of the Project will involve consultation with, or required approvals by, other local, state and federal regulatory agencies, including, but not limited to, the following:

- The Transportation Advisory Staff Committee ("TASC"): Coordination of all roadway and transit changes.
- City of Daly City: Approval of installation of a traffic signal and transit bulb in Daly City.
- California Department of Transportation ("Caltrans") District 4: Approval of temporary construction street encroachment permits within Caltrans rights-of-way.

To the extent that the identified mitigation measures require consultation with or approval by these other agencies, the SFMTA Board urges these agencies to assist in implementing, coordinating, or approving the mitigation measures, as appropriate to the particular measure.

6. Location and Custodian of Records

The DEIR and all documents referenced in or relied on by the Draft and FEIR, the DEIR public hearing transcript, a copy of all letters regarding the EIR received during the Notice of Preparation and DEIR public review periods, the administrative record, the Responses to Comments document, and the Supplemental Service Variants Memorandum, and background documentation for the FEIR are located at the Planning Department, 1650 Mission Street, San Francisco. (Planning Department Case File No. 2011.0558E.) The Planning Commission Secretary, Jonas Ionin, is the custodian of records for the Planning Department and the Planning Commission.

All information, including written materials and testimony, concerning approval of the Project and adoption of these findings, presented to the SFMTA Board or incorporated into reports presented to the SFMTA Board, are located at the SFMTA offices at One South Van Ness Avenue, 7th floor, San Francisco.

All files have been available to the SFMTA Board and the public for review in considering these findings and whether to approve the Project.

E. Findings about Significant Environmental Impacts and Mitigation Measures

The following Sections II, III, and IV set out the SFMTA Board of Directors' findings about the FEIR's determinations regarding significant environmental impacts and the mitigation measures proposed to address them. These findings provide the written analysis and conclusions of the SFMTA Board regarding the environmental impacts of the Project and the mitigation measures included as part of the FEIR and adopted by the SFMTA Board as part of the Project. To avoid duplication and redundancy, and because the SFMTA Board agrees with, and hereby adopts, the conclusions in the FEIR, these findings will not repeat the analysis and conclusions in the FEIR, but instead incorporate them by reference and rely upon them as substantial evidence supporting these findings.

In making these findings, the SFMTA Board has considered the opinions of SFMTA staff and other City staff and experts, other agencies, and members of the public. The SFMTA Board finds that the determination of significance thresholds is a judgment decision within the discretion of the SFMTA and the City and County of San Francisco; the significance thresholds used in the EIR are supported by substantial evidence in the record, including the expert opinion of the SFMTA and City staff; and the significance thresholds used in the EIR provide reasonable and appropriate means of assessing the significance of the adverse environmental effects of the Project.

These findings do not attempt to describe the full analysis of each environmental impact contained in the FEIR. Instead, a full explanation of these environmental findings and conclusions can be found in the FEIR, which includes its Initial Study presented in EIR Appendix 2, and these findings hereby incorporate by reference the discussion and analysis in the FEIR supporting the determinations regarding the Project impacts and mitigation measures designed to address those impacts. In making these findings, the SFMTA Board of Directors ratifies, adopts, and incorporates in these findings the determinations and conclusions of the FEIR relating to environmental impacts and mitigation measures, except to the extent any such determinations are specifically and expressly modified by these findings.

As set forth below, the SFMTA Board adopts and incorporates the mitigation measures set forth in the FEIR and the attached MMRP to substantially lessen or avoid the significant impacts of the Project. The SFMTA Board intends to adopt all the mitigation measures proposed in the FEIR. Accordingly, in the event a mitigation measure identified in the FEIR has inadvertently been omitted in these findings or the MMRP, such mitigation measure is hereby adopted and incorporated in the findings below by reference. In addition, in the event the language describing a mitigation measure set forth in these findings or the MMRP fails to accurately reflect the mitigation measures in the FEIR due to a clerical error, the language of the policies and implementation measures as set forth in the FEIR shall control. The impact numbers and mitigation measure numbers used in these findings reflect the information contained in the FEIR.

In the Sections II, III and IV below, the same findings are made for a category of environmental impacts and mitigation measures. Rather than repeat the identical finding dozens of times to address each and every significant effect and mitigation measure, the initial finding obviates the need for such repetition because in no instance is the SFMTA Board rejecting the conclusions of the FEIR or the mitigation measures identified in the FEIR for the Project.

The findings below include findings relevant to the TTRP Moderate Alternative and to the TTRP Expanded Alternative. Under either alternative, the FEIR assumed that the Service Policy Framework, the Service Improvements, Service Variants, the Service-related Capital Improvements, and the TPS Toolkit as applied to the program-level TTRP corridors would be implemented. It is not known at this time which specific alternative, or mixture of proposals from the two alternatives, will be ultimately approved by the SFMTA Board for each TTRP corridor. It is likely that, over time, a mix of the proposals described in the TTRP Moderate Alternative and the TTRP Expanded Alternative will be adopted and implemented along the various corridors. Because of this, in taking this action, the SFMTA Board makes the following findings regarding the potential for environmental impacts and required mitigation measures for both the TTRP Moderate Alternative and the TTRP Expanded Alternative, as each are described in the FEIR.

II. IMPACTS FOUND NOT TO BE SIGNIFICANT AND THUS DO NOT REQUIRE MITIGATION

Under CEQA, no mitigation measures are required for impacts that are less than significant (Pub. Resources Code § 21002; CEQA Guidelines §§ 15126.4(a)(3) and 15091). Based on the evidence in the whole record of this proceeding, the Board finds that implementation of the Proposed Project will not result in any significant impacts in the following areas and that these impact areas therefore do not require mitigation:

Land Use and Land Use Planning

- Impacts LU-1, LU-2, and LU-3: The proposed Project would not physically divide an established community, would not conflict with applicable land use plans, policies, or regulations of an agency with jurisdiction over the project adopted for the purpose of avoiding or mitigating an environmental effect, or have a substantial adverse impact on the existing character of the vicinity.
- Impact C-LU-1: The proposed Project, in combination with other past, present, or reasonably foreseeable future projects in the project vicinity, would not have a cumulatively considerable contribution to a significant cumulative land use or land use planning impact.

Aesthetics

- Impacts AE-1 and AE-2: The proposed Project would not have a substantial adverse effect on a scenic vista or on scenic resources, including, but not limited to, trees, rock outcroppings, and other features of the built or natural environment which contribute to a scenic public setting.
- Impact AE-3: The proposed Project would not degrade existing visual character or quality of the project sites and surroundings.
- Impact AE-4: The proposed Project would not create a new source of substantial light or glare that would have a substantial adverse effect on day or nighttime views.
- Impact C-AE-1: The proposed Project, in combination with other past, present, or reasonably foreseeable future projects would not have a cumulatively considerable contribution to a significant cumulative aesthetics impact.

Population and Housing

- Impact PH-1: The proposed Project would not induce substantial population growth either directly or indirectly.
- Impact PH-2: The proposed Project would not displace any existing housing units or create any demand for additional housing, or displace substantial numbers of people, necessitating the construction of replacement housing.
- Impact C-PH-1: The proposed Project in combination with other past, present, or reasonably foreseeable future projects would not result in a cumulatively considerable contribution to significant cumulative impacts on population or housing.

Cultural and Paleontological Resources

- Impact CP-1: The proposed Project would not cause a substantial adverse change in the significance of an historic architectural resource.
- Impact C-CP-1: The proposed Project, in combination with past, present, and reasonably foreseeable future projects in the vicinity, would not result in a cumulatively considerable contribution to significant cumulative impacts on cultural resources or archaeological resources.

Transportation and Circulation

- The proposed Project would not result in changes to air traffic patterns because the project site is not located within an airport land use plan area or in the vicinity of a private airstrip.
- The proposed Project would not substantially increase transportation hazards due to a design feature or incompatible uses.
- Impact TR-1: Implementation of the Service Policy Framework and the TEP project components would not result in construction-related transportation impacts because of their temporary and limited duration.
- Impact TR-2: Implementation of the Service Policy Framework Objectives A through D would not result in significant impacts to local or regional transit, traffic operations, pedestrians and bicyclists, loading, emergency vehicle access, or parking.
- Impact TR-4: Implementation of the Policy Framework Objective A, Actions A.1, A.2 and A.4, Objective B, Actions B.1 through B.4, Objective C, Actions C.1 and C.2, and Objective D, Actions D.1 through D.4 would not result in significant traffic impacts.
- Impact TR-6: Implementation of the Policy Framework Objective A, Actions A.1, A.2 and A.4, Objective B, Actions B.1 through B.4, Objective C, Actions C.1 and C.2, and Objective D, Actions D.1 through D.4 would not result in significant loading impacts.
- Impact TR-7: Implementation of all of the TPS Toolkit categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, Traffic Signal and Stop Sign Changes, and Pedestrian Improvements, would not result in significant impacts to local or regional transit, pedestrians and bicycles, emergency vehicle access, or parking.
- Impact TR-9: Implementation of the following TPS Toolkit categories: Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes, would not result in significant traffic impacts.
- Impact TR-11: Implementation of TPS Toolkit element category Traffic Signal and Stop Sign Changes would not result in significant loading impacts.
- Impact TR-12: Implementation of program-level Service-related Capital Improvements projects (TTPI.2, TTPI.3, TTPI.4, OWE.6, and SCI.1) would not result in significant impacts to local or regional transit, traffic operations, pedestrians and bicyclists, loading, emergency vehicle access, or parking.
- Impact TR-13: Implementation of any of the TPS Toolkit categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, Traffic Signal and Stop Sign Changes, and Pedestrian Improvements along the nine program-level TTRP corridors would not result in significant impacts to local or regional transit, pedestrians and bicyclists, emergency vehicle access, or parking.
- Impact TR-15: Implementation of any TPS Toolkit elements within the following categories: Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes, along the program-level TTRP corridors would not result in significant impacts on traffic operations.

- Impact TR-17: Implementation of any of the TPS Toolkit elements within the category Traffic Signal and Stop Sign Changes along the program level TTRP corridors would not result in significant loading impacts.
- Impact TR-18: Implementation of the Service Improvements or Service Variants would not result in significant impacts to local or regional transit, traffic operations, pedestrians and bicyclists, loading, emergency vehicle access, or parking.
- Impact TR-19: Implementation of the project-level Service-related Capital Improvement projects (TTPI.2, OWE.1, OWE.1 Variant, OWE.2, OWE.3, OWE.4, OWE.5, and SCI.2) would not result in significant impacts to local or regional transit, traffic operations, pedestrians and bicyclists, loading, emergency vehicle access, or parking.
- Impact TR-20: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would not result in significant impacts to local or regional transit.
- Impact TR-21: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1 would not result in significant impacts to local or regional transit.
- Impact TR-22: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would have less-than-significant traffic impacts at 78 study intersections.
- Impact TR-23: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.28_1, or TTRP.71_1 would have less-than-significant traffic impacts at 40 study intersections.
- Impact TR-25: Implementation of the project-level TTRP.14 Expanded Alternative would have less-than-significant traffic impacts at 19 study intersections under Existing plus Service Improvements and the TTRP.14 Expanded Alternative conditions.
- Impact TR-29: Implementation of the project-level TTRP.22_1 Expanded Alternative would have less-than-significant traffic impacts at six study intersections that would operate at level of service ("LOS") D or better under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative conditions.
- Impact TR-33: Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 1 would have less-than-significant traffic impacts at six study intersections that would operate at LOS D or better under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 conditions.
- Impact TR-37: Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 2 would have less-than-significant traffic impacts at six study intersections that would operate at LOS D or better under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 conditions.
- Impact TR-39: Implementation of the project-level TTRP.30_1 Expanded Alternative would have less-than-significant traffic impacts at nine study intersections that would

operate at LOS D or better under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative conditions.

- Impact TR-41: Implementation of the project-level TTRP.30_1 Expanded Alternative Variant 1 would have less-than-significant traffic impacts at nine study intersections that would operate at LOS D or better under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 1 conditions.
- Impact TR-43: Implementation of the project-level TTRP.30_1 Expanded Alternative Variant 2 would have less-than-significant traffic impacts at nine study intersections that would operate at LOS D or better under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 2 conditions.
- Impact TR-44: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would not result in significant impacts to pedestrians and bicyclists.
- Impact TR-45: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1 Expanded Alternative, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1 would not result in significant impacts to pedestrians and bicyclists.
- Impact TR-46: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.22_1, TTRP.28_1, or TTRP.71_1 would not result in significant loading impacts.
- Impact TR-47: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, or TTRP.71_1 would not result in significant loading impacts.
- Impact TR-55: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would not result in significant impacts on emergency vehicle access.
- Impact TR-56: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1 would not result in significant impacts on emergency vehicle access.
- Impact TR-57: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would not result in a significant parking impact.
- Impact TR-58: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1 would not result in a significant parking impact.

- Impact C-TR-4: Implementation of the Service Improvements or Service Variants, in combination with past, present and reasonably foreseeable development in San Francisco, would not contribute considerably to ridership at the regional transit screenlines on AC Transit, Caltrain, Golden Gate Transit, SamTrans, and other regional ferry service under 2035 Cumulative plus Service Improvements only conditions.
- Impact C-TR-5: The TPS Toolkit elements as applied in the program-level TTRP corridors, and Service Improvements with the TTRP Moderate Alternative would not contribute considerably to ridership at the regional transit screenlines on AC Transit, Caltrain, Golden Gate Transit, SamTrans, and other regional ferry service under 2035 Cumulative plus Service Improvements and the TTRP Moderate Alternative conditions.
- Impact C-TR-6: The TPS Toolkit elements as applied in program-level TTRP corridors, and Service Improvements with the TTRP Expanded Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would not contribute considerably to ridership at the regional transit screenlines on AC Transit, Caltrain, Golden Gate Transit, SamTrans, and other regional ferry service under 2035 Cumulative plus Service Improvements and the TTRP Expanded Alternative conditions.
- Impact C-TR-8: Implementation of the Service Policy Framework Objective A, Actions A.1, A.2 and A.4, Objective B, Actions B.1 through B.4, Objective C, Actions C.1 and C.2, and Objective D, Actions D.1 through D.4 and any of the TPS Toolkit elements within categories: Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant traffic impacts under 2035 Cumulative plus Service Improvements and the TTRP Moderate Alternative conditions, and therefore would not contribute to any significant cumulative traffic impacts.
- Impact C-TR-10: Implementation of the Service Policy Framework Objective A, Actions A.1, A.2 and A.4, Objective B, Actions B.1 through B.4, Objective C, Actions C.1 and C.2, and Objective D, Actions D.1 through D.4 and any of the TPS Toolkit elements within categories: Transit Stop Changes, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant traffic impacts under 2035 Cumulative plus Service Improvements and the TTRP Expanded Alternative conditions, and therefore would not contribute to any significant cumulative traffic impacts.
- Impact C-TR-11: Implementation of the Service Improvements or Service Variants, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant traffic impacts under 2035 Cumulative plus Service Improvements only conditions, and therefore would not contribute to any significant cumulative traffic impacts.
- Impact C-TR-12: Implementation of the TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1, TTRP.14 Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1 would have less-than-significant traffic impacts under 2035 Cumulative plus Service Improvements and the TTRP Moderate Alternative conditions, and therefore would not contribute to any significant cumulative traffic impacts.

- **Impact C-TR-38:** Implementation of the TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would not contribute considerably to significant cumulative traffic impacts at 16 study intersections that would operate at LOS E or LOS F under 2035 Cumulative plus Service Improvements and the TTRP Expanded Alternative conditions.
- **Impact C-TR-39:** Implementation of the TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1 would not result in significant cumulative traffic impacts at 48 study intersections that would operate at LOS D or better under 2035 Cumulative plus Service Improvements and the TTRP Expanded Alternative conditions.
- **Impact C-TR-40:** Implementation of the Service Policy Framework and any of the TPS Toolkit elements within categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Traffic Signal and Stop Sign Changes, and Pedestrian Improvements as applied in program-level TTRP corridors, Service Improvements or Service Variants, and Service-related Capital Improvements, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative pedestrian and bicycle impacts.
- **Impact C-TR-41:** Implementation of the Service Improvements or Service Variants and the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14 Variant 1 and TTRP Variant 2, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative pedestrian and bicycle impacts.
- **Impact C-TR-42:** Implementation of the Service Improvements or Service Variants and the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative pedestrian and bicycle impacts.
- **Impact C-TR-46:** Implementation of the Policy Framework Objective A, Actions A.1, A.2 and A.4, Objective B, Actions B.1 through B.4, Objective C, Actions C.1 and C.2, and Objective D, Actions D.1 through D.4, TPS Toolkit Category Traffic Signal and Stop Sign Changes as applied in program-level TTRP corridors, Service Improvements or Service Variants, and Service-related Capital Improvements, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative loading impacts.
- **Impact C-TR-47:** Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.22_1, TTRP.28_1, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative loading impacts.

- Impact C-TR-48: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.22_1, TTRP.22_1 Variant 1, TTRP.22_1 Variant 2, TTRP.28_1, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative loading impacts.
- Impact C-TR-50: Implementation of the Service Policy Framework Objective A, Actions A.1, A.2, and A.4, Objective B all actions, Objective C, Actions C.1 and C.2, and Objective D all actions, and any of the TPS Toolkit elements within categories: Transit Stop Changes and Traffic Signal and Stop Sign Changes, and Pedestrian Improvements as applied in program-level TTRP corridors, Service Improvements, and Service-related Capital Improvements, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative parking impacts.
- Impact C-TR-51: Implementation of the project-level TTRP Moderate Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.22_1, TTRP.28_1, TTRP.30_1, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative parking impacts.
- Impact C-TR-53: Implementation of the project-level TTRP Expanded Alternative for the TTRP.J, TTRP.L, TTRP.N, TTRP.5, TTRP.8X, TTRP.9, TTRP.14, TTRP.28_1, TTRP.30_1, TTRP.30_1 Variant 1, TTRP.30_1 Variant 2, or TTRP.71_1, in combination with past, present and reasonably foreseeable development in San Francisco, would have less-than-significant cumulative parking impacts.

Noise and Vibration

- The proposed Project is not located within an airport land use plan area, within two miles of a public or public use airport, or in the vicinity of a private airstrip, and therefore would not expose people residing or working in the project area to excessive noise levels.
- Impact NO-1: Construction activities, occurring indirectly as a result of the proposed Service Policy Framework, and as proposed under the TEP for the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants would not result in a substantial temporary or periodic increase in noise levels above existing ambient conditions.
- Impact NO-2: Construction activities, occurring indirectly as a result of the proposed Service Policy Framework, and as proposed under the TEP for the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants would not expose persons and structures to excessive temporary ground-borne vibration or ground-borne noise levels.
- Impact NO-3: The proposed Service Policy Framework and operation of the Service Improvements and Service Variants would not result in a substantial increase in permanent noise levels along affected transit routes above existing ambient conditions.
- Impact NO-4: The proposed Service Policy Framework and the Service Improvements and Service Variants proposed by the TEP would not expose people to or generate excessive ground-borne vibration or noise levels along affected transit routes.

- Impact C-NO-1: The Service Policy Framework and the construction and operation of the proposed TEP, including Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants, in combination with other past, present, or reasonably foreseeable future projects, would not increase construction noise and vibration or operational noise and vibration levels along affected transit routes substantially above existing ambient conditions.

Air Quality

- The proposed Project would not result in significant odor impacts.
- Impact AQ-1: The Service Policy Framework and construction activities proposed under the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants 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.
- Impact AQ-2: The Service Policy Framework and construction activities proposed under the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants 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.
- Impact AQ-3: The Service Policy Framework and the proposed project-level Service Improvements and Service Variants in combination with the TTRPs and TTRP Variants would not result in a violation of air quality standards or contribute substantially to an existing or projected air quality violation nor 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.
- Impact AQ-4: The Service Policy Framework and proposed project-level Service Improvements and Service Variants 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.
- Impact AQ-5: The Service Policy Framework, and construction and operation of the proposed TEP, including the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants, would not conflict with or obstruct implementation of the 2010 Clean Air Plan, the Bay Area's applicable air quality plan.
- Impact C-AQ-1: The Service Policy Framework, and construction and operation of the proposed TEP, including the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants, in combination with 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.
- Impact C-AQ-2: The Service Policy Framework, and construction and operation of the proposed TEP, including the Service Improvements and Service Variants, Service-related Capital Improvements, and TTRPs and TTRP Variants, in combination with past,

present and reasonably foreseeable future projects, 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.

Greenhouse Gas Emissions

- Impact C-GG-1: The proposed Project would generate greenhouse gas emissions, but not in 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.

Wind and Shadow

- Impact WS-1: The proposed Project would not alter winds in a manner that would substantially affect public areas.
- Impact WS-2: The proposed Project would not create new shadow that substantially affects outdoor recreation facilities or other public areas.

Recreation

- Impact RE-1, RE-3: The proposed Project would not result in the increased use of existing neighborhood or regional parks or other recreation facilities such that substantial physical deterioration would occur or be accelerated, nor result in the degradation of recreational resources.
- Impact RE-2: The proposed project would not include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment.
- Impact C-RE-1: The proposed project in combination with other past, present, or reasonably foreseeable future projects would not result in a cumulatively considerable contribution to significant cumulative impacts on recreation.

Utilities and Services Systems

- Impact UT-1, UT-2: The proposed Project would not exceed the wastewater treatment requirements of the Regional Water Quality Control Board; result in a determination that the wastewater treatment provider has inadequate capacity to serve the project; or require or result in the construction of new or the expansion of existing water, wastewater treatment or stormwater drainage facilities
- Impact UT-3: The proposed Project would have sufficient water supply available from existing entitlements and would not require new or expanded water supply resources or entitlements.
- Impact UT-4: The proposed Project would increase the amount of solid waste generated on the project sites, but would be adequately served by the City's landfill and would comply with federal, state and local statutes and regulations related to solid waste.

- Impact C-UT-1: The proposed Project in combination with other past, present, or reasonably foreseeable future projects would not result in a cumulatively considerable contribution to significant cumulative impacts on utilities and service systems.

Public Services

- Impact PS-1: The proposed Project would not result in substantial adverse physical impacts associated with the provision of police protection, fire protection, schools, and library services in order to maintain acceptable service ratios, response times, or other performance objectives.
- Impact C-PS-1: The proposed Project would not result in a cumulatively considerable contribution to significant impacts on police services, fire protection, emergency services, schools, or libraries such that new or altered facilities are required.

Biological Resources

- Impact BI-1, B-2, BI-3: The proposed Project would not affect any special status species, riparian habitat or other sensitive natural community, or federally protected wetlands; would not interfere with the movement of native resident or wildlife species or with established native resident or migratory wildlife corridors; and would not conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance.
- Impact C-BI-4: The proposed Project would not result in a cumulatively considerable contribution to significant cumulative impacts on biological resources.

Geology and Soils

- Impact GE-1: Implementation of the proposed Project would not result in exposure of people and structures to potential substantial adverse effects, including the risk of loss, injury, or death involving rupture of a known earthquake fault, seismic ground-shaking, liquefaction, lateral spreading, or landslides.
- Impact GE-2: The implementation of the proposed Project would not result in substantial erosion, loss of topsoil, or adverse impacts to topographical features.
- Impact GE-3: The implementation of the proposed Project would not locate sensitive land uses on geologic units or soils that are expansive, unstable, or that would become unstable as a result of future uses, and potentially result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse.
- Impact C-GE-1: The proposed Project would not result in a cumulatively considerable contribution to significant cumulative impacts on geology and soils.

Hydrology and Water Quality

- Impact HY-1: The implementation of the proposed Project would not violate water quality or waste discharge standards, exceed the capacity of existing drainage systems,

provide additional sources of polluted runoff, or otherwise substantially degrade water quality.

- Impact HY-2, HY-3: The proposed Project would not substantially deplete groundwater supplies or interfere substantially with groundwater recharge, and would not substantially alter existing drainage patterns in a manner that would result in substantial erosion or siltation.
- Impact HY-4, HY-5: The implementation of the proposed Project would not expose people or structures to substantial risk of loss due to flooding, or to a significant risk of loss, injury or death involving inundation by seiche, tsunami, or mudflow, or as a result of the failure of a reservoir.
- Impact C-HY-1: The proposed Project would not result in a cumulatively considerable contribution to significant cumulative impacts on water quality and hydrology.

Hazards and Hazardous Materials

- Impact HZ-3: Implementation of the proposed Project would not create a significant hazard to the public or the environment by location on a hazardous materials site.
- Impact HZ-4: Implementation of the proposed Project would not expose people or structures to a significant risk of loss, injury, or death involving fires, and would not interfere with the implementation of an emergency response plan.
- Impact C-HZ-1: The proposed Project would not result in a cumulatively considerable contribution to significant cumulative impacts with respect to hazards and hazardous materials.

Mineral and Energy Resources

- Impact ME-1: The proposed Project would not result in the loss of availability of a known mineral resource or a locally-important mineral resource recovery site,
- Impact ME-2: The proposed Project would not result in the use of large amounts of fuel, water, or energy, or use these in a wasteful manner.
- Impact C-ME-1: The proposed Project would not result in a cumulatively considerable contribution to significant cumulative impacts on mineral and energy resources.

Agriculture and Forest Resources

- Impact AF-1: The proposed Project would not have a substantial adverse effect on agriculture or forest resources.

Growth-Inducing Impacts

- Impact GR-1: Implementation of the Service Policy Framework and the TEP project components would not result in growth inducing impacts.

III. FINDINGS OF POTENTIALLY SIGNIFICANT IMPACTS THAT CAN BE AVOIDED OR REDUCED TO A LESS-THAN-SIGNIFICANT LEVEL THROUGH MITIGATION AND THE DISPOSITION OF THE MITIGATION MEASURES

CEQA requires agencies to adopt mitigation measures that would avoid or substantially lessen a project's identified significant impacts or potential significant impacts if such measures are feasible (unless mitigation to such levels is achieved through adoption of a project alternative). The findings in this Section III and in Section IV concern mitigation measures set forth in the EIR. These findings discuss mitigation measures as identified in the FEIR and recommended for adoption by the SFMTA Board of Directors. The full text of the mitigation measures is contained in the FEIR and in **Attachment B**, the Mitigation Monitoring and Reporting Program.

The SFMTA Board adopts all of the mitigation measures identified in the FEIR. The SFMTA Board finds that all of the mitigation measures are appropriate and feasible. Based on the analysis contained in the FEIR, other considerations in the record, and the significance thresholds in the EIR, the SFMTA Board finds that the impacts identified in this Section III will be reduced to a less-than-significant level through implementation of the mitigation measures contained in the FEIR, imposed as conditions of approval, and set forth in **Attachment B**.

Cultural and Paleontological Resources

- Impact CP-2: The proposed Project could cause a substantial adverse change in the significance of an archaeological resource pursuant to *CEQA Guidelines* Section 15064.5.

There is a reasonable presumption that construction of the proposed program-level and project-level TEP components will not require an excavation depth and/ or be located in an area where the potential for effect on archaeological resources is likely. However, to avoid potential adverse impacts on archaeological resources where the presence of the resource cannot be known, foreseen, or predicted, the Accidental Discovery Archaeological Mitigation Measure will be implemented for all TEP components. This mitigation measure requires that upon accidental discovery of an archaeological resource during construction (including human remains), the appropriate treatment of the resource will be carried out by a qualified archaeological consultant.

Mitigation Measure M-CR-2a: Accidental Discovery of Archeological Resources.

The construction of the following four TEP components has the potential to adversely affect archaeological resources: TTRP.22_2; TTRP.9; and two Service-related Capital Improvements, OWE.1 New Overhead Wiring – Reroute 33 Stanyan onto Valencia Street, and SC1.2 Sansome Street Contraflow Lane. TTRP.9 includes a segment of Bayshore Boulevard, and TTRP. 22_2 includes a segment of Richardson Avenue. These segments occur along the historic shoreline,

estuary, tidal marsh or lagoon, or watercourse and such sites may include prehistoric archaeological resources. The installation of overhead wire support poles and duct banks along a two-block portion of Valencia Street (OWE.1) will be constructed in the Mission Dolores area in which there is a potential for significant archaeological resources from the Hispanic Period. The installation of traffic mast arms along a three-block portion of Sansome Street (SCI.2) will occur in an area with the potential for impacts to archaeological resources from the Yerba Buena period. Construction in these areas could result in significant impacts on archaeological resources if the Archaeological Monitoring mitigation measure is not implemented. Implementation of the Archaeological Monitoring mitigation measure requires review by the Planning Department archeologist once engineering design details are known. If determined necessary by the Planning Department, the SFMTA would be required to hire an archaeological consultant to be present and monitor construction activities associated with these four TEP components (as necessary), redirect construction activities if an intact archaeological deposit is encountered, evaluate the deposit, and either re-design the project or implement a data recovery program.

Mitigation Measure M-CR-2b: Archaeological Monitoring

- Impact CP-3: The proposed Project could directly or indirectly destroy a unique paleontological resource or site or unique geologic feature.

Given the shallow excavation depths of TEP construction activities and previous ground disturbance that is common within the public right-of-way, there is a low probability of encountering significant paleontological resources in the course of project construction. However, the presence of shallow paleontological resources within areas of excavation under the proposed Project cannot be conclusively ruled out. Disturbance of paleontological resources could impair the ability of paleontological resources to yield important scientific information. The Paleontological Resources Accidental Discovery mitigation measure will apply in the event that any indication of a paleontological resource is encountered in the course of TEP project construction activities, and if the resource may be important, a qualified paleontological consultant will be retained to design and implement a sampling and data recovery program.

Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery

Hazards and Hazardous Materials

- Impact HZ-1: Implementation of the proposed Project would not create a significant hazard through routine transport, use, disposal, handling, or emission of hazardous materials or through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment.

The use, storage, and disposal of hazardous materials is regulated by numerous local, state, and federal laws and regulations. Excavation in the public-right-of-way is regulated under the Public Works Code, which states that excavation contractors are subject to all applicable hazardous material guidelines for disposal, handling, release, and treatment of hazardous material; site remediation; and worker safety and training. Additionally, Article 20 of the Public Works Code and Article 22A of the San Francisco Health Code require environmental investigation at construction sites where contaminated fill materials may be encountered. The SFMTA and construction contractors will adhere to these regulations. However, to ensure that potential significant impacts from release of hazardous materials during construction are reduced to less-than-significant levels, the SFMTA and construction contractors are required to implement the Hazardous Materials Soil Testing mitigation measure, which requires that soil to be removed from an excavation area and not encapsulated within the same area be tested and, if found to contain hazardous materials, be transported and disposed of in compliance with local, state and federal requirements.

Mitigation Measure M-HZ-1: Hazardous Materials Soil Testing

- Impact HZ-2: Implementation of the proposed project would not substantially emit hazardous emissions or acutely hazardous materials near schools.

To ensure that construction and operation of the program- and project-level TEP components will not result in significant hazardous materials emissions or the handling of acutely hazardous materials near schools, the SFMTA and construction contractors are required to implement the Hazardous Materials Soil Testing mitigation measure listed above.

Mitigation Measure M-HZ-1: Hazardous Materials Soil Testing

IV. SIGNIFICANT IMPACTS THAT CANNOT BE AVOIDED OR REDUCED TO A LESS-THAN-SIGNIFICANT LEVEL

Based on substantial evidence in the whole record of these proceedings, the SFMTA Board of Directors finds that, where feasible, changes or alterations have been required, or incorporated into, the Project to reduce the significant environmental impacts as identified in the FEIR. The SFMTA Board finds that the mitigation measures in the FEIR and described below are appropriate, and that changes have been required in, or incorporated into, the Project that, pursuant to Public Resources Code Section 21002 and CEQA Guidelines Section 15091, may substantially lessen, but do not avoid (i.e., reduce to less-than-significant levels), the potentially significant environmental effects associated with implementation of the Project that are described below. The SFMTA Board adopts all of the mitigation measures and improvement measures set forth in the Mitigation Monitoring and Reporting Plan (MMRP), attached as **Attachment B**. But, the SFMTA Board further finds that for the impacts listed below, despite

the implementation of all feasible mitigation measures, the effects remain significant and unavoidable.

Based on substantial evidence in the whole record, including the expert opinion of SFMTA and Planning Department staff and consultants to those staff, the SFMTA Board also finds that for some impacts identified in the FEIR, as noted below in this Section IV, no feasible mitigation measures were identified in the FEIR and those impacts remain significant and unavoidable. For a detailed explanation of the lack of feasible mitigation measures for some of the following impacts, and of the reasons why certain mitigation measures, although technologically feasible, may be subject to uncertainty, including funding-related uncertainty, please see the relevant discussions in the FEIR.

The SFMTA Board determines that the following significant impacts on the environment, as reflected in the FEIR, are unavoidable, but under Public Resources Code §§ 21081(a)(3) and (b), and CEQA Guidelines §§ 15091(a)(3), 15092(b)(2)(B), and 15093, the SFMTA Board determines that the impacts are acceptable due to the overriding considerations described in Section VI below. This finding is supported by substantial evidence in the record of this proceeding.

Transportation and Circulation

- **Impact TR-3:** Implementation of the Policy Framework Objective A, Action A.3, and Objective C, Actions C.3 through C.5 may result in significant traffic impacts.
 - *Mitigation Measure M-TR-8: Optimization of Intersection Operations.*

Because this measure may not be adequate to mitigate impacts to intersection traffic operations to less-than-significant levels, and because the feasibility of providing additional vehicle capacity is unknown and it is not always possible to optimize an intersection such that level of service will improve to level of service (“LOS”) D or better, the impact on traffic operations remains significant and unavoidable.

- **Impact TR-5:** Implementation of the Policy Framework Objective A, Action A.3 and Objective C, Actions C.3 through C.5 may result in significant loading impacts.
 - *Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces*
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations,*

These measures could reduce significant loading impacts to a less-than-significant level. However, in some locations on-street parking may not be available to convert to commercial loading spaces on the same block and side of the street or within 250 feet on an adjacent side

street, the feasibility of providing replacement commercial loading spaces pursuant to Mitigation Measure M-TR-10 cannot be assured in every situation. And because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of Mitigation Measure M-TR-48 is uncertain. Therefore, the impact of loss of on-street commercial loading spaces remains significant and unavoidable.

- **Impact TR-8:** Implementation of the following TPS Toolkit categories: Lane Modifications and Pedestrian Improvements may result in significant traffic impacts.
 - *Mitigation Measure M-TR-8: Optimization of Intersection Operations*

Because this measure may not be adequate to mitigate intersection traffic operations to less-than-significant levels, and because the feasibility of providing additional vehicle capacity is unknown and it is not always possible to optimize an intersection such that level of service will improve to LOS D or better, the impact on traffic operations remains significant and unavoidable.

- **Impact TR-10:** Implementation of the following TPS Toolkit categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements, may result in significant loading impacts.
 - *Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces*

While this measure could reduce significant loading impacts, in some locations on-street parking may not be available to convert to commercial loading spaces on the same block and side of the street or within 250 feet on an adjacent side street, the feasibility of providing replacement commercial loading spaces pursuant to Mitigation Measure M-TR-10 cannot be assured. Therefore, the impact of loss of on-street commercial loading spaces remains significant and unavoidable.

- **Impact TR-14:** Implementation of TPS Toolkit elements within the following categories: Lane Modifications and Pedestrian Improvements, along the program-level TTRP corridors may result in significant traffic impacts.
 - *Mitigation Measure M-TR-8: Optimization of Intersection Operations*

Because this measure may not be adequate to mitigate intersection traffic operations to less-than-significant levels, and because the feasibility of providing additional vehicle capacity is unknown and it is not always possible to optimize an intersection such that level of service will improve to LOS D or better, the impact on traffic operations remains significant and unavoidable.

- **Impact TR-16:** Implementation of the following TPS Toolkit categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements, along the program-level TTRP corridors may result in significant loading impacts.
 - *Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces*

While this measure could reduce significant loading impacts, in some locations on-street parking may not be available to convert to commercial loading spaces on the same block and side of the street or within 250 feet on an adjacent side street, the feasibility of providing replacement commercial loading spaces pursuant to Mitigation Measure M-TR-10 cannot be assured. Therefore, the impact of loss of on-street commercial loading spaces remains significant and unavoidable.

- **Impact TR-24:** Implementation of the project-level TTRP.14 Expanded Alternative would result in a significant traffic impact at the intersection of Randall Street/San Jose Avenue that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.14 Expanded Alternative conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-26:** Implementation of the project-level TTRP.22_1 Expanded Alternative would result in a significant traffic impact at the intersection of 16th/Bryant streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative conditions.
 - *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets.*

Implementation of Mitigation Measure M-TR-26 would reconfigure the intersection of 16th and Bryant Streets such that the westbound approach would be a through lane and dedicated right turn-pocket and the eastbound approach would be to a shared through/right lane.

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, traffic impacts at the intersection of 16th and Bryant streets remain significant and unavoidable.

- **Impact TR-27:** Implementation of the project-level TTRP.22_1 Expanded Alternative would result in a significant traffic impact at the intersection of 16th Street/Potrero Avenue that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-28:** Implementation of the project-level TTRP.22_1 Expanded Alternative would result in a significant traffic impact at the intersection of 16th/Seventh streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-30:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 1 would result in a significant traffic impact at the intersection of 16th/Bryant streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 conditions.

– *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets*

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, traffic impacts at the intersection of 16th and Bryant streets remain significant and unavoidable.

- **Impact TR-31:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 1 would result in a significant traffic impact at the intersection of 16th Street/Potrero Avenue that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-32:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 1 would result in a significant traffic impact at the intersection of 16th/Seventh streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-34:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 2 would result in a significant traffic impact at the intersection of 16th/Bryant streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 conditions.

– *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets*

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, traffic impacts at the intersection of 16th and Bryant streets would remain significant and unavoidable.

- **Impact TR-35:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 2 would result in a significant traffic impact at the intersection of 16th Street/Potrero Avenue that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-36:** Implementation of the project-level TTRP.22_1 Expanded Alternative Variant 2 would result in a significant traffic impact at the intersection of 16th/Seventh streets that would operate at LOS E or LOS F conditions under Existing plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-38:** Implementation of the project-level TTRP.30_1 Expanded Alternative would result in a significant traffic impact at the intersection of Columbus Avenue/Green Street/Stockton Street that would operate at LOS E conditions under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-40:** Implementation of the project-level TTRP.30_1 Expanded Alternative Variant 1 would result in a significant traffic impact at the intersection of Columbus Avenue/Green Street/Stockton Street that would operate at LOS E conditions under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 1 conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-42:** Implementation of the project-level TTRP.30_1 Expanded Alternative Variant 2 would result in a significant traffic impact at the intersection of Columbus Avenue/Green Street/Stockton Street that would operate at LOS E conditions under Existing plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 2 conditions.

No feasible mitigation measures are available and the impact remains significant and unavoidable.

- **Impact TR-48:** Implementation of project-level TTRP.14 Moderate Alternative Variant 1 would result in a reduction in on-street commercial loading supply on Mission Street

such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.

– *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

With implementation of this Mitigation Measure, the impacts related to loss of commercial loading spaces on transit and traffic operations would be reduced. However, because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-49:** Implementation of project-level TTRP.14 Moderate Alternative Variant 2 would result in a reduction in on-street commercial loading supply on Mission Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.

– *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-50:** Implementation of project-level TTRP.14 Expanded Alternative would result in a reduction in on-street commercial loading supply on Mission Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.

– *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-51:** Implementation of project-level TTRP.30_1 Moderate Alternative would result in a reduction in on-street commercial loading supply on Stockton Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.

– *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-52:** Implementation of project-level TTRP.30_1 Expanded Alternative would result in a reduction in on-street commercial loading supply on Stockton Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-53:** Implementation of project-level TTRP.30_1 Expanded Alternative Variant 1 would result in a reduction in on-street commercial loading supply on Stockton Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact TR-54:** Implementation of project-level TTRP.30_1 Expanded Alternative Variant 2 would result in a reduction in on-street commercial loading supply on Stockton Street such that the existing loading demand during the peak hour of loading activities could not be accommodated within on-street loading supply and may create a potentially hazardous condition or significant delay that may affect traffic, transit, bicycles, or pedestrians.
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this measure is uncertain and impacts on this corridor remain significant and unavoidable.

- **Impact C-TR-1:** The Service Policy Framework and Service Improvements or Service Variants, in combination with past, present and reasonably foreseeable development in San Francisco, would contribute considerably to a significant cumulative impact on

transit, resulting in an exceedance of Muni's capacity utilization standard on the Mission corridor within the Southeast screenline of the Downtown screenlines under 2035 Cumulative plus Service Improvements only conditions.

– *Mitigation Measure M-C-TR-1: SFMTA Monitoring of Muni Service*

Implementation of this Mitigation Measure would reduce the cumulative impact on the affected corridor to a less-than-significant level. However, because the SFMTA cannot commit to future funding appropriations nor be certain of its ability to provide additional service citywide to maintain the capacity utilization standard, among other service goals, the feasibility of this mitigation measure is uncertain, and the cumulative impact on transit remains significant and unavoidable.

- **Impact C-TR-2:** The Service Policy Framework, TPS Toolkit elements as applied in the program-level TTRP corridors, and the Service Improvements with the TTRP Moderate Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would contribute considerably to significant cumulative impacts on transit, resulting in exceedances of Muni's capacity utilization standard on the Fulton/Hayes corridor within the Northwest screenline and on the Mission corridor within the Southeast screenline of the Downtown screenlines under 2035 Cumulative plus Service Improvements and the TTRP Moderate Alternative conditions.

– *Mitigation Measure M-C-TR-1: SFMTA Monitoring of Muni Service*

Implementation of this Mitigation Measure would reduce the cumulative impact on the affected corridor to a less-than-significant level. However, because the SFMTA cannot commit to future funding appropriations nor be certain of its ability to provide additional service citywide to maintain the capacity utilization standard, among other service goals, the feasibility of this mitigation measure is uncertain, and the cumulative impact on transit remains significant and unavoidable.

- **Impact C-TR-3:** The Service Policy Framework, the TPS Toolkit elements as applied in the program-level TTRP corridors, and the Service Improvements with the TTRP Expanded Alternative, in combination with past, present and reasonably foreseeable development in San Francisco, would contribute considerably to significant cumulative impacts on transit, resulting in exceedances of Muni's capacity utilization standard on the Fulton/Hayes corridor within the Northwest screenline and on the Mission corridor within the Southeast screenline of the Downtown screenlines under 2035 Cumulative conditions plus Service Improvements and the TTRP Expanded Alternative conditions.

– *Mitigation Measure M-C-TR-1: SFMTA Monitoring of Muni Service*

Implementation of this Mitigation Measure would reduce the cumulative impact on the affected corridor to a less-than-significant level. However, because the SFMTA cannot commit to future funding appropriations nor be certain of its ability to provide additional service citywide to

maintain the capacity utilization standard, among other service goals, the feasibility of this mitigation measure is uncertain, and the cumulative impact on transit remains significant and unavoidable.

- **Impact C-TR-7:** Implementation of the Service Policy Framework Objective A, Action A.3 and Objective C, Actions C.3 through C.5 and TPS Toolkit categories: Lane Modifications and Pedestrian Improvements as applied in program-level TTRP corridors, in combination with past, present and reasonably foreseeable development in San Francisco, would result in cumulative traffic impacts at intersections along the corridors under 2035 Cumulative plus Service Improvements and the TTRP Moderate Alternative conditions.

- *Mitigation Measure M-TR-8: Optimization of Intersection Operations*

Because this measure may not be adequate to mitigate intersection traffic operations to less-than-significant levels, and because the feasibility of providing additional vehicle capacity is unknown and it is not always possible to optimize an intersection such that level of service will improve to LOS D or better, the feasibility of mitigation is not assured. Therefore, the cumulative impact on traffic operations remains significant and unavoidable

- **Impact C-TR-9:** Implementation of the Service Policy Framework Objective A, Action A.3 and Objective C, Actions C.3 through C.5 and TPS Toolkit categories: Lane Modifications and Pedestrian Improvements as applied in program-level TTRP corridors would result in cumulative traffic impacts at intersections along the corridors under 2035 Cumulative plus Service Improvements and the TTRP Expanded Alternative conditions.

- *Mitigation Measure M-TR-8: Optimization of Intersection Operations*

Because this measure may not be adequate to mitigate intersection traffic operations to less-than-significant levels, and because the feasibility of providing additional vehicle capacity is unknown and it is not always possible to optimize an intersection such that level of service will improve to LOS D or better, the effectiveness of this mitigation measure is not assured, and mitigation is infeasible. Therefore, the cumulative impact on traffic operations remains significant and unavoidable.

- **Impact C-TR-13:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.J Expanded Alternative would contribute considerably to cumulative traffic impacts at the intersection of Market/Church/14th streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-14:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.5 Expanded Alternative would result in cumulative traffic impacts at the intersection of Fulton Street/Masonic Avenue during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-15:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.8X Expanded Alternative would result in cumulative traffic impacts at the intersection of Geneva Avenue/Carter Street during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-16:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.8X Expanded Alternative would result in cumulative traffic impacts at the intersection of Geneva Avenue/Moscow Street during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-17:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.14 Expanded Alternative would result in project and cumulative traffic impacts at the intersection of Randall Street/San Jose Avenue during the a.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-18:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.14 Expanded Alternative would result in cumulative traffic impacts at the intersection of Mission/Fifth streets during the a.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-19:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.14 Expanded Alternative would result in cumulative impacts at the intersection of Mission/16th streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-20:** Implementation of the 2035 Cumulative plus Service Improvements and TTRP.22_1 Expanded Alternative would result in project and cumulative traffic impacts at the intersection of 16th/Bryant streets during the p.m. peak hour.

– *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets*

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, cumulative traffic impacts at the intersection of 16th and Bryant streets remain significant and unavoidable.

- **Impact C-TR-21:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 would result in project and traffic cumulative impacts at the intersection of 16th/Bryant streets during the p.m. peak hour.

– *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets*

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, cumulative traffic impacts at the intersection of 16th and Bryant streets remain significant and unavoidable.

- **Impact C-TR-22:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 would result in project and cumulative traffic impacts at the intersection of 16th/Bryant streets during the p.m. peak hour.

– *Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets*

Implementation of Mitigation Measure M-TR-26 would not improve intersection operations to LOS D or better during the p.m. peak hour; therefore, cumulative traffic impacts at the intersection of 16th and Bryant streets remain significant and unavoidable.

- **Impact C-TR-23:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative would result in project and cumulative traffic impacts at the intersection of 16th/Potrero streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-24:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 would result in project and cumulative traffic impacts at the intersection of 16th/Potrero streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-25:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 would result in project and cumulative traffic impacts at the intersection of 16th/Potrero streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-26:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative would result in cumulative traffic impacts at the intersection of 16th/Owens streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-27:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 would result in cumulative traffic impacts at the intersection of 16th/Owens streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-28:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 would result in cumulative traffic impacts at the intersection of 16th/Owens streets during the p.m. peak hour.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-29:** Implementation of the 2035 Cumulative plus Service Improvements plus the TTRP.22_1 Expanded Alternative would result in cumulative traffic impacts at the intersection of 16th/Fourth streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-30:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 would result in cumulative traffic impacts at the intersection of 16th/Fourth streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-31:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 would result in cumulative traffic impacts at the intersection of 16th/Fourth streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-32:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative would result in project and cumulative traffic impacts at the intersection of 16th/Seventh streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-33:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 1 would result in project and cumulative traffic impacts at the intersection of 16th/Seventh streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-34:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.22_1 Expanded Alternative Variant 2 would result in project and cumulative traffic impacts at the intersection of 16th/Seventh streets during the a.m. and p.m. peak hours.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-35:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.30_1 Expanded Alternative would result in project and cumulative traffic impacts at the intersection of Columbus Avenue/Green Street/Stockton Street.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-36:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 1 would result in project and cumulative traffic impacts at the intersection of Columbus Avenue/Green Street/Stockton Street.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-37:** Implementation of the 2035 Cumulative plus Service Improvements and the TTRP.30_1 Expanded Alternative Variant 2 would result in project and cumulative traffic impacts at the intersection of Columbus Avenue/Green Street/Stockton Street.

No feasible mitigation measures are available and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-43:** Implementation of the Policy Framework Objective A, Action A.3 and Objective C, Actions C.3 through C.5, and TPS Toolkit Categories: Transit Stop Changes, Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements as applied to the program-level TTRP corridors in combination with past, present and reasonably foreseeable development in San Francisco, would result in cumulative loading impacts.
 - *Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces.*

While this measure could reduce significant loading impacts, in some locations on-street parking may not be available to convert to commercial loading spaces on the same block and side of the street or within 250 feet on an adjacent side street, the feasibility of providing replacement commercial loading spaces pursuant to Mitigation Measure M-TR-10 cannot be assured. Therefore, the cumulative impact of loss of on-street commercial loading spaces remains significant and unavoidable.

- **Impact C-TR-44:** Implementation of the project-level TTRP Moderate Alternative including the TTRP.14 Variant 1, TTRP.14 Variant 2, and TTRP.30_1 in combination with past, present and other reasonably foreseeable development in San Francisco, would result in cumulative loading impacts.
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this mitigation measure is uncertain and cumulative impacts on this corridor remain significant and unavoidable.

- **Impact C-TR-45:** Implementation of the project-level TTRP Expanded Alternative including the TTRP.14, TTRP.30_1, TTRP.30_1 Variant 1, and TTRP.30_1 Variant 2, in combination with past, present and reasonably foreseeable development in San Francisco, would result in project and cumulative loading impacts.
 - *Mitigation Measure M-TR-48: Enforcement of Parking Violations*

Because the effectiveness of the use of camera video enforcement of parking regulations along new transit-only lanes is not known, the feasibility of this mitigation measure is uncertain and cumulative impacts on these corridors remain significant and unavoidable.

- **Impact C-TR-49:** Implementation of the Service Policy Framework Objective A, Action A.3 and Objective C, Actions C.3, C.4 and C.5, and the TPS Toolkit categories: Lane Modifications, Parking and Turn Restrictions, and Pedestrian Improvements as applied in program-level TTRP corridors, in combination with past, present and reasonably foreseeable development in San Francisco, may result in significant cumulative parking impacts.

- *Mitigation Measure M-C-TR-49: Explore the Implementation of Parking Management Strategies.*

It is uncertain whether parking management strategies would mitigate this significant cumulative parking impact to a less-than-significant level. Therefore, feasibility of this mitigation measure cannot be assured, and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-52:** Implementation of the project-level TTRP Moderate Alternative for the TTRP.14 Variant 1 or the TTRP.14 Variant 2, in combination with past, present and reasonably foreseeable development in San Francisco, would result in significant cumulative parking impacts.

- *Mitigation Measure M-C-TR-49: Explore the Implementation of Parking Management Strategies*

It is uncertain whether parking management strategies would mitigate this significant cumulative parking impact to a less-than-significant level. Therefore, feasibility of this mitigation measure cannot be assured, and the cumulative impact remains significant and unavoidable.

- **Impact C-TR-54:** Implementation of the project-level TTRP Expanded Alternative for the TTRP.22_1, TTRP.22_1 Variant 1, or TTRP.22_1 Variant 2, in combination with past, present and reasonably foreseeable development in San Francisco, would result in significant cumulative parking impacts.

- *Mitigation Measure M-C-TR-49: Explore the Implementation of Parking Management Strategies*

It is uncertain whether parking management strategies would mitigate this significant cumulative parking impact to a less-than-significant level. Therefore, feasibility of this mitigation measure cannot be assured, and the cumulative impact remains significant and unavoidable.

V. EVALUATION OF PROJECT ALTERNATIVES

This Section describes the alternatives to the project analyzed in the FEIR and the reasons for finding the alternatives infeasible and rejecting them as required by Public Resources Code section 21081(a)(3) and CEQA Guidelines Section 15091(a)(3). This section also outlines the reasons for approving the TEP as proposed.

CEQA mandates that an EIR evaluate a reasonable range of alternatives to the project that would "feasibly attain most of the basic objectives of the project, but would avoid or substantially lessen effects of the project, and evaluate the comparative merits of the project." (CEQA Guidelines Section 14126.6(a).) CEQA requires that every EIR also evaluate a "No Project" alternative. Alternatives provide the decisionmakers with a basis of comparison to the Project in terms of their significant impacts and their ability to meet project objectives. This comparative

analysis is used to consider reasonably, potentially feasible options for minimizing environmental consequences of the Proposed Project.

The Alternatives listed below and rejected are rejected as infeasible based upon substantial evidence in the record, including evidence of economic, legal, social, technological, and other considerations described in this Section, and for the reasons described in Section VI below, which is incorporated herein by reference.

A. Reasons for Approving Proposed Project

As discussed above in Section I and in Chapter 2 of the FEIR, the TEP consists of a Service Policy Framework, Service Improvements, 12 Service-Related Capital Improvements, and Travel Time Reduction Proposals (TTRPs) (which apply various items from the Transit Preferential Streets "Toolkit") along 17 transit corridors. For the purposes of environmental review, the FEIR described and analyzed two possible TEP projects—referred to as the TTRP Moderate Alternative and the TTRP Expanded Alternative—at an equal level of detail and analysis. This was done because, although the "TEP" was examined in one environmental document in order to understand the full scope of its potential environmental impacts, the TEP is actually a collection of projects and proposals, which, while related, may be implemented at various times and, in many cases, independently of each other.

Thus, the FEIR defined and analyzed the proposed project as two alternatives in order to capture the reasonable range of TEP proposals the SFMTA may chose to implement over time and to evaluate the potential environmental impacts resulting from that range. Both alternatives would implement the Service Policy Framework, the Service Improvements, Service Variants, the Service-related Capital Improvements, and the TPS Toolkit as applied to the program-level TTRP corridors. The difference between the two alternative projects is that under the TTRP Moderate Alternative, these elements would be implemented in combination with a "moderate" number of TPS Toolkit elements along certain Rapid Network corridors and, under the TTRP Expanded Alternative, these elements would be implemented in combination with an "expanded" number of TPS Toolkit elements along the same Rapid Network corridors. The rationale behind this is that the TTRP Moderate Alternative would capture a project with fewer and less substantial physical environmental effects and the TTRP Expanded Alternative would capture a project with more substantial physical environmental effects.

It is not known at this time when or if the full scope of all the TTRP proposals included in the TEP will be implemented. Implementation of various TTRP proposals will depend on community and stakeholder input, as well as a myriad of policy and budgetary considerations. It is likely that, over time, the SFMTA will implement at a project-level a collection of TTRP proposals that fall somewhere in between the TTRP Moderate and Expanded Alternatives analyzed in the FEIR. However, at this time, it is not known whether a given project along a TTRP corridor will include components of the Moderate Alternative or the Expanded Alternative, or a mixture of the

two. Because of this, the SFMTA Board is not now rejecting either the TTRP Moderate Alternative or the TTRP Expanded Alternative. Rather, the SFMTA Board is taking action to approve both alternatives at a conceptual and programmatic level and to direct staff to continue to develop specific project proposals for each TTRP corridor. Once any such projects are proposed for approval, the SFMTA Board would adopt as necessary findings to reject alternatives to those proposed TTRP projects.

The SFMTA Board finds that the Project will provide the following benefits:

- Support and implement the City's Transit First Policy by providing clear direction for managing modal allocation of space on the transportation system for the City of San Francisco.
- Improve the cost-effectiveness and productivity of transit operations.
- Improve the customer experience on the transit system.
- Improve transit system reliability.
- Improve transit travel times.
- Improve safety for pedestrians, bicyclists, and transit riders.
- Realign transit routes to eliminate underused routes and increase headways on heavily-used routes.
- Reduce crowding on heavily-used routes.
- Improve accessibility to the transit system.
- Attract more passengers to the transit system and increase the use of transit by existing riders.
- Reduce the use of automobiles on City streets.

B. Alternatives Rejected and Reasons for Rejection

The SFMTA Board of Directors rejects the No Project Alternative described and analyzed in the FEIR because the SFMTA Board finds that there is substantial evidence, including evidence of economic, legal, social, technological, and other considerations described in this Section in addition to those described in Section VI below under CEQA Guidelines Section 15091(a)(3), that make this alternative infeasible. In making these determinations, the SFMTA Board is aware that CEQA defines "feasibility" to mean "capable of being accomplished in a successful manner within a reasonable period of time, taking into account economic, environmental, social, legal, and technological factors." The SFMTA Board is also aware that under CEQA case law the concept of "feasibility" encompasses (i) the question of whether a particular alternative promotes the underlying goals and objectives of a project; and (ii) the question of whether an

alternative is “desirable” from a policy standpoint to the extent that desirability is based on a reasonable balancing of the relevant economic, environmental, social, legal, and technological factors.

Because both of the other alternatives analyzed in the FEIR—the TTRP Moderate Alternative and the TTRP Expanded Alternative—included implementation of the Service Policy Framework, the Service Improvements, Service Variants, the Service-related Capital Improvements, and the TPS Toolkit as applied to the program-level TTRP corridors, rejecting the No Project Alternative rejects every alternative that would fail to implement these TEP proposals as infeasible.

1. Alternative A: No Project

Under the No Project Alternative, the Service Policy Framework would not be adopted. The SFMTA would not implement the transit service changes included in the Service Improvements and Service Variants, and would not construct the Service-related Capital Improvements or the Travel Time Reduction Proposals. The SFMTA regularly monitors performance of the transit system and routinely makes adjustments to improve service when funding and resources are available. Therefore, under the No Project Alternative, some of the features of the TEP, such as elements in the TPS Toolkit, would be implemented; for example, transit bulbs and pedestrian bulbs would continue to be installed and accessible boarding platforms would continue to be added on a location-by-location basis when feasible. However, no scheduled program of improvements would be implemented without adoption of the TEP. With the No Project Alternative, the significant physical impacts related to traffic, loading, and cumulative parking conditions identified in the FEIR for the Project and set forth above would not occur, and the mitigation measures identified in the EIR and the Initial Study would not be necessary.

The No Project Alternative would not provide for an organized, comprehensive, coordinated program of transit system improvements. Transit system reliability and efficiency would not improve, and crowding on some routes would not be expected to change substantially from existing conditions. Under cumulative conditions with the No Project Alternative, the transit system would become more crowded as growth and development continue to occur in the City. Transit travel times would not improve on a coordinated basis. A mode shift from automobiles to transit use would not occur, resulting in additional automobile congestion. The No Project Alternative would not help the City support the Transit First Policy. Additionally, traffic congestion will continue to degrade the performance of the surface transit system leading to increasing operating costs born by the City of San Francisco tax payers. As costs continue to increase, and on time performance continues to degrade, resources that had originally been identified to provide additional service will be used to supplement existing operations. This spiral of increased operational subsidies with no increase in service may result in lower

ridership, which leads to decreasing revenue and a downward spiral in the sustainability of the transit system and mobility for residents and visitors to the City of San Francisco.

For these reasons, the SFMTA Board finds that, on balance, the Project is preferable to the No Project Alternative and the No Project Alternative is rejected as infeasible.

2. Alternatives Considered and Rejected in the EIR

Alternative locations for the TEP would not be feasible because the Project is a systemwide program to improve the existing transit infrastructure and service in San Francisco; therefore, alternative locations outside of San Francisco are rejected. Alternative locations for transit improvements on streets other than those proposed are rejected as infeasible because of the need to maintain connectivity and geographic coverage within the existing transit and overall transportation network.

The SFMTA considered several potential alternatives to aspects of the TEP's TTRP Moderate and Expanded Alternatives. These alternatives include the following:

- Transit-only streets along high transit ridership corridors.
- Transit-only lanes along the entirety of all existing four-lane (or more) transit corridors.
- Stop sign removal and replacement with traffic signals at all stop sign locations on transit corridors.
- Stop consolidation and optimization standards as recommended in best practices literature.
- Route terminal relocation and optimization for some routes with terminal locations at unproductive route segments or in low transit demand locations.
- Fleet mode change by route, such as servicing some routes that currently operate with existing trolley vehicles with the diesel fleet or vice versa.
- Additional extensions to existing routes.
- Modification of route tails (swapping one route segment with a different route segment to serve the same transit corridor).
- Route discontinuations and other route segment eliminations.
- Use of higher capacity vehicles on certain routes (note that the TEP includes service on some routes, such as the 5 Fulton, with higher capacity vehicles, but not on others).
- Streamlining all routes for improved directness by, for example, reducing the number of turns (streamlining is included in the TEP for some routes).
- Modifying frequency for all routes (frequency modifications, both increased and decreased frequency, is included in the TEP for some routes).
- Reducing the span of service for some routes.

- Farside boarding at all signalized intersections (farside boarding at signalized intersections is included in the TEP for many routes, but not all).

These alternatives were removed from consideration during development of the TEP for a variety of reasons as set forth in Section 6.5 of the FEIR. The SFMTA Board concurs with the findings in the EIR, and rejects these alternatives as infeasible for the reasons set forth therein.

VII. STATEMENT OF OVERRIDING CONSIDERATIONS

Pursuant to CEQA § 21081 and CEQA Guidelines § 15093, the SFMTA Board of Directors hereby finds, after consideration of the FEIR and the evidence in the record, that each of the specific overriding economic, legal, social, technological and other benefits of the Project as set forth below independently and collectively outweighs the significant and unavoidable impacts and is an overriding consideration warranting approval of the Project. Any one of the reasons for approval cited below is sufficient to justify approval of the Project. Thus, even if a court were to conclude that not every reason is supported by substantial evidence, the SFMTA Board will stand by its determination that each individual reason is sufficient. The substantial evidence supporting the various benefits can be found in the preceding findings, which are incorporated by reference into this Section, and in the documents found in the Record of Proceedings, as defined in Section I.

On the basis of the above findings and the substantial evidence in the whole record of this proceeding, the SFMTA Board specially finds that there are significant benefits of the Project in spite of the unavoidable significant impacts, and therefore makes this Statement of Overriding Considerations. The SFMTA Board further finds that, as part of the process of obtaining Project approval, all significant effects on the environment from implementation of the Project have been eliminated or substantially lessened where feasible. All mitigation measures identified in the EIR for the Project are adopted as part of this approval action. The SFMTA Board has determined that any remaining significant effects on the environment found to be unavoidable are acceptable due to the following specific overriding economic, technical, legal, social and other considerations.

The Project will have the following benefits:

- The Service Policy Framework and the TEP will support and implement the City's Transit First Policy.
- Improved transit service with the TEP, including improved (reduced) transit travel times, increased efficiency and improved reliability, will make Muni a more attractive transportation mode, resulting in more use of transit and less automobile travel throughout the City.

- Implementing the TEP will improve safety for pedestrians, bicyclists, and transit riders.
- Improved network efficiency and reduced system redundancy with implementation of the TEP will improve the cost-effectiveness of transit operations.
- Implementation of the TEP capital projects will support increased access for seniors and people with disabilities by expanding accessible rail stops and making platform upgrades.
- Enhanced transit service on the busiest lines will drastically improve the customer experience by reducing crowding.
- Service level expansion will improve system-wide neighborhood connectivity and access to regional transit by providing more frequent service between neighborhoods.
- Finite public resources will be redirected to better match travel demand and trip patterns based on existing community needs.

Having considered these benefits, the SFMTA Board of Directors finds that the benefits of the TEP outweigh the unavoidable adverse environmental effects, and that the adverse environmental effects are therefore acceptable.

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM FOR THE TRANSIT EFFECTIVENESS PROJECT

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/ Reporting Responsibility	Monitoring Schedule
MITIGATION MEASURES AGREED TO BY SFMTA					
<i>Cultural and Paleontological Resources</i>					
<p>Mitigation Measure M-CP-2a: Accidental Discovery of Archeological Resources</p> <p>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 archaeological and paleontological resource "ALERT" sheet to the project prime contractor; to any project subcontractor (including demolition, excavation, grading, foundation, pile driving, etc. firms); and to any 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.</p>	SFMTA and project contractors	Prior to soils disturbance activities	SFMTA to distribute Planning Department "ALERT" sheet and provide signed affidavit from project contractor, subcontractor(s) and utilities firm(s) stating that all field personnel have received copies of the "ALERT" sheet.	ERO to receive signed affidavit.	<p>Prior to any soil disturbing activities.</p> <p>Following distribution of "ALERT" sheet but prior to any soils disturbing activities.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>Should any indication of an archaeological 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.</p>	<p>SFMTA and project contractor's Head Foreman</p>	<p>During soils disturbance activities</p>	<p>SFMTA and project contractor's Head Foreman to inform ERO and suspend soils disturbing activities.</p>	<p>ERO to determine if additional measures are necessary</p>	<p>During soils disturbance activities</p>
<p>If the ERO determines that an archaeological resource may be present within the project site, the project sponsor shall retain the services of an archaeological consultant from the pool of qualified archaeological consultants maintained by the Planning Department archaeologist. The archaeological consultant shall advise the ERO as to whether the discovery is an archaeological resource, retains sufficient integrity, and is of potential scientific/historical/cultural significance. If an archaeological resource is present, the archaeological consultant shall identify and evaluate the archaeological resource. The archaeological 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.</p> <p>Measures might include: preservation in situ of the archaeological resource, an archaeological monitoring program, or an archaeological testing program. If an archaeological monitoring program or archaeological testing program is required, it shall be consistent with the Environmental Planning division guidelines for such programs. The ERO may also require that the project sponsor immediately implement a site security program if the archaeological resource is at risk from vandalism, looting, or other damaging actions.</p>	<p>SFMTA and project archaeological consultant</p>	<p>When determined necessary by the ERO</p>	<p>If required, SFMTA to retain an archaeological consultant from the pool of qualified archaeological consultants.</p> <p>Project archaeological consultant to advise ERO regarding the status of the archeological resource.</p> <p>ERO to determine whether the need for an archaeological monitoring program, an archaeological testing program, or site security program is needed.</p>	<p>ERO to determine if additional measures are necessary to implement</p>	

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>The project archaeological consultant shall submit a Final Archeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describing the archaeological and historical research methods employed in the archaeological monitoring/data recovery program(s) undertaken. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the final report.</p> <p>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 of the Planning Department shall receive one bound copy, one unbound copy, and one unlocked searchable Portable Document Format (PDF) copy on CD of the FARR along with copies of any formal site recordation forms (CA DPR 523 series) and/or documentation for nomination to the NRHP/CRHR. 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.</p>	SFMTA and project archaeological consultant	When determined necessary by the ERO	SFMTA and project archaeological consultant to prepare draft and final FARR	ERO to review and approve final FARR	

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>Mitigation Measure M-CP-2b: Archaeological Monitoring</p> <p>Based on the reasonable potential that archaeological 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 on buried or submerged historical resources. Once engineering design details for the identified projects (OWE.1, OWE.1 Variant, SCI.2, TTRP.9 and TTRP.22_2) and other projects in archaeologically sensitive areas, as identified by the Environmental Review Officer, are known, the project sponsor shall consult with the Planning Department archeologist regarding the specific aspects of these proposals that would require monitoring. If required by the Planning Department archeologist, the project sponsor shall retain the services of an archaeological consultant from the pool of qualified archaeological consultants maintained by the Planning Department archeologist. The archaeological consultant shall undertake an archaeological 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. Archaeological monitoring and/or data recovery programs required by this measure could suspend construction of the project for up to a maximum of four weeks. At the direction of the ERO, the suspension of <i>construction</i> can be extended beyond four weeks only if such a suspension is the only feasible means to reduce to a less than significant level potential effects on a significant archaeological resource as defined in <i>CEQA Guidelines</i> Sect. 15064.5 (a)(c).</p>	SFMTA and Planning Department	Prior to soils disturbance	<p>SFMTA to consult with Planning Department archaeologist.</p> <p>If required, SFMTA to choose archaeological consultant from the pool of qualified archaeological consultants</p>	Project archeological consultant, Planning Department	<p>Consultation with Planning Department Archeologist to occur once engineering design details for the identified projects are known; timeline for subsequent actions determined following meeting.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p><i>Archaeological monitoring program (AMP).</i> The archaeological monitoring program shall minimally include the following provisions:</p> <ul style="list-style-type: none"> ▪ The archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the AMP reasonably prior to any project-related soils disturbing activities commencing. The ERO, in consultation with the project archaeologist, shall determine what project activities shall be archaeologically 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 archaeological monitoring because of the potential risk these activities pose to archaeological resources and to their depositional context. ▪ The archaeological 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 archaeological resource. ▪ The archaeological monitor(s) shall be present on the project site according to a schedule agreed upon by the archaeological consultant and the ERO until the ERO has, in consultation with the archaeological consultant, determined that project construction activities could have no effects on significant archaeological deposits. ▪ The archaeological monitor shall record and be authorized to collect soil samples and artifactual/ecofactual material as warranted for analysis. 	<p>SFMTA and project archaeological consultant, in consultation with ERO</p> <p>Archaeological monitor and SFMTA and SFMTA's construction contractors</p>	<p>If archaeological monitoring is implemented, prior to any soils-disturbing activities, and during soils disturbing construction at any location.</p> <p>If monitoring is implemented, as construction contractors are retained, prior to any soils-disturbing activities</p> <p>If monitoring is implemented, schedules for monitoring to be established in the AMP, in consultation with ERO</p>	<p>Project archaeological consultant to prepare Archaeological Monitoring Program (AMP) in consultation with the ERO</p> <p>Archaeological consultant to advise all construction contractors</p> <p>Archaeological monitor shall temporarily redirect construction activities as necessary and consult with ERO</p>	<p>SFMTA and project archaeological consultant, in consultation with ERO</p> <p>Archaeological monitor to observe construction according to the schedules established in the AMP for each site.</p>	<p>Considered complete on finding by ERO that AMP is implemented.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<ul style="list-style-type: none"> If an intact archaeological deposit is encountered, all soils disturbing activities in the vicinity of the deposit shall cease. The archaeological 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 archaeological monitor has cause to believe that the pile driving activity may affect an archaeological resource, the pile driving activity shall be terminated until an appropriate evaluation of the resource has been made in consultation with the ERO. The archaeological consultant shall immediately notify the ERO of the encountered archaeological deposit. The archaeological consultant shall, after making a reasonable effort to assess the identity, integrity, and significance of the encountered archaeological deposit, present the findings of this assessment to the ERO. 					

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p><i>Consultation with Descendant Communities:</i> On discovery of an archaeological site¹ associated with descendant Native Americans or the Overseas Chinese, an appropriate representative² of the descendant group and the ERO shall be contacted. The representative of the descendant group shall be given the opportunity to monitor archaeological field investigations of the site and to consult with ERO regarding appropriate archaeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archaeological site. A copy of the Final Archaeological Resources Report shall be provided to the representative of the descendant group. If the ERO, in consultation with the archaeological consultant, determines that a significant archaeological resource is present and that the resource could be adversely affected by the proposed project, at the discretion of the project sponsor, either:</p> <p>A) The proposed project shall be re-designed so as to avoid any adverse effect on the significant archaeological resource; or</p> <p>B) An archaeological data recovery program shall be implemented, unless the ERO determines that the archaeological resource is of greater interpretive than research significance and that interpretive use of the resource is feasible.</p>	<p>Archaeological monitor and SFMTA and SFMTA's construction contractors</p>	<p>For the duration of soil-disturbing activities, the representative of the descendant group shall be given the opportunity to monitor archaeological field investigations on the site and consult with the ERO regarding appropriate archaeological treatment of the site, of recovered data from the site, and, if applicable, any interpretative treatment of the associated archaeological site.</p>	<p>SFMTA shall contact ERO and descendant group representative upon discovery of an archaeological site.</p>	<p>Project archaeological consultant shall prepare a FARR in consultation with the ERO.</p> <p>A copy of the FARR shall be provided to the representative of the descendant group</p>	<p>Considered complete on notification of the appropriate descendant group, provision of an opportunity to monitor construction site work, and completion and approval of the FARR by ERO, if necessary.</p>

¹ The term "archaeological site" is intended here to minimally include any archaeological deposit, feature, burial, or evidence of burial.

² An "appropriate representative" of the descendant group is here defined to mean, in the case of Native Americans, any individual listed in the current Native American Contact List for the City and County of San Francisco maintained by the California Native American Heritage Commission, and in the case of the Overseas Chinese, the Chinese Historical Society of America.

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>If an archaeological data recovery program is required by the ERO, the archaeological data recovery program shall be conducted in accord with an archaeological data recovery plan (ADRP). The project archaeological consultant, project sponsor, and ERO shall meet and consult on the scope of the ADRP. The archaeological 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 archaeological 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. Destructive data recovery methods shall not be applied to portions of the archaeological resources if nondestructive methods are practical. The scope of the ADRP shall include the following elements:</p> <ul style="list-style-type: none"> ▪ <i>Field Methods and Procedures.</i> Descriptions of proposed field strategies, procedures, and operations. ▪ <i>Cataloguing and Laboratory Analysis.</i> Description of selected cataloguing system and artifact analysis procedures. ▪ <i>Discard and Deaccession Policy.</i> Description of and rationale for field and post-field discard and deaccession policies. 	<p>SFMTA and project archaeological consultant, in consultation with ERO</p>	<p>Considered complete once verification of curation occurs.</p>	<p>Consultant to prepare Archaeological Data Recovery Program in consultation with ERO.</p>	<p>Final ADRP to be submitted to ERO</p>	<p>Considered complete on finding by ERO that ADRP is implemented.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<ul style="list-style-type: none"> ▪ <i>Interpretive Program.</i> Consideration of an on-site/off-site public interpretive program during the course of the archaeological data recovery program. ▪ <i>Security Measures.</i> Recommended security measures to protect the archaeological resource from vandalism, looting, and non-intentionally damaging activities. ▪ <i>Final Report.</i> Description of proposed report format and distribution of results. ▪ <i>Curation.</i> 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. 					

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM					
Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p><i>Human Remains, Associated or Unassociated Funerary Objects.</i> 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 Native American Heritage Commission who shall appoint a Most Likely Descendant (MLD) (Pub. Res. Code Sec. 5097.98). The archaeological consultant, project sponsor, 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 (<i>CEQA Guidelines</i> Sec. 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.</p>	<p>SFMTA and project archaeological consultant, in consultation with ERO</p>	<p>Ongoing throughout soils-disturbing activities</p>	<p>If applicable, upon discovery of human remains and/or associated or unassociated funerary objects, the consultant shall notify 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 who shall appoint a Most Likely Descendant (MLD) who, along with the archaeological consultant and the SFMTA, shall make reasonable efforts to develop an agreement for the treatment of human remains and/or associated or unassociated funerary objects</p>	<p>Project archaeological consultant and/or archaeological monitor</p>	<p>Considered complete on notification of the San Francisco County Coroner and NAHC, if necessary.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p><i>Final Archaeological Resources Report.</i> The archaeological consultant shall submit a Draft Final Archaeological Resources Report (FARR) to the ERO that evaluates the historical significance of any discovered archaeological resource and describes the archaeological and historical research methods employed in the archaeological testing/monitoring/data recovery program(s) undertaken. Information that may put at risk any archaeological resource shall be provided in a separate removable insert within the draft final report.</p> <p>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 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/or documentation for nomination to the NRHP/CRHR. 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.</p>	<p>SFMTA and project archaeological consultant, in consultation with ERO</p>	<p>If applicable, upon completion of cataloguing and analysis of recovered data and findings</p> <p>If applicable, upon approval of Final Archaeological Resources Report by ERO</p>	<p>If applicable, consultant to prepare draft and final Archeological Resources Report reports.</p>	<p>If applicable, the ERO to review and approve the Final Archeological Resources Report</p> <p>If applicable, consultant to transmit final, approved documentation to NWIC and San Francisco Planning Department</p> <p>If applicable, consultant shall prepare all plans and recommendations for interpretation by the consultant shall be submitted first and directly to the ERO for review and comment, and shall be considered draft reports subject to revision until final approval by the ERO.</p>	<p>Considered complete on approval of final FARR.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>Mitigation Measure M-CP-3: Paleontological Resources Accidental Discovery</p> <p>In order to avoid any potential adverse effect in the event of accidental discovery of a paleontological resource during construction of the project, the project sponsor shall be responsible for ensuring that all project contractors and subcontractors involved in soil-disturbing activities associated with the project comply with the following procedures in the event of discovery of a paleontological resource. Paleontological remains, or resource, can take the form of whole or portions of marine shell, bones, tusk, horn and teeth from fish, reptiles, mammals, and lower order animals. In the case of Megafauna, the remains, although partial, may be large in scale. Also paleontological resources include petrified wood and rock impressions of plant or animal parts.</p> <p>Should any indication of a paleontological resource be encountered during any soil- disturbing activity of the project, the project foreman and/or project sponsor shall immediately notify the City Planning Department's Environmental Review Officer (ERO) and one of its designated paleontologists (currently, Dr. Jean De Mouthe/Dr. Peter Roopnarine in the Geology Department of the California Academy of Sciences) and immediately suspend any soil-disturbing activities in the vicinity of the discovery until the ERO has determined what additional measures are needed.</p>	<p>SFMTA and project contractor's Head Foreman</p>	<p>During construction</p>	<p>Project contractor/SFMTA to notify the ERO and one of its designated paleontologists and suspend soils-disturbing activities.</p>	<p>SFMTA and ERO</p>	<p>During construction, upon indication that a paleontological resource has been encountered</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>If the ERO determines that a potentially-significant paleontological resource may be present within the project site, the project sponsor shall retain the services of a qualified paleontological consultant with expertise in California paleontology to design and implement a Paleontological Resources Mitigation Plan (PRMMP). The PRMMP shall include a description of discovery procedures; sampling and data recovery procedures; procedures for the preparation, identification, analysis, and curation of fossil specimens and data recovered; and procedures for the preparation and distribution of a final paleontological discovery report (PDR) documenting the paleontological find.</p> <p>The PRMMP shall be consistent with the Society for Vertebrate Paleontology Standard Guidelines for the mitigation of construction-related adverse impacts to paleontological resources and the requirements of the designated repository for any fossils collected. In the event of a verified paleontological discovery, the remaining construction and soil-disturbing activities within those geological units specified as paleontologically sensitive in the PRMMP shall be monitored by the project paleontological consultant.</p> <p>The consultant's work shall be conducted in accordance with this mitigation measure and at the direction of the City's ERO. Plans and reports prepared by the consultant shall be submitted for review and approval by the ERO.</p>	<p>SFMTA and project paleontological consultant in consultation with the ERO.</p>	<p>The project paleontological consultant to consult with the ERO as indicated; completed when ERO accepts final report</p>	<p>SFMTA to retain appropriately qualified consultant to prepare PRMMP, carry out monitoring, and reporting</p>	<p>ERO to approve final PRMMP</p> <p>Project paleontological consultant shall provide brief monthly reports to ERO during monitoring or as identified in the PRMMP, and notify the ERO immediately if work should stop for data recovery during monitoring.</p> <p>The ERO to review and approve the final documentation as established in the PRMMP</p>	<p>Considered complete on approval of final PRMMP.</p> <p>Considered complete on approval of final documentation by ERO.</p>

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM					
Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<i>Hazards and Hazardous Materials</i>					
<p>Mitigation Measure M-HZ-1: Hazardous Materials Soil Testing</p> <p>In order to protect both construction workers and the public from exposure to hazardous materials in soils encountered during construction of the proposed project, the project sponsor agrees to adhere to the following requirements.</p> <ol style="list-style-type: none"> 1) Any soil excavated and then, encapsulated under concrete and/or asphalt covering within the same area as its excavation shall not require testing for the presence of hazardous materials in levels exceeding those acceptable to government agencies unless the TEP project or construction manager determines any extenuating circumstances exist, such as odors, unusual color or presence of foreign material. The reuse, remediation, or disposal of any soil tested and found to contain hazardous materials under these circumstances shall be in compliance with the requirements of the San Francisco Department of Public Health (DPH) and other agencies. The project sponsor shall be responsible for reporting the test results of any soil with hazardous material content to DPH within 21 days of the completion of testing, accompanied with a map showing the excavation location. 2) Any excavated soil not reused and encapsulated under concrete and/or asphalt covering within the same area as its excavation, shall be tested for the presence of hazardous materials in levels exceeding those acceptable to government agencies, before it is moved from the area of excavation. The transportation and disposal of the soil shall be in 	SFMTA	Soil and groundwater test results containing any hazardous materials shall be submitted to the Department of Public Health (DPH) within 21 days of the completion of testing.	SFMTA project construction contractor shall be responsible for the implementation of Steps 1 – 3.	Department of Public Health	Considered complete on review and approval by DPH of the soil and groundwater testing results, along with maps showing the location of the excavated soil and/or groundwater containing the hazardous materials.

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>compliance with DPH, state, and federal requirements. The project sponsor shall be responsible for reporting the test results of any soil with hazardous material content to DPH within 21 days of the completion of testing, accompanied with a map showing the excavation location.</p>					
<p>3) If the proposed excavation activities encounter groundwater, the groundwater shall be tested for hazardous materials. Copies of the test results shall be submitted to DPH within 21 days of the completion of testing. Any dewatering shall adhere to DPH, SFPUC, and state requirements.</p>					
<p>In the event that a subsequent ordinance or regulations are adopted by DPH governing the handling and testing of hazardous materials encountered during construction within the public right-of-way, DPH shall be given the option to require the project sponsor to adhere to the implementation of the new ordinance or regulations in lieu of the above requirements if they provide similar safety protection for both construction workers and the public.</p>					

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
MITIGATION MEASURES IN DEIR					
<i>Transportation and Circulation</i>					
<p>Mitigation Measure M-TR-8: Optimization of Intersection Operations</p> <p>The final design of program-level TTRPs that include TPS Toolkit elements from the Lane Modifications and Pedestrian Improvements categories shall integrate design elements from the following intersection geometries and traffic control measures to the greatest extent feasible without compromising the purpose of the project. Potential intersection geometry optimization measures include left or right turn pockets, turn prohibitions, restriping to add additional mixed-flow capacity, lane widening to provide for transit-only or mixed-flow lanes, and parking prohibitions. Potential traffic control measures include signalization, exclusive signal phases, and changes to the signal cycle. The final design shall ensure that transit, pedestrian, and bicycle travel are accommodated, is within the confines of feasible traffic engineering solutions, and does not conflict with overall City policies related to transportation.</p>	SFMTA	During development of detailed designs for the program-level TTRP proposals.	Optimize intersection geometries and traffic control measures	SFMTA, Planning Department	Prior to completion of detailed designs for the program-level TTRP proposals.
<p>Mitigation Measure M-TR-10: Provision of Replacement Commercial Loading Spaces</p> <p>Where feasible, the SFMTA shall install new commercial loading spaces of similar length on the same block and side of the street, or within 250 feet on adjacent side streets, of where commercial loading spaces would be permanently removed, in order to provide equally convenient loading space(s). These loading spaces shall only be replaced on streets with commercial uses.</p>	SFMTA	During development of detailed designs for the program-level TTRP proposals.	Where feasible, install new commercial loading spaces.	SFMTA with review by Planning Department,	Prior to or concurrent with the removal of on-street commercial loading spaces.

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>Mitigation Measure M-TR-26: Intersection Restriping at 16th/Bryant streets The SFMTA shall reconfigure the proposed changes at the intersection of 16th/Bryant streets converting the westbound approach of 16th Street at Bryant Street from what is proposed to be a shared through-right turn lane to a through lane and a dedicated right-turn pocket adjacent to the through lane, and reconfigure the eastbound approach from what is proposed to be a separate through lane and a dedicated right-turn pocket adjacent to the through lane to a shared through/right lane</p>	SFMTA	During project implementation	Reconfigure westbound and eastbound approaches of 16th Street at Bryant Street	Planning Department, SFMTA	Prior to completion of detailed design for project-level improvements at 16th/Bryant streets.
<p>Mitigation Measure M-TR-48: Enforcement of Parking Violations On streets where implementation of project-level TTRPs would result in a net reduction of on-street commercial loading spaces, the SFMTA shall enforce parking regulations in transit-only lanes through the use of video cameras on transit vehicles and/ or other parking enforcement activities.</p>	SFMTA	Ongoing after implementation of TTRP improvements.	Enforce parking regulations and/or install video cameras on transit vehicles.	SFMTA	Ongoing
<p>Mitigation Measure M-C-TR-1: SFMTA Monitoring of Muni Service The SFMTA, shall, to the extent feasible and consistent with annual budget appropriations, continue to monitor Muni service citywide, reporting as required on service goals, including the capacity utilization standard, and where needed, and as approved by decision makers and under budgetary appropriations, strive to improve upon Muni operations, including peak hour transit capacity on screenlines and corridors.</p>	SFMTA	Ongoing, after implementation of TEP improvements.	SFMTA to monitor transit service goals and proposed improvements to Muni operations.	SFMTA	Ongoing.

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

Adopted Mitigation Measures	Responsibility for Implementation	Mitigation Schedule	Mitigation Action	Monitoring/Reporting Responsibility	Monitoring Schedule
<p>Mitigation Measure M-C-TR-49: Explore the Implementation of Parking Management Strategies. SFMTA shall explore whether implementation of parking management strategies would be appropriate and effective in this and other parts of the City to more efficiently manage the supply of on-street parking over time.</p>	SFMTA	Ongoing during implementation of TEP.	Identify and explore new parking management strategies, particularly along the TTRP corridors	SFMTA report to SF Planning	Ongoing during project implementation.

ADMINISTRATIVE DRAFT 2 – SUBJECT TO CHANGE

EXHIBIT 2: MITIGATION MONITORING AND REPORTING PROGRAM (continued)

MONITORING AND REPORTING PROGRAM

IMPROVEMENT MEASURES FOR THE TRANSIT EFFECTIVENESS PROJECT

<p>Improvement Measure I-TR-1: Construction Measures During the construction of all TEP projects, the SFMTA shall require the following: 1) Construction contractors shall be prohibited from scheduling any truck trips, such as concrete mixers, heavy construction equipment and materials delivery, etc., to the construction sites during the a.m. (7 to 9 a.m.) and p.m. (4 to 6 p.m.) peak commute periods. 2) All construction activities shall adhere to the provisions in the City of San Francisco's Regulations for Working in San Francisco Streets (Blue Book), including those addressing sidewalk and lane closures. To minimize construction impacts on nearby businesses and residents, the SFMTA shall alert motorists, bicyclists, and nearby property owners of upcoming construction through its existing website and other available means, such as distribution of flyers, emails, and portable message or informational signs. Information provided shall include contact name(s) for the SFMTA project manager, public information officer, and/or the SFMTA General Enforcement Division contact number (311). 3) Construction contractors shall encourage construction workers to use carpooling and transit to the construction site in order to minimize parking demand.</p>	<p>SFMTA and project construction contractor(s)</p>	<p>Throughout the construction duration for any TEP component requiring construction.</p>	<p>SFMTA and project construction contractor(s) to coordinate construction related activities with DPW, the Fire Department, the Planning Department, and any other City agencies.</p>	<p>SFMTA Considered complete after completion of construction activities.</p>
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