Better Market Street Project

SAN FRANCISCO COUNTY, CALIFORNIA
DISTRICT 4 – SF-Market Street
City and County of San Francisco, Market Street
STPL-5934(180)

Draft Environmental Assessment and Draft Section 4(f) Evaluation

Prepared by the
State of California Department of Transportation

The environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 USC 327 and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

May 2020

General Information about This Document

What's in this document:

The California Department of Transportation (Caltrans), as assigned by the Federal Highway Administration (FHWA), has prepared this Environmental Assessment (EA), which examines the potential environmental impacts of the alternatives being considered for the proposed project located in San Francisco County, California. San Francisco Public Works is proposing to use funds from FHWA for this local roadway project. The document tells you why the project is being proposed, what alternatives we have considered for the project, how the existing environment could be affected by the project, the potential impacts of each of the alternatives, and the proposed avoidance, minimization, and/or mitigation measures.

What you should do:

- Please read this document.
- Additional copies of this document and the related technical studies are available for review at:
  - San Francisco Public Works, 30 Van Ness Avenue, 5th Floor, San Francisco, CA 94102
  - Caltrans District 4, Office of Local Assistance, 111 Grand Avenue, 12th Floor, Oakland, CA 94612
  - This document may be downloaded at the following website: http://www.bettermarketstreetsf.org/your-part-environmental-review.html.
- Attend the virtual public hearing on June 17, 2020 at 4:00 PM. Details on how to attend the virtual public hearing can be found at the following website: http://www.bettermarketstreetsf.org/your-part-environmental-review.html
- We'd like to hear what you think. If you have any comments about the proposed project, please attend the public hearing and/or send your written comments by the deadline.
  - Send comments via postal mail to:
    San Francisco Public Works
    Attn: Boris Deunert, Manager of Regulatory Affairs
    30 Van Ness Avenue, 5th Floor
    San Francisco, CA 94102
  - Send comments via email to: Boris.Deunert@sfdpw.org
- Be sure to send comments by the deadline: July 14, 2020

What happens next:

After comments are received from the public and reviewing agencies, Caltrans, as assigned by the FHWA, and in cooperation with San Francisco Public Works, may: (1) give environmental approval to the proposed project, (2) request additional environmental studies, or (3) abandon the project. If the project is given environmental approval and funding is obtained, San Francisco Public Works could design and construct all or part of the project.

Alternative Formats:

For individuals with sensory disabilities, this document is available in Braille, in large print, on audiocassette, or on computer disk. To obtain a copy in one of these alternative formats, please write to Caltrans, Attn: Dan Rivas, Office of Local Assistance, 111 Grand Avenue, Oakland, CA 94612; or call (510) 286-5743 (voice); or use the California Relay Service TTY number, (800) 735-2929 (TTY), 1 (800) 735-2929 (Voice) or 711.

4 – SF-Market Street
STPL-5934(180)

Redesign and provide various transportation and streetscape improvements to a 2.2-mile-long corridor along Market Street in the City and County of San Francisco

Draft Environmental Assessment and Draft Section 4(f) Evaluation

Submitted Pursuant to:

(Federal) 42 USC 4332(2)(C), 49 USC 303, and/or 23 USC 138

THE STATE OF CALIFORNIA

DEPARTMENT OF TRANSPORTATION

5-27-2020

Date of Approval

Tony Tavares
District 4 Director
California Department of Transportation

The following persons may be contacted for more information about this document:

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California Department of Transportation

Boris Deunert, 30 Van Ness Avenue, 5th Floor,
San Francisco, CA 94102 (415) 558-4009
San Francisco Public Works

S.1 NEPA ASSIGNMENT

The project is subject to federal, as well as state environmental review requirements because San Francisco Public Works (Public Works) proposes the use of federal funds from the Federal Highway Administration (FHWA). Project documentation, therefore, has been prepared in compliance with the National Environmental Policy Act (NEPA).

California participated in the "Surface Transportation Project Delivery Pilot Program" (Pilot Program) pursuant to 23 USC 327, for more than five years, beginning July 1, 2007, and ending September 30, 2012. MAP-21 (P.L. 112-141), signed by President Obama on July 6, 2012, amended 23 USC 327 to establish a permanent Surface Transportation Project Delivery Program. As a result, Caltrans entered into a Memorandum of Understanding pursuant to 23 USC 327 (NEPA Assignment MOU) with FHWA. The NEPA Assignment MOU became effective October 1, 2012, and was renewed on December 23, 2016 for a term of five years. In summary, Caltrans continues to assume FHWA responsibilities under NEPA and other federal environmental laws in the same manner as was assigned under the Pilot Program, with minor changes. With NEPA Assignment, FHWA assigned and Caltrans assumed all of the United States Department of Transportation (USDOT) Secretary's responsibilities under NEPA. This assignment includes projects on the State Highway System and Local Assistance Projects off of the State Highway System within the State of California, except for certain categorical exclusions that FHWA assigned to Caltransunder the 23 USC 326 CE Assignment MOU, projects excluded by definition, and specific project exclusions.

Public Works is the project proponent and the San Francisco Planning Department is the lead agency under the California Environmental Quality Act (CEQA). FHWA's responsibility for environmental review, consultation, and any other actions required by applicable Federal environmental laws for this project are being, or have been, carried out by Caltrans pursuant to 23 United States Code Section 327 (23 USC 327) and the Memorandum of Understanding dated December 23, 2016 and executed by FHWA and Caltrans.

While this project is subject to the requirements of both NEPA and CEQA, separate environmental documents have been prepared, one that complies with NEPA and another that complies with CEQA. This Environmental Assessment (EA) complies with the requirements of NEPA and other federal environmental laws. Compliance with CEQA and state environmental laws is provided in the *Better Market Street Environmental Impact Report (EIR)*, which was certified by the San Francisco Planning Commission on October 10, 2019.

After receiving comments from the public and reviewing agencies, a final environmental document will be prepared. Caltrans may request additional environmental and/or engineering studies to address comments. The final environmental document will include responses to comments received on the Draft EA and will identify the preferred alternative. If the decision is made to approve the project, Caltrans will decide whether to issue a Finding of No Significant Impact (FONSI) or require an Environmental Impact Statement (EIS) for compliance with the National Environmental Policy Act (NEPA). A Notice of Availability (NOA) of the FONSI will be sent to the affected units of federal, state, and local government, and to the State Clearinghouse in compliance with Executive Order 12372.

S.2 OVERVIEW OF THE PROJECT LOCATION

The project corridor consists primarily of the 2.2 miles of Market Street between Octavia Boulevard and the Embarcadero in the City and County of San Francisco, spanning the Downtown/Civic Center, South of Market, and Financial District neighborhoods. The project corridor also includes the following street segments/intersections:

- Valencia Street between Market and McCoppin streets
- McAllister Street between Market Street and Charles J. Brenham Place
- Charles J. Brenham Place between Market and McAllister streets
- Four off-corridor intersections (as shown in Figure 1-1 in Chapter 1, *Proposed Project*)
- Portions of adjacent Caltrans facilities that intersect Market Street on its north and south sides (as shown in Figure 1-1)
    - Immediate intersection area of South Van Ness Avenue (U.S. Highway [US] 101)
    - Portion of the Market Street/Octavia Boulevard intersection (US 101/Interstate 80 eastbound connector)

S.3 STATEMENT OF PROJECT PURPOSE AND NEED

The principal purpose of the project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. Ancillary purposes of the project are to replace infrastructure in the corridor that is reaching the end of its operational design life, and to improve the accessibility of the corridor and quality of its streetscape environment.

Capacity, Transportation Demand, and Safety

Market Street is the main artery of the San Francisco Municipal Railway (Muni), with the majority of routes operating on or crossing Market Street. Market Street is among the slowest corridors in the Muni system, with average speeds of approximately 5.1 mph on Market Street between Larkin and First streets because of conflicts between different modes of transportation, stop spacing, and heavy passenger volumes. In addition to an average of approximately 250,000 transit boardings per day, Market Street sees substantial pedestrian use (approximately 85,000 pedestrians per weekend day on Market Street between Fourth and Fifth streets) and has experienced a substantial increase in the number of bicyclists (at Market Street and Van Ness Avenue during the p.m. peak hour, there were approximately 165 bicyclists in 1995 compared to 467 bicyclists in 2015, a 183 percent increase).

Market Street is located on a high-injury network, with 166 reported pedestrian collisions along the project corridor, consisting of 137 collisions between vehicles and pedestrians and 29 collisions between pedestrians and bicyclists between January 2012 and December 2016. Market Street's collision rate (67 Muni/auto collisions and 53 bicycle/pedestrian or pedestrian/auto collisions total on Market Street for the period 2012–2013, the most recent data available) is higher than the statewide average for an urban four-lane undivided road (see Table 1-1 in Chapter 1, *Proposed Project*).

The entire length of Market Street is approximately 0.4 percent of San Francisco's total street miles but the site of 11 percent of the city's severe/fatal bicyclist injuries and 6 percent of the city's severe/fatal pedestrian injuries. On average, one person is killed each year along the corridor. Market Street has three of the top-five intersections for bicyclist-involved injury collisions (at Octavia, Gough and Fifth streets) and two of the top-five intersections for pedestrian-involved injury collisions (at Fifth and Seventh streets). A 2015 study by SFMTA concluded that the nature of the collisions suggests that the mixing of automobiles on a street that carries a large volume of bicyclists, pedestrians, and transit buses is contributory, because shared facilities pose conflicts between modes of transportation.

Roadway Deficiencies

Design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation are outlined below:

- Shared lanes mixing transit, taxis, commercial vehicles, and bicyclists pose potentially hazardous conditions for all modes of transportation.
    - High demand for loading by commercial vehicles and taxis lead to conflicts between vehicles, double parking, and parking on the sidewalk and create pinch zones at commercial on-street loading areas.
    - Congestion results from limited opportunities for vehicles to pass in center lanes, particularly when vehicles are queued while making right turns.
    - Curbside lane blockages at right-turn areas or commercial loading areas lead to conflicts between traffic and loading vehicles.
- The lack of existing dedicated bicycle facilities east of Eighth Street leads to bicyclists, transit, taxis and commercial vehicles competing for the same space; vehicles weaving in bus lanes; and pinch zones in lanes due to encroachment from boarding islands.
    - Left turns are not defined for bicyclists at several intersections, which can make bicyclists unsure of where and how to cross.
    - Lack of intersection waiting space for bicyclists leads to unsafe conditions when waiting to turn.
    - Rails for Muni streetcars and ventilation grates for the Bay Area Rapid Transit (BART) system can be hazards for bicyclists.
- Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks.
- For low-vision and mobility-impaired pedestrians, existing nonstandard brick sidewalks that do not comply with the Americans with Disabilities Act (ADA). The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters.
- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. United States Access Board Guidelines require bus boarding and alighting areas to provide a clear length of 96 inches measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches measured parallel to the vehicle roadway, in order to provide sufficient clearance.

Logical Termini and Independent Utility

The logical termini for the project are the aggregates of the logical termini for each of the principal modes of transportation which the project addresses. Each mode has different logical termini, which are presented in Table S-1.

As shown in Table S-1, no additional projects are required to establish the utility of the Better Market Street project, thus the project has independent utility. The work will extend from the ends of all lines to the end of the four-lane segment of Market Street where the reduction of roadway capacity impacts transit and traffic, and captures the largest transfer point (Market Street and Van Ness Avenue). For bicycles, the project will complete the existing Class IV facility for Market Street. For pedestrians, the project will capture the entire area with non-ADA-compliant pavers and ramps.

Table S-1. Logical Termini for Each Mode of Transportation

Mode of Transportation	Eastern Terminus of Mode	Western Terminus of Mode
Transit	**Market Street & Steuart Street** All bus lines terminate at Market Street and Steuart Street	**Market Street & Van Ness Avenue** Market Street at Van Ness Avenue is the biggest transfer point between regular buses, Bus Rapid Transit, and the Metro. It is also the point at which the density of bus lines drastically increases (from 16 lines west of Van Ness to 30 east of Van Ness).
Traffic	**Market Street & Steuart Street** Market Street terminates at Steuart Street	**12th Street/Franklin Street & Market Street** This is the point at which the number of lanes on Market Street reduces from six to four, correspondingly reducing capacity and increasing congestion.
Bicycles	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront. Currently, cyclists can dismount and walk their bicycles through the existing plaza between Steuart Street and the Embarcadero.	**Octavia Street & Market Street** The existing Class IV facility ends here.
Pedestrians	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront.	**Octavia Street & Market Street** This is the western limit of the brick pavers; the area east of here contains all the non-compliant curb ramps.

S.4 OVERVIEW OF THE BUILD ALTERNATIVE (PROJECT)

Public Works, in coordination with the Citywide Planning Division of the San Francisco Planning Department, the SFMTA, the San Francisco Public Utilities Commission (SFPUC), and the San Francisco County Transportation Authority (SFCTA), proposes to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. The project includes changes to and replacement/modification of:

- Roadway configuration
- Traffic signals
- Surface transit, including transit-only lanes, stop spacing, service, transit-stop location, transit-stop characteristics, and infrastructure
- Bicycle facilities
- Pedestrian facilities
- Commercial and passenger loading
- Vehicular parking
- Utilities
    - Sewer Line Replacement
    - Water Line Replacement
    - Traction Power System Improvement
    - PUC Power System Installation
    - DT Fiber Conduit Installation
    - Overhead Contact System Replacement
    - Track Replacement
    - F-loop Installation
    - Streetlight Improvement
    - Irrigation System Improvement
    - Fire Hydrant Improvement
    - Curb Ramps and Accessibility Improvement
    - Streetscape Improvement

Caltrans is the lead agency for NEPA. CEQA clearance occurred through a separate process with the San Francisco Planning Department as the CEQA lead agency.

All proposed project elements will be constructed entirely within public right-of-way areas; the majority of project elements will be constructed within the operational public right-of-way (travel lanes). The project will require a temporary encroachment permit for construction activities and a

permanent encroachment permit from Caltrans for modifications within the Van Ness Avenue and Central Freeway rights-of-way.

The total area of disturbance is approximately 40 acres. Excavations to approximately 3 to 15 feet will be necessary for underground utility rehabilitation/replacement. For one location, at 691 Market Street, the depth of soil disturbance could be 35 feet because of an existing two-story sub-sidewalk basement. No roadway cut and fill is anticipated to be required.

The project will be entirely within the area served by San Francisco's combined sewer/stormwater system and will not entail any new or intensified land uses that could increase the amount of wastewater. Therefore, the project will require no environmental regulatory approvals from state or federal regulatory agencies concerning wastewater.

Design Option

One Build Alternative is under consideration, with one design option. The design option reflects differences in prioritization of different modes of transportation, principally transit and bicycles, and refers to the approximately 0.6-mile portion of Market Street between Octavia Boulevard and a point approximately 300 feet east of the intersection of Hayes and Market streets. This design option also includes a portion of 11th Street south of Market Street.

S.5 NO-BUILD ALTERNATIVE

The No-Build (No-Action) Alternative consists of those transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Consequently, the No-Build Alternative represents future travel conditions on Market Street without the Build Alternative; it is the baseline against which the Build Alternative will be assessed to meet NEPA requirements. Generally, the roadway configuration; surface transit, such as Muni service; streetscapes; commercial and passenger loading; vehicular parking; and utilities will remain in their current condition. Limited physical changes will be made on Market Street (e.g., regularly scheduled or emergency repairs, electrification of the two track switches on Market Street at 11th Street, replacement/repair of BART/Muni ventilation grates, additional concrete protection to bike lanes, refreshing existing crosswalk and other pavement markings, minor signal timing changes to improve vehicle progression, other minor physical changes to respond to maintenance or operational needs).

Reasonably foreseeable land use projects, plans, and transportation projects are included in the No-Build Alternative analysis, based on inputs from the City and County of San Francisco. These projects include development projects (e.g., residential, commercial, mixed-use projects), area plans (e.g., Market and Octavia Area Plan, Eastern Neighborhoods Rezoning and Area Plans) that will amend land use designations (e.g., plus zoning, height, bulk, etc.), and transportation/streetscape projects. Transportation projects that will overlap some portion of the project corridor include:

- Muni Forward
- Van Ness Improvement Project
- Geary Rapid Project

- Electrification of the two existing track switches on Market Street at 11th Street
- Replacement/repair of BART/Muni ventilation grates
- Addition of concrete protection to bike lanes
- Refreshing of existing crosswalk and other pavement markings
- Minor signal timing changes to improve vehicle progression

S.6 SUMMARY OF ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Table S-2 provides a summary of the project's environmental impacts and associated avoidance, minimization, and/or mitigation measures. Refer to Chapter 1, *Proposed Project*, for a list of standardized measures that are applicable to the project and which are used on most other, if not all, Public Works projects. Refer to Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, for a detailed impact analysis of each resource area, including the regulatory setting and existing conditions.

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Table S-2. Summary of Environmental Impacts and Avoidance, Minimization, and/or Mitigation Measures

	Potential Impact		
Environmental Impact Topic	**No-Build Alternative**	**Build Alternative / Design Option**	**Avoidance, Minimization, and/or Mitigation Measures**
Parks and Recreational Facilities	Minimal impacts during construction, no impacts during operation.	Construction would result in temporary disruptions to access for some nearby parks, however detours would be provided to maintain access to parks and recreational facilities. Beneficial effects during operation due to improved bicycle and pedestrian facilities.	No avoidance, minimization, and/or mitigation measures are required.
Community Impacts and Environmental Justice	Minimal impacts on community cohesion and character during construction and operation. Construction and operations would not result in disproportionately high or adverse effects on minority and low-income populations.	Construction of the Build Alternative and design option will temporarily affect transit, bicyclists, pedestrians, and commercial vehicles and taxis because of temporary construction street closures and detours, which will temporarily affect the community character of the area and cause temporary inconveniences for users of the area and local business. During operation of the Build Alternative and design option, transit, commercial vehicle, taxi, bicycle, and pedestrian circulation will all be improved. Construction and operation of the Build Alternative and design option will not result in disproportionately high or adverse effects on minority and low-income populations.	**AMM-CI-1[1]:** Loading areas within active construction zones will be relocated as close to the construction zone as practical. Temporary loading zones may be possible under some circumstances. **AMM-CI-2:** A Construction Management Plan will be developed and implemented by the City and San Francisco Public Works (Public Works) to manage detours for vehicles, transit, bicyclists, and pedestrians. Temporary detours for bicyclists, pedestrians, and transit will be provided to maintain access to existing businesses for the duration of construction. Pedestrian access throughout the corridor will be preserved at all times. Periodic sidewalk, plaza, or crosswalk closures may occur during sidewalk reconstruction and utility work and detours will be provided. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain Americans with Disabilities Act compliance. **AMM-CI-3:** Caltrans Standard Specification Section 14 will be implemented. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust. **AMM-CI-4:** Additional Control Measures for Construction Emissions of Fugitive Dust will be implemented. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of Caltrans' Standard Specifications and Special Provisions, a National Pollutant Discharge Elimination System permit, biological opinions, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project. **AMM-CI-5:** Implement the following measures, per Caltrans Standard Specifications Section 14-8.02, to minimize temporary noise effects from construction (California Department of Transportation 2015): • Control and monitor noise resulting from work activities. • Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m. **AMM-CI-6:** Nighttime Construction Vibration Control Measures will be implemented. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan will evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan will also require vibration levels at vibration-sensitive receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. **AMM-CI-7:** Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access changes, routing and scheduling. **AMM-CI-8:** Utility lines will be relocated by the utility companies, in coordination with the City. Potentially

[1] Community Impacts avoidance and minimization measures are hereafter referenced as AMM-CI.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			affected utility customers will be notified of potential service disruptions before relocation. **AMM-CI-9:** Targeted outreach to businesses in the project corridor will take place to accommodate the loading/unloading needs of each business. **AMM-CI-10:** San Francisco Public Works will conduct targeted outreach to homeless persons along the project corridor to notify them at least three days in advance of construction activities. **AMM-CI-11:** San Francisco Public Works will work with local or nonprofit groups that assist the homeless, such as the Department of Homelessness and Supportive Housing – Homeless Outreach Team, to move homeless persons from construction zones to shelters, transitional housing, or supportive housing to the extent feasible.
Utilities/Emergency Services	Minimal impacts during construction and operation	Construction of the Build Alternative and design option will not result in an exceedance of the wastewater treatment requirements of the Regional Water Quality Control Board, and will comply with all federal, state, and local statues and regulations related to solid waste. Public Works will be required to work with the SFMTA to identify detour routes and locations where detour signs will be implemented and will incorporate detour plans into the proposed project's construction management plan to avoid impacts on emergency services. Impacts on utilities will not occur during project operation because all utility modifications and relocations will occur only during construction.	**AMM-UT-1[2]:** Utilities will be relocated by the utility companies, in coordination with the City. Potentially affected utility customers will be notified of potential service disruptions before relocation. **AMM-ES-1[3]:** Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access, routing, and scheduling changes. **AMM-ES-2:** Streets will be reviewed by the Transportation Advisory Staff Committee, including review by the fire and police departments so that emergency-vehicle access is not impaired. Pursuant to the SFMTA Blue Book, Public Works or its contractor(s) will be required to work with the SFMTA to identify detour routes and locations where detour signs will be implemented and incorporate detour plans into the project's construction management plan.
Traffic and Transportation/ Pedestrian and Bicycle Facilities	Minimal impacts during construction and operation.	Emergency access, many bicycle routes, and numerous transit routes on Market Street, cross streets, and nearby parallel streets will be affected by construction of the Build Alternative and design option. Proposed private and commercial-vehicle restrictions associated with the design option will reduce the potential for collisions for all modes of transportation on the portion of Market Street between Gough Street and Hayes Street (e.g., by restricting private vehicles to crossings and by further restricting commercial vehicle movements on Market Street). Operation of the Build Alternative and design option will result in a beneficial effect as it will improve transit operations, and will also improve bicycle facilities on Market Street by providing a raised sidewalk-level bikeway in each direction between the curb travel lane and the pedestrian through zone.	No avoidance, minimization, and/or mitigation measures are required. Standardized measures pertaining to this resource are provided in the section titled *Standardized Measures* in Chapter 1, Proposed Project.
Visual/Aesthetics	Minimal impacts on visual character, visual quality, and affected viewer groups during construction and operations.	Construction activities will have visual impacts on views of and from the project corridor during the construction period because of the temporary presence of construction equipment and staging areas. Construction of the proposed project will require removal of existing street trees which will create a short-term visual change during the period between removal of the existing trees and when the replacement trees grow to maturity. Construction of the proposed project will also require removal of the existing red brick sidewalk throughout the project corridor which will result in a moderate resource change. The 236 Path of Gold light standards within the project corridor will be partially restored (the tridents), reconstructed (base and poles), and realigned. The standards will be reinstalled in a consistent alignment to create a visible linear edge to	No avoidance, minimization, and/or mitigation measures are required. Standardized measures pertaining to this resource are provided in the section titled *Standardized Measures* in Chapter 1, Proposed Project.

[2] Utilities avoidance and minimization measures are hereafter referenced as AMM-UT.

[3] Emergency Services avoidance and minimization measures are hereafter referenced as AMM-ES.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
		the pedestrian zone. From a street-level perspective and from a landscape perspective, the Build Alternative will not degrade the visual quality of the Path of Gold light standards. Operation of the proposed project will have a negligible change on street views from Market Street as well as surrounding streets.	
Cultural Resources	Minimal impacts during construction, no impacts during operation.	Project-related ground disturbance has the potential to encounter as-yet undocumented archaeological resources and human remains during construction of the Build Alternative and design option. Construction-related activities have the potential to affect the character-defining features of the built resources through project-related alterations to the streetscape (i.e., roadway or sidewalk areas). The Build Alternative and design option will result in diminished integrity of the Market Street Cultural Landscape District and affect the district's eligibility for the NRHP. Avoidance and minimization measures will minimize the effects of the Build Alternative and design option but will not result in avoidance or reduction of adverse effects. The Build Alternative and design option will not result in any additional alteration to the materiality of built resources during operation.	**AMM-CUL-1[4]: Data Recovery Plan** The project has the potential to adversely affect one known archaeological resource (the Yerba Buena Cemetery) and nine resources whose presence have not been field-verified (the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf). In addition, there are five areas that are considered sensitive for containing archaeological deposits. Public Works will ensure that adverse effects of the project on these resources are resolved by implementing the *Data Recovery Plan for the Better Market Street Project* (DRP). The DRP identifies archaeologically sensitive areas; presents a research design and describes data requirements for archaeological sites; describes monitoring and data recovery methods, procedures, and protocols; describes procedures for unanticipated discoveries; describes procedures and protocols for data recovery; and describes reporting requirements. Archaeological monitoring will occur in the vicinity of Yerba Buena Cemetery, the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf, as well as in the five locations determined to have increased sensitivity to contain archaeological deposits. **AMM-CUL-2:** Unanticipated Archaeological Discoveries Procedures In the event of an unanticipated archaeological discovery all ground disturbance and equipment will cease within a 60-foot radius of the discovery, and if possible, be redirected to another portion of the project corridor. The area surrounding the discovery will be secured and the resource will be protected while appropriate assessment occurs. In the event of a potential discovery, the resident engineer and the Caltrans Archaeologist will be notified immediately. As appropriate, the Caltrans Archaeologist will notify the Caltrans Cultural Studies Office (CSO), who in turn will notify SHPO. Evaluation and treatment options will be determined in direct communication with stakeholders, as applicable. If human remains are encountered, then the procedures outlined by the Native American Heritage Commission (NAHC), in accordance with Section 7050.5 of the California Health and Safety Code (HSC) and Section 5097.98 of the Public Resources Code, will be followed. If the discovery is determined to include human remains: 1. All ground-disturbing work within the immediate vicinity (60 feet) of the find will halt. 2. The San Francisco County Coroner will be notified: San Francisco County Medical Examiner 1 Newhall Street San Francisco, CA 94124 Phone: (415) 641-3600 Web: https://sf.gov/departments/city-administrator/office-chief-medical-examiner 3. NAHC will be notified: Native American Heritage Commission 915 Capitol Mall, Room 364 Sacramento, California 95814 Phone: (916) 653-4082 Email: nahc@nahc.ca.gov 4. The coroner will have 2 working days to examine the remains after being notified in accordance with HSC

[4] Cultural resources avoidance and minimization measures are hereafter referenced as AMM-CUL.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			Section 7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify NAHC of the discovery. 5. NAHC will immediately designate and notify the Native American Most Likely Descendant (MLD), who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for treatment of them. All Native American coordination will be done in direct communication with the Caltrans Archaeologist assigned to the project. **AMM-CUL-3:** Prepare and Submit a Historic Preservation Treatment Plan Public Works shall retain a professional who meets the Secretary of the Interior's Professional Qualifications Standards to prepare a Historic Preservation Treatment Plan (HPTP) for the following contributing elements of the Market Street Cultural Landscape District: Embarcadero Plaza, Hallidie Plaza, and United Nations Plaza. Public Works shall coordinate with the San Francisco Department of Recreation and Parks on the timeline, cost share, and overall implementation of this measure. The HPTP shall incorporate rehabilitation recommendations for maintaining and protecting the paving materials at the three plazas and shall include the following elements: • The HPTP shall be prepared and implemented to aid in protecting the physical elements of the plazas that contribute to the character of the Market Street Cultural Landscape District, as identified and described in the State of California Department of Parks and Recreation (DPR) district record appended to the Historic Resource Evaluation Report that was completed as part of the Section 106 review and technical documentation for this project. The HPTP shall focus on the district's association with the Market Street Redevelopment Plan design led by architects John Carl Warnecke and Mario Ciampi and landscape architect Lawrence Halprin with specific guidance on the treatment of historic materials, including the red brick herringbone paving present in all three locations. • The HPTP shall provide a baseline conditions assessment of the contributing elements in each of three plazas, including documentation of areas that illustrate typical conditions and degradation that will be addressed through rehabilitation recommendations. • The HPTP will also include best practices guidelines and rehabilitation recommendations to guide future projects associated with ongoing maintenance and repair of the red brick and other contributing elements of the plazas to ensure that replacement materials are compatible with the character of historic materials. • If deemed necessary upon assessment of the resources' condition, the plan shall include guidance for preliminary stabilization measures to be carried out before construction to prevent damage to the three plazas as a result of construction activities. Specifically, the protection measures shall incorporate construction specifications to be implemented by the construction contractor(s) to ensure all feasible means of avoiding damage to the resources. Public Works will not authorize the execution of any Undertaking that may affect historic properties until the HPTP has been completed and approved by Caltrans. **AMM-CUL-4:** Develop and Implement Community-led Programs Public Works will administer the selection of a minimum of three community-led public programs to celebrate and commemorate the history of Market Street. Proposals will be solicited through an RFP submission process and will be proposed, managed and implemented by California-based non-profit organizations with an interest in the history and/or cultural properties of the Market Street Cultural Landscape District. The selection process may be coordinated with the San Francisco Planning Department to fulfill the interpretive and commemorative mitigation measures that were developed to meet the requirements of the California Environmental Quality Act (see the *Better Market Street Environmental Impact Report*, which was certified by the San Francisco Planning Commission on October 10, 2019), or they can be completed as independent programming. With funding support from Public Works, a minimum of three community-led programs will be awarded. Interpretive or commemorative programs may include temporary events such as dances, lectures, or walking tours, or they may take the form of permanent installations such as interpretive signage or an on-site exhibition. Organizations with a demonstrated interested in the history of Market Street may apply through the RFP

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			process. Preference will be given to organizations located within the project APE. Program selection will be made by a committee that will include a minimum of five persons, and include at least three members with professional experience in arts and cultural programming. The committee may include professionals from the following fields and organizations: a representative of Public Works; a representative of Caltrans; professionals from the fields of history, historic preservation, performing arts, visual arts, or design. Organizations with representation on the committee will not be eligible to apply for award consideration. Where responses to the RFP include proposals for temporary programming, a plan for documentation or recordation of the program will be included. The documentation or recordation materials will be appended to the annual reporting detailed in Stipulation G of the MOA and will also be hosted by the organizations so that the information included in the programs are made available to the public as part of the permanent historical record on the history of Market Street. Additionally, the programs, both temporary and permanent, must be accessible to the public through in-person or digital participation. Public Works will not authorize the execution of any Undertaking activity that may affect historic properties in the APE until awards are made for three community-led programs, and draft work plans have been submitted by the awardees and approved by the selection committee.
Water Quality and Storm Water Runoff	Minimal impacts during construction and operation.	Construction-period temporary effects on water quality will be reduced by implementing the standard BMPs recommended for a particular construction activity. In the event that groundwater is encountered during construction, dewatering will be conducted on a one-time temporary basis and will not deplete groundwater supplies. Operation of the Build Alternative and design option will not result in a substantial change in surface permeability, nor will it alter topography in the area, therefore it will not increase runoff, erosion, siltation, and will not result in associated water quality conditions/impairments.	**AMM-WQ-1**[5]**:** The project will implement the temporary BMPs included in Table 2.2.1-1 (see Table 2.2.1-1 in Section 2.2.1, *Water Quality and Stormwater Runoff)*. **AMM-WQ-2:** The project will implement the operational source control BMPs included in Table 2.2.1-2 (see Table 2.2.1-2 in Section 2.2.1, *Water Quality and Stormwater Runoff)*.
Geology/Soils/Seismic/ Topography	Minimal impacts during construction and operation.	Compliance with seismic design standards, as part of the Public Works permitting process, and design specifications, as followed by the SFMTA, will ensure that project features will minimize damage from seismic activity. Preparation and implementation of a stormwater pollution prevention plan (SWPPP), in accordance with the National Pollutant Discharge Elimination System, will be required. Construction of the proposed project will be required to meet the requirements of the San Francisco Building Code and the California Building Code. Furthermore, all construction, including engineered fills, will comply with Caltrans' Standard Specifications. Although the potential for seismic ground shaking and ground failure within San Francisco is unavoidable, improvements to, and the redesign of, existing transportation, streetscape, and utility infrastructure will not create new seismic hazards for people or structures during operation.	No avoidance, minimization, and/or mitigation measures are required. Standardized measures pertaining to this resource are provided in the section titled *Standardized Measures* in Chapter 1, Proposed Project.
Hazardous Waste/Materials	Minimal impacts during construction and operation.	Exposure of humans to hazardous materials during ground-disturbing activities would be avoided or minimized through avoidance and minimization measures. No impact will occur during operation of the project, as the potential for encountering hazardous materials and waste will be avoided.	**AMM-HAZ-1**[6]**:** If excavation or earth-disturbing activity is planned along the project corridor as well as within areas near the PRECs and HRECs, additional soil and groundwater investigation will be conducted (based on depths of proposed excavation after the completion of the project's engineering conceptual design) to evaluate the following: • Potential human and environmental risks from PRECs and HRECs. • Potential waste classification for soil that will be excavated for disposal during the construction of the

[5] Water quality and storm water runoff avoidance and minimization measures are hereafter referenced as AMM-WQ.

[6] Hazardous waste/materials avoidance and minimization measures are hereafter referenced as AMM-HAZ.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			project. Waste disposal characterization analyses should include CAM17 metals, pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). • Potential for aerially deposited lead (ADL) and lead striping paint. Shallow soils anticipated to be excavated during the project will be sampled and analyzed for lead. Caltrans standard special provisions for removal of yellow paint will also be followed. • If excavation is anticipated to extend below the groundwater table at any part of the project corridor, groundwater will be sampled in the vicinity prior to obtaining dewatering and discharge permits to San Francisco Public Utilities Commission's combined storm and sewer system. **AMM-HAZ-2:** Public Works will develop and implement the necessary plans and measures required by federal and state regulations, including a health and safety plan, best management practices, and/or an injury and illness prevention plan. The plans will be prepared and implemented to address worker safety when working with potentially hazardous materials, including potential asbestos-containing materials, lead-containing paint lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity. **AMM-HAZ-3:** Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting, and reusing of soil will also be conducted following Caltrans' standard special provisions. **AMM-HAZ-4:** As required by Caltrans' standard special provisions, the construction contractor will sample and test yellow and white traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. The stripes will be disposed of at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the project proponent and the construction contractor. Implementing this measure will minimize potential effects from these hazardous materials.
Air Quality	Minimal impacts during construction and operation.	Construction activities will generate short-term emissions of particulate emissions (e.g., airborne dust) as a result of excavation, grading, hauling, and various other construction-related activities. Exhaust emissions from construction equipment are also expected. These emissions include CO, NOX, VOCs, directly emitted particulate matter (PM10 and PM2.5), and toxic air contaminants such as diesel particulate matter. NOX emissions will be above the Bay Area Air Quality Management District threshold for CEQA purposes, requiring mitigation. Implementation of Caltrans Standard Specifications and the fugitive dust control measures during construction will also help to minimize air quality impacts from construction activities. The Build Alternative and design option is not a capacity-increasing project and will not result in a significant number of new trips or vehicle miles traveled (VMT) relative to the No Build Alternative.	**AMM-AQ-1**[7]**:** Implement Caltrans Standard Specification Section 14. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust. **AMM-AQ-2:** Implement Additional Control Measures for Construction Emissions of Fugitive Dust. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of a National Pollutant Discharge Elimination System permit, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project. The following measures are taken from BAAQMD's 2017 California Environmental Quality Act Air Quality Guidelines: • Reduce the amount of disturbed area where possible. • Use water trucks or sprinkler systems to apply sufficient quantities of water and prevent airborne dust from leaving the site. An adequate water source must be identified. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever

[7] Air quality avoidance and minimization measures are hereafter referenced as AMM-AQ.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			possible. • All dirt stockpile areas should be sprayed daily, as needed, then covered, or a district-approved alternative method should be used. • Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil-disturbing activities. • Exposed ground areas that will be reworked more than 1 month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established. • All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the district. • All roadways, driveways, sidewalks, etc., to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading, unless seeding or soil binders are used. • Speeds for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. • All trucks hauling dirt, sand, soil, or other loose materials should be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer), in accordance with San Francisco County regulations. • Wheel washers should be installed where vehicles exit from unpaved roads onto streets or trucks and equipment leaving the site should be washed. • Streets should be swept at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible. • A sign should be posted in a prominent location that is visible to the public and include the telephone numbers of the contractor and San Francisco Public Works for questions or concerns about dust from the project.
Noise and Vibration	Minimal impacts during construction and operation.	Noise from construction of the Build Alternative and design option may intermittently dominate the noise environment in the immediate area of construction. Caltrans Standard Specifications Section 14-8.02, will reduce construction noise by requiring the construction contractor to implement measures to minimize temporary noise impacts. In addition, the construction contractor will be required to comply with Section 2907(b) of the City noise ordinance. Nighttime Construction Vibration Control Measures, will reduce vibration impacts resulting from construction activities. Increases in noise levels during operation of the Build Alternative and design option will be below the limit of perceptible change, and no vibration impacts are anticipated to occur at vibration-sensitive uses along the project corridor.	**AMM-NOI-1[8]:** Caltrans Standard Specifications Section 14-8.02. Standard Caltrans procedures include implementation of the following measures to minimize temporary noise effects from construction (California Department of Transportation 2018): • Control and monitor noise resulting from work activities. • Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m. **AMM-NOI-2:** Nighttime Construction Vibration Control Measures. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan shall evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan shall also require vibration levels at vibration-sensitive receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. The project contractor shall: • Retain the services of a qualified professional to prepare a pre-construction assessment and vibration monitoring plan. This assessment and vibration monitoring plan shall identify all vibration-sensitive receptors adjacent to the project corridor that could be exposed to vibration from nighttime construction activities exceeding a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. The qualified professional shall submit the plan to Public Works for review and approval prior to issuance of a construction permit. • Inform vibration-sensitive receptors of upcoming construction activities that may generate high levels of

[8] Noise and vibration avoidance and minimization measures are hereafter referenced as AMM-NOI.

Environmental Impact Topic	Potential Impact: No-Build Alternative	Potential Impact: Build Alternative / Design Option	Avoidance, Minimization, and/or Mitigation Measures
			vibration a minimum of one week in advance of such construction activities. Methods of notification shall include mailed notices as well as notifications hand-posted on doorways. The notification shall include the name and contact information for a person that can be reached during nighttime construction hours. • Perform real-time vibration monitoring during all construction activities conducted between the hours of 8 p.m. and 7 a.m. at a location representative of the nearest vibration-sensitive receptor. If vibration levels exceed a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources, the vibration monitor shall immediately alert the construction manager, who shall immediately cease construction activity. Construction activity shall resume only after the vibration-generating equipment is adjusted or relocated such that the vibration level no longer exceeds 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources or such activity is otherwise conducted between the hours of 7 a.m. and 8 p.m.
Biological Environment	Minimal impacts during construction, no impacts during operation.	All existing street trees in the BSA could be removed and new street trees will be planted as a result of construction of the Build Alternative and design option. AMMs will ensure that construction of the Build Alternative and design option will not result in take of eggs or young, or otherwise result in disturbance of nesting birds. Operation of the project is not expected to result in any direct or indirect effects on migratory nesting birds.	**AMM-BIO-1[9]:** To avoid effects from tree removal on migratory nesting birds, stump removal will be conducted after August 31 and before February 1, outside the nesting season. To avoid effects of all other construction activities on active bird nests, including special-status bird species, a qualified biologist will conduct a preconstruction survey for nesting birds prior to any construction activities scheduled during the nesting season (February 1 to August 31). The survey will occur no more than 7 days prior to the initiation of ground-disturbing activities, including clearing, grubbing, and staging. The survey area will include the disturbance footprint and a 50-foot area around the footprint (buffer) for songbirds protected by the Migratory Bird Treaty Act. **AMM-BIO-2:** If active nests are found during the survey, the biologist will establish exclusion zones around each nest. No work will be allowed in exclusion zones until the biologist has determined that the young have fledged or the nest is no longer active. The size of the exclusion zones will be based on the species' sensitivity to disturbance and planned work activities in the vicinity. The buffer size may be reduced if the biologist, after monitoring the nest and nearby construction activities, determines that no disturbance that would result in nest abandonment or premature fledging (e.g., young being startled by construction noise or visual disturbance and jumping out of the nest before they are able to fly) is likely to occur. **AMM-BIO-3:** If a lapse in project-related activities of 10 days or more occurs, another preconstruction survey will be conducted. **AMM-BIO-4:** One survey will be required prior to the initiation of construction in each segment of the project if construction within the segment is initiated during the nesting bird season (February 1 to August 31). In addition, one nesting bird survey will be required between April and May (at the discretion of the qualified biologist, depending on construction activities) of each year.

[9] Biological resource avoidance and minimization measures are hereafter referenced as AMM-BIO.

TABLE OF CONTENTS

PAGE

Summary S-1

S.1 NEPA Assignment S-1
S.2 Overview of the Project Location S-2
S.3 Statement of Project Purpose and Need S-2
Capacity, Transportation Demand, and Safety S-2
Roadway Deficiencies S-3
Logical Termini and Independent Utility S-4
S.4 Overview of the Build Alternative (Project) S-5
Design Option S-6
S.5 No-Build Alternative S-6
S.6 Summary of Environmental Impacts and Mitigation Measures S-7

Chapter 1 Proposed Project 1-1

1.1 Introduction 1-1
1.2 Project Location 1-1
1.3 Purpose and Need 1-5
1.3.1 Purpose 1-5
1.3.2 Need 1-5
1.4 Logical Termini and Independent Utility 1-7
1.5 Existing Conditions 1-8
1.6 Project Description 1-10
1.7 Project Alternatives 1-11
1.7.1 Proposed Build Alternative and Design Option 1-11
1.7.2 No-Build Alternative 1-52
1.7.3 Alternatives Considered but Eliminated From Consideration 1-53
1.8 Permits and Approvals Needed 1-62

Chapter 2 Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures 2.1.1-1

2.1 Human Environment 2.1.1-4
2.1.1 Parks and Recreational Facilities 2.1.1-4
2.1.2 Community Impacts 2.1.2-1
2.1.3 Utilities/Emergency Services 2.1.3-1
2.1.4 Traffic and Transportation/Pedestrian and Bicycle Facilities 2.1.4-1

2.1.5 Visual/Aesthetics 2.1.5-1
2.1.6 Cultural Resources 2.1.6-1
2.2 Physical Environment 2.2.1-1
2.2.1 Water Quality and Stormwater Runoff 2.2.1-1
2.2.2 Geology/Soils/Seismic/Topography 2.2.2-1
2.2.3 Hazardous Waste/Materials 2.2.3-1
2.2.4 Air Quality 2.2.4-1
2.2.5 Noise and Vibration 2.2.5-1
2.3 Biological Environment 2.3-1
2.3.1 Animal Species 2.3-1
2.4 Cumulative Effects 2.4-1
2.4.1 Regulatory Setting 2.4-1
2.4.2 Affected Environment 2.4-1
2.4.3 Environmental Consequences 2.4-2

Chapter 3 Comments and Coordination 3-1
3.1 Introduction 3-1
3.2 Scoping Process 3-1
3.3 Consultation and Coordination with Public Agencies 3-2
3.3.1 Federal Highway Administration 3-5
3.3.2 Consultations Pursuant to Section 106 of the National Historic Preservation Act 3-5
3.3.3 Tribal Consultation 3-6
3.3.4 Coordination Under Section 4(f) of the U.S. Department of Transportation Act of 1966 3-6
3.4 Agencies Consulted 3-7
3.5 Ongoing Public Involvement 3-8

Chapter 4 List of Preparers 4-1
4.1 California Department of Transportation 4-1
4.2 San Francisco Public Works 4-1
4.3 San Francisco Municipal Transportation Agency 4-2
4.4 ICF 4-2
4.5 Fehr & Peers 4-4

Chapter 5 Distribution List.....5-1
5.1 Introduction.....5-1
5.1.1 Federal Agencies.....5-1
5.1.2 State Agencies.....5-1
5.1.3 Regional Agencies.....5-2
5.1.4 Local Agencies.....5-3
5.1.5 Public Officials.....5-6
5.1.6 Other Interested Parties.....5-7

Chapter 6 References.....6-1

Appendices

Appendix A Draft Section 4(f) Evaluation
Appendix B Draft Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations
Appendix C Title IV Policy Statement
Appendix D Past, Present, and Reasonably Foreseeable Land Use Projects, Plans, and Transportation Projects in the Vicinity of the Project Corridor
Appendix E Correspondence
Appendix F Avoidance, Minimization, and/or Mitigation Summary
Appendix G List of Technical Studies
Appendix H List of Acronyms

List of Tables

S-1 Logical Termini for Each Mode of Transportation S-4

S-2 Summary of Environmental Impacts and Avoidance, Minimization, and/or Mitigation Measures S-9

1-1 Collisions per Million Vehicle Miles Traveled 1-5

1-2 Logical Termini for Each Mode of Transportation 1-7

1-3 Proposed Sidewalk and Through Zones Widths 1-28

1-4 Proposed Intersection Bulb-out Locations 1-28

1-5 Pedestrian Route Accessibility Requirements from the United States Access Board 1-31

1-6 Proposed Loading Zone Locations 1-34

1-7 Proposed Street Tree Species and Common Names 1-40

1-8 Stage I Initial Design Concepts 1-54

1-9 Permits and Approvals 1-62

2.1.1-1 Parks and Street-Level Plazas Within One Block of the Project Corridor 2.1.1-5

2.1.2-1 Housing Characteristics for the City and the Study Area in 2016 ..... 2.1.2-5

2.1.2-2 Employment Characteristics for the City and the Study Area in 2016 ..... 2.1.2-6

2.1.2-3 Race and Ethnicity Data for the City and the Study Area (2016) 2.1.2-15

2.1.2-4 Income and Poverty in the City and the Study Area (2016) 2.1.2-16

2.1.4-1 Traffic Volumes on Market Street (Existing Conditions), Weekday P.M. Peak Hour 2.1.4-5

2.1.4-2 Pedestrian Volumes on Market Street Sidewalks within Project Corridor (Existing Conditions), Weekday P.M. Peak Hour 2.1.4-6

2.1.4-3 Pedestrian Sidewalk Level-of-Service Analysis (Near-term [2020] Conditions), Weekday P.M. Peak Hour 2.1.4-15

2.1.6-1 Summary of Cultural Resources Findings 2.1.6-31

2.2.1-1 Suggested Minimum Temporary Control BMPs 2.2.1-9

2.2.1-2 Summary of Pollutant Source Areas and Associated Structural and Operational Source Control Measures 2.2.1-10

2.2.4-1 Federal and State Criteria Air Pollutant Standards, Effects, Sources, and Attainment Status for the Project Area 2.2.4-4

2.2.4-2 Status of SIPs Relevant to the Project Area 2.2.4-7

2.2.4-3 Ambient Air Quality Monitoring Data Measured at the Arkansas Street Monitoring Station 2.2.4-11

2.2.4-4 Sensitive Receptors within 1,000 Feet of the Project Corridor (Market Street and Mission Street) 2.2.4-12

2.2.4-5 Construction-Period Emissions Estimates (No Control Measures Implemented) 2.2.4-20

2.2.4-6 Construction-Period Emissions Estimates (With Engine Control Measures) 2.2.4-20

2.2.5-1 Vibration Source Levels for Construction Equipment 2.2.5-5

2.2.5-2 Vibration Damage Potential, Threshold Criteria Guidelines 2.2.5-6

2.2.5-3 Vibration Annoyance Potential, Criteria Guidelines 2.2.5-6

2.2.5-4 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment 2.2.5-7

2.2.5-5 Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings 2.2.5-8

2.2.5-6 Existing Noise- and Vibration-Sensitive Receptors 2.2.5-9

2.2.5-7 Noise Monitoring Locations 2.2.5-13

2.2.5-8 Summary of Long- and Short-term Noise Monitoring 2.2.5-14

2.2.5-9 Existing Streetcar Passby Noise Measurement Locations and Noise Levels 2.2.5-16

2.2.5-10 Existing Exterior Ground-Level Vibration at Vibration Measurement Locations 2.2.5-17

2.2.5-11 Expected Interior Vibration at Buildings near Vibration Measurement Locations on Market Street 2.2.5-18

List of Figures

1-1 Proposed Project Location 1-3

1-2 Proposed Project Transportation and Streetscape Improvements 1-13

1-3 Proposed Project and Design Option Conceptual Plans 1-23

1-4 Proposed Project and Design Option Cross Sections 1-24

1-5 From Contract Drawings for Market Street Reconstruction: Herringbone Brick Pattern 1-30

2.1.2-1 Community Impact Assessment Study Area 2.1.2-3

2.1.4-1 Transportation Study Area 2.1.4-3

2.1.4-2 Existing and Proposed Project Muni Transit Stop Spacing 2.1.4-17

2.1.5-1 Visual Assessment Units 2.1.5-5

2.1.5-2 Hayes Valley VAU Key Views 2.1.5-7

2.1.5-3 Downtown VAU Key Views 2.1.5-8

2.1.5-4 Financial VAU Key Views 2.1.5-9

2.1.6-1 Archaeological and Built Environment Areas of Potential Effects (Overview) 2.1.6-3

2.2.4-1 Nearest Air Quality Monitoring Station to the Project Corridor 2.2.4-9

2.2.4-2 Existing Air Quality Sensitive Receptors in the Vicinity of the Project Corridor 2.2.4-15

2.2.5-1 Noise Levels of Common Activities 2.2.5-2

2.2.5-2 Noise Measurement Locations and Existing Sensitive Receptors in the Vicinity of the Project Corridor 2.2.5-11

Chapter 1
Proposed Project

1.1 INTRODUCTION

San Francisco Public Works (Public Works), in coordination with the Citywide Planning Division of the San Francisco Planning Department, the San Francisco Municipal Transportation Agency (SFMTA), the San Francisco Public Utilities Commission (SFPUC), and the San Francisco County Transportation Authority (SFCTA), proposes to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. The following sections describe the project location, purpose and need, independent utility and logical termini, existing conditions, Build Alternative, No-Build Alternative, and the needed permits and approvals.

1.2 PROJECT LOCATION

Figure 1-1, p. 1-3, shows the project vicinity and project location. The project corridor consists primarily of the 2.2 miles of Market Street between Octavia Boulevard and the Embarcadero in the city and county of San Francisco, spanning the Downtown/Civic Center, South of Market, and Financial District neighborhoods. The project corridor also includes the following street segments/intersections:

- Valencia Street between Market and McCoppin streets
- McAllister Street between Market Street and Charles J. Brenham Place
- Charles J. Brenham Place between Market and McAllister streets
- Four off-corridor intersections (as shown in Figure 1-1)
- Portions of adjacent Caltrans facilities that intersect Market Street on its north and south sides (as shown in Figure 1-1)
    - Immediate intersection area of South Van Ness Avenue (U.S. Highway 101 [US 101])
    - Portion of the Market Street/Octavia Boulevard intersection (US 101/Interstate 80 eastbound connector)

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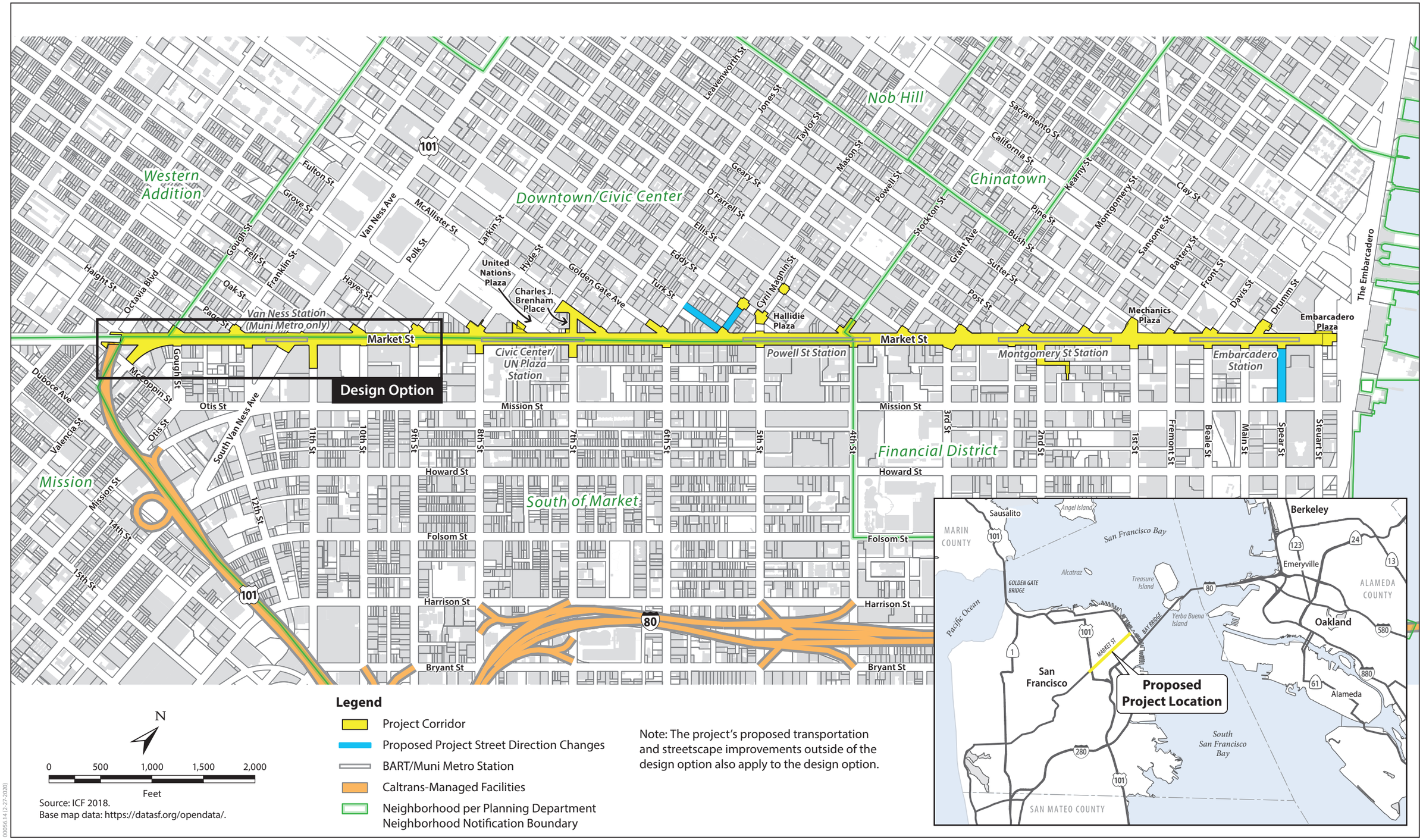

Note: The project's proposed transportation and streetscape improvements outside of the design option also apply to the design option.

Source: ICF 2018.
Base map data: https://datasf.org/opendata/.

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Better Market Street Project

Figure 1-1
Proposed Project Location

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1.3 PURPOSE AND NEED

1.3.1 Purpose

The principal purpose of the project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. Ancillary purposes of the project are to replace infrastructure in the corridor that is reaching the end of its operational design life, and to improve the accessibility of the corridor and quality of its streetscape environment.

1.3.2 Need

1.3.2.1 Capacity, Transportation Demand, and Safety

Market Street is the main artery of the San Francisco Municipal Railway (Muni), with the majority of routes operating on or crossing Market Street. Market Street is among the slowest corridors in the Muni system, with average speeds of approximately 5.1 mph on Market Street between Larkin and First streets because of conflicts between different modes of transportation, stop spacing, and heavy passenger volumes. In addition to an average of approximately 250,000 transit boardings per day, Market Street sees substantial pedestrian use (approximately 85,000 pedestrians per weekend day on Market Street between Fourth and Fifth streets) and has experienced a substantial increase in the number of bicyclists (at Market Street and Van Ness Avenue during the p.m. peak hour, there were approximately 165 bicyclists in 1995 compared to 467 bicyclists in 2015, a 183 percent increase).

Market Street is located on a high-injury network, with 166 reported pedestrian collisions along the project corridor, consisting of 137 collisions between vehicles and pedestrians and 29 collisions between pedestrians and bicyclists between January 2012 and December 2016.[1] Market Street's collision rate (67 Muni/auto collisions and 53 bicycle/pedestrian or pedestrian/auto collisions total on Market Street for the period 2012–2013, the most recent data available) is higher than the statewide average for an urban four-lane undivided road (see Table 1-1).

Table 1-1. Collisions per Million Vehicle Miles Traveled

Market Street	32.0
Statewide average for urban four-lane undivided road	1.53
Caltrans District 4 average	0.58
San Francisco County	4.7
Mission Street	6.9

Collision data: SFMTA, 2015; Caltrans, 2014.

[1] San Francisco Department of Public Health, using San Francisco Police Department records and the Statewide Integrated Traffic Records System, 2012 to 2016.

The entire length of Market Street is approximately 0.4 percent of San Francisco's total street miles but the site of 11 percent of the city's severe/fatal bicyclist injuries and 6 percent of the city's severe/fatal pedestrian injuries. On average, one person is killed each year along the corridor. Market Street has three of the top-five intersections for bicyclist-involved injury collisions (at Octavia, Gough and Fifth streets) and two of the top-five intersections for pedestrian-involved injury collisions (at Fifth and Seventh streets). A 2015 study (San Francisco Municipal Transportation Agency 2015; Perkins and Will et al. 2011) by SFMTA concluded that the nature of the collisions suggests that the mixing of automobiles on a street that carries a large volume of bicyclists, pedestrians, and transit buses is contributory because shared facilities pose conflicts between modes of transportation.

Roadway Deficiencies

Design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation are outlined below.

- Shared lanes mixing transit, taxis, commercial vehicles, and bicyclists pose potentially hazardous conditions for all modes of transportation.
    - High demand for loading by commercial vehicles and taxis lead to conflicts between vehicles, double parking, and parking on the sidewalk and create pinch zones at commercial on-street loading areas.
    - Congestion results from limited opportunities for vehicles to pass in center lanes, particularly when vehicles are queued while making right turns.
    - Curbside lane blockages at right-turn areas or commercial loading areas lead to conflicts between traffic and loading vehicles.
- The lack of existing dedicated bicycle facilities east of Eighth Street leads to bicyclists, transit, taxis and commercial vehicles competing for the same space; vehicles weaving in bus lanes; and pinch zones in lanes due to encroachment from boarding islands.
    - Left turns are not defined for bicyclists at several intersections, which can make bicyclists unsure of where and how to cross.
    - Lack of intersection waiting space for bicyclists leads to unsafe conditions when waiting to turn.
    - Rails for Muni streetcars and ventilation grates for the Bay Area Rapid Transit (BART) system can be hazards for bicyclists.
- Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks that do not comply with the Americans with Disabilities Act (ADA). The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters.

- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. United States Access Board Guidelines require bus boarding and alighting areas to provide a clear length of 96 inches measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches measured parallel to the vehicle roadway, in order to provide sufficient clearance.

1.4 LOGICAL TERMINI AND INDEPENDENT UTILITY

The logical termini for the project are the aggregates of the logical termini for each of the principal modes of transportation which the project addresses. The purpose of the project is to make Market Street safer and more efficient for all modes of transportation, but each mode has different logical termini, which are presented in Table 1-2.

As shown in Table 1-2, no additional projects are required to establish the utility of the Better Market Street project, thus the project has independent utility. The work will extend from the ends of all lines to the end of the four-lane segment of Market Street where the reduction of roadway capacity impacts transit and traffic, and captures the largest transfer point (Market Street and Van Ness Avenue). For bicycles, the project will complete the existing Class IV facility for Market Street. For pedestrians, the project will capture the entire area with non-ADA-compliant pavers and ramps.

Table 1-2. Logical Termini for Each Mode of Transportation

Mode of Transportation	Eastern Terminus of Mode	Western Terminus of Mode
Transit	**Market Street & Steuart Street** All bus lines terminate at Market Street and Steuart Street	**Market Street & Van Ness Avenue** Market Street at Van Ness Avenue is the biggest transfer point between regular buses, Bus Rapid Transit, and the Metro. It is also the point at which the density of bus lines drastically increases (from 16 lines west of Van Ness to 30 east of Van Ness).
Traffic	**Market Street & Steuart Street** Market Street terminates at Steuart Street	**12th Street/Franklin Street & Market Street** This is the point at which the number of lanes on Market Street reduces from six to four, correspondingly reducing capacity and increasing congestion.
Bicycles	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront. Currently, cyclists can dismount and walk their bicycles through the existing plaza between Steuart Street and the Embarcadero.	**Octavia Street & Market Street** The existing Class IV facility ends here.
Pedestrians	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront.	**Octavia Street & Market Street** This is the western limit of the brick pavers; the area east of here contains all the non-compliant curb ramps.

1.5 EXISTING CONDITIONS

Market Street is a major city street and a significant regional destination, functioning as the backbone of both San Francisco's local and BART's regional transportation systems. Market Street is a significant bicyclist commuter route and a major retail portal, serving a population both within and outside the city. The project corridor crosses or is adjacent to several distinct districts and neighborhoods. The land use distribution along Market Street is primarily commercial and office, with few residential uses but several hotels.

In general, there are four travel lanes on Market Street between 12th Street and Main Street. The blocks between Main and Steuart streets have three travel lanes. West of 12th Street, Market Street widens to seven travel lanes to allow left turns onto northbound Franklin Street and southbound Valencia Street. Market Street has traffic signals at most intersections.

Private vehicles are not permitted on Market Street eastbound (inbound) between 10th and Main streets and westbound (outbound) between Steuart Street and Van Ness Avenue. Where permitted to travel on Market Street, vehicles are restricted from using transit-only lanes at all times. Eastbound private vehicles are required to turn right at 10th Street.

Market Street's center transit-only lanes permit use by public transit, taxis, and emergency vehicles 24 hours a day, seven days a week. Existing transit-only lanes are located in the westbound (outbound) direction between Third Street and Van Ness Avenue and between 12th and Third streets in the eastbound (inbound) direction. Streetcar tracks run in both directions on Market Street, in the center lanes between Octavia Boulevard and Steuart Street.

Muni operates 23 bus routes and one streetcar line (the F-line, on a tie-and-ballast track) along the surface of Market Street during the evening peak hour within the project corridor. Of these, five trolleybuses and 10 motor coaches travel on Market Street for more than one block (the remainder cross Market Street, travel only a short distance, or do not stop on Market Street). Most of these routes operate throughout the day; and serve at least one of 17 curbside stops (eight inbound, nine outbound) and 23 center boarding island stops (12 inbound, 11 outbound) within the project corridor.

In addition to the daytime bus routes, Muni operates two late-night bus routes on Market Street. Amtrak Thruway coaches also travel eastbound on Market Street, serving a stop between Powell and Fourth streets. During late-night hours, SamTrans route 397 and AC Transit route 800 also run on Market Street between Van Ness Avenue and 11th Street and Octavia Boulevard and Beale Street, respectively.

Existing bicycle facilities consist of dedicated lanes or shared lanes that are marked with sharrows, depending on location. There is a protected sidewalk-level bikeway with plastic safe-hit posts as well as partially raised bikeways between Gough Street and halfway between Ninth and Eighth streets in the eastbound direction and between Eighth Street and Octavia Boulevard in the westbound direction. Sharrows are painted in the curb lanes at all other locations on Market Street to indicate that bicycles and vehicles share these lanes. Valencia Street has an existing road-level bikeway in each direction between Market and McCoppin streets. Nine Ford Go-Bike pods are located along Market Street. Bicycle racks are also located at a number of locations along Market Street.

Existing sidewalks on Market Street are generally wider (between 25 and 35 feet) east of Van Ness Avenue and narrower (closer to 15 feet) west of Van Ness Avenue. Market Street's sidewalks are constructed of red bricks set in a herringbone pattern, with 18-inch-wide granite curbs separating

sidewalks from the roadway. The brick paving does not meet federal standards regarding adequate traction or minimal joints for pedestrian access routes. The numerous joints associated with the existing brick paving have been found to cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes.[2] The requirement related to joints in the surface of the pedestrian access route is intended to eliminate, to the greatest extent possible, surfaces that tend to cause the front end of a wheelchair to vibrate or bounce as it travels across the surface. For many people who must use wheelchairs, this vibration can cause pain or muscle spasms, possibly leading to loss of control of the wheelchair. Moreover, the existing herringbone pattern, with its wide joints, poses challenges for visually impaired persons. Joints between bricks can be wide enough to catch the tip of a cane and thus be dangerous for those with walking aids. In addition, brick has a tendency to buckle over time, creating tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Moreover, many sidewalk crossings lack ADA-compliant curb ramps.

A number of objects are located on the existing sidewalks, including bus shelters, trees, signage, newspaper kiosks and boxes, flower stands, public art, bicycle racks, self-cleaning bathrooms, advertising signs, bollards with chains at several intersection crossings, Auxiliary Water Supply System (AWSS) hydrants, and two sets of historic light standards (the Path of Gold light standards and the Golden Triangle light standards, described below).

The AWSS is a high-pressure fire suppression water supply system that was instituted after the 1906 earthquake to create redundancies in the city's system. It includes the Twin Peaks Reservoir, two water pump stations, two storage tanks, approximately 1,600 water hydrants, sub-surface distribution pipes, gate valves, and approximately 200 underground cisterns. Approximately 65 AWSS hydrants, as well as the associated sub-surface distribution pipes and gate valves, line both sides of Market Street within the project corridor.

The Path of Gold light standards are decorative light poles with a trident-shaped top; each top part supports a light globe. The Path of Gold light standards are a City and County of San Francisco (City) historic landmark, as defined under article 10 of the San Francisco Planning Code (Landmark No. 200). A total of 327 Path of Gold light standards are located between 1 Market Street and 2490 Market Street (near Castro Street); 236 Path of Gold light standards are located within the 2.2 miles of the project corridor (the Embarcadero to Octavia Boulevard).

The Golden Triangle light standards are also decorative light poles but with a two-part top with two light globes. A total of 189 Golden Triangle light standards remain standing, generally between Mason, Market, and Sutter streets.

As of a 2017 survey, there were 767 trees within the project's limit of work, of which 93 percent were various cultivars of London plane tree. Of the total, 360 trees, or 47 percent, were evaluated as "fair to healthy," and 407 trees, or 53 percent, were evaluated as "declining to dead," with contributing factors that included scant soil quantities, poor soil quality, poor drainage, limited water, and underground constraints, such as sub-sidewalk basements and utilities (San Francisco Bureau of Urban Forestry 2017).

[2] Conclusions in this discussion are drawn from the Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks, accessed December 12, 2018.

Market Street has a limited number of designated on-street commercial and passenger loading bays. However, a limited number of curb cuts exists on Market Street, allowing access to off-street parking and loading facilities.

Existing utilities along Market Street include a brick sewer line beneath Market Street, electrical components for the streetcar overhead contact system (OCS), electrical conduits for the Path of Gold light standards and traffic signals, and other subsurface utilities beneath the Market Street right-of-way. Fire hydrants, in addition to the large AWSS hydrants, are also located within the project corridor.

1.6 PROJECT DESCRIPTION

Public Works, in coordination with the Citywide Planning Division of the San Francisco Planning Department, the SFMTA, the SFPUC, and the SFCTA, proposes to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. The project includes changes to, or replacement/modification of:

- Roadway configuration
- Traffic signals
- Surface transit, including transit-only lanes, stop spacing, service, transit-stop location, transit-stop characteristics, and infrastructure
- Bicycle facilities
- Pedestrian facilities
- Commercial and passenger loading
- Vehicular parking
- Utilities
    - Sewer line replacement
    - Water line replacement
    - Traction power system improvements
    - SFPUC power system installation
    - Department of Technology fiber conduit installation
    - Overhead contact system replacement
    - Track replacement
    - F Market & Wharves Historic Streetcar (F-line) loop (F-loop) installation
    - Streetlight improvement
    - Irrigation system improvement
    - Fire hydrant improvement
    - Curb ramps and accessibility improvement
    - Streetscape improvement

Caltrans is the lead agency for NEPA. The San Francisco Planning Department is the lead agency for the California Environmental Quality Act (CEQA); CEQA clearance occurred through a separate process.

All proposed project elements will be constructed entirely within public right-of-way areas; the majority of project elements will be constructed within the operational public right-of-way (the travel lanes on Market Street). The project will require a temporary encroachment permit for construction activities and a permanent encroachment permit from Caltrans for modifications within the Van Ness Avenue and Central Freeway rights-of-way.

The total area of disturbance is approximately 40 acres. Excavations to approximately three to 15 feet will be necessary for underground utility rehabilitation/replacement. For one location, at 691 Market Street, the depth of soil disturbance could be 35 feet because of an existing two-story sub-sidewalk basement. No roadway cut and fill is anticipated to be required.

The project will be entirely within the area served by San Francisco's combined sewer/stormwater system and will not entail any new or intensified land uses that could increase the amount of wastewater. Therefore, the project will require no environmental regulatory approvals from state or federal regulatory agencies concerning wastewater.

The following sections describe the Build Alternative and Design Option that were developed to meet the identified need by accomplishing the defined purpose while avoiding or minimizing environmental impacts. All aspects of the proposed project will comply with applicable provisions of Caltrans' 2018 Standard Specifications (California Department of Transportation 2018). This document considers the Build and No-Build Alternatives.

The project is located in the City of San Francisco on Market Street. The total length of the project corridor is 2.2 miles.

1.7 PROJECT ALTERNATIVES

One Build Alternative (with one design option) and the No-Build Alternative are under consideration. Numerous build alternatives were considered for the proposed project and all but one of the build alternatives considered were eliminated from further consideration, as described further in Section 1.7.3, *Alternatives Considered but Eliminated From Consideration*.

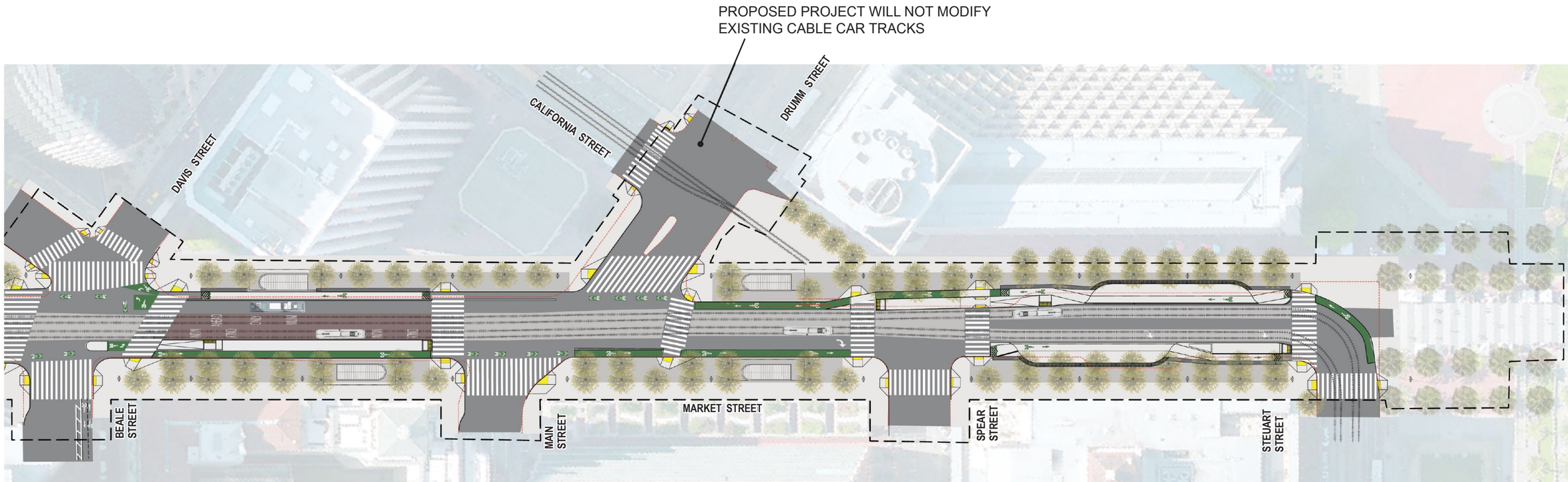
1.7.1 Proposed Build Alternative and Design Option

The Build Alternative includes changes to, or replacement/modification of, the various elements listed in section 1.6, Project Description. Figure 1-2, Sheets 1 through 10, pp. 1-13 through 1-22, show the Build Alternative's proposed improvements.

The design option reflects differences in emphasis with respect to prioritizing different modes of transportation, principally transit and bicycles, and refers to the approximately 0.6-mile portion of Market Street between Octavia Boulevard and a point approximately 300 feet east of the intersection of Hayes and Market streets. This design option also includes a portion of 11th Street south of Market Street. There are fewer transit lines west of the 9th/Hayes/Larkin/Market intersection – only Muni routes 6, 7, 9 and the F-line remain. Also, substantial high-density residential development is underway in this area known as The Hub, with the majority concentrated

within one block of the Market/Van Ness intersection. Several thousand new residents are expected to move into the new residential towers. As part of the public outreach for the Hub Area Plan, the community asked for a design option for Better Market Street that provided more space for pedestrians and further reduced conflicts with vehicles. As a result, this design option between the intersections of 9th/Hayes/Larkin/Market and Gough/Market is being considered. It differs from the Build Alternative in that there are additional turn restrictions, only one vehicle lane in each direction, and wider sidewalks. Only transit, paratransit, taxis, and emergency vehicles will be allowed to use the roadway in this area. Delivery vehicles westbound on Market will be detoured onto Hayes or Larkin streets. Eastbound, all private and delivery vehicles will be detoured before reaching 12th Street. Figures 1-3 and 1-4 show the differences between the Build Alternative and the Design Option.

The design option will not materially increase construction costs. The proposed project, with or without the design option will cost approximately $603.7 million.



Notes:

- Substations that will be upgraded as part of the proposed project are located within the project corridor but are not identified in this figure for security purposes.
- This figure illustrates proposed transportation and streetscape improvements that will occur slightly outside of the project corridor (e.g., traffic striping and turn restrictions); these proposed improvements will not involve ground disturbance.
- This figure does not illustrate some project-related activities that will result in changes to existing cultural resources (e.g., relocating and rehabilitating underground Auxiliary Water Supply System lines).

N

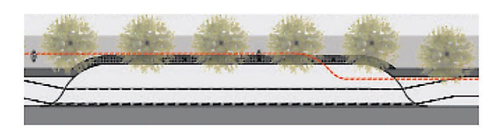
0 50 100 150 200

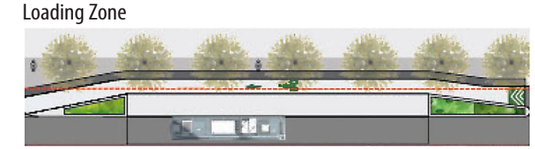
Feet

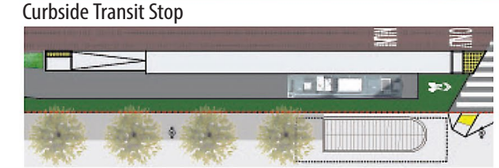
Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks

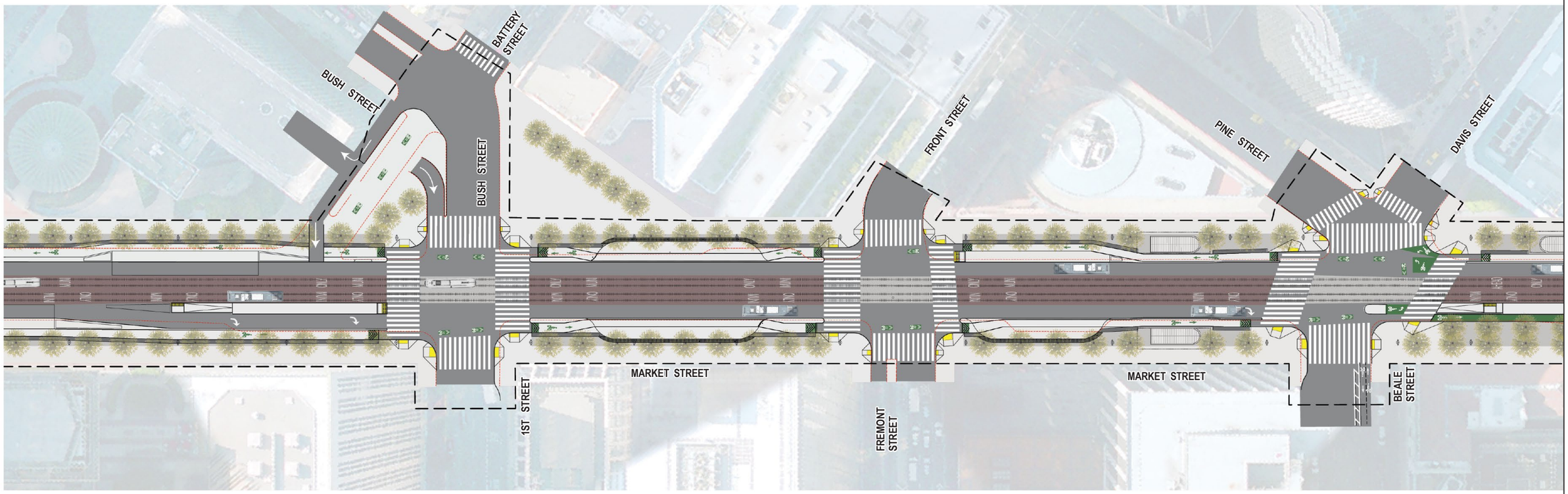

Loading Zone


Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-21-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 1 of 10)



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N

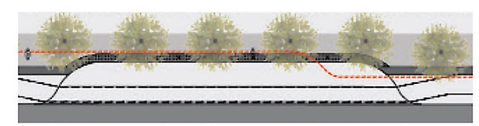
0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks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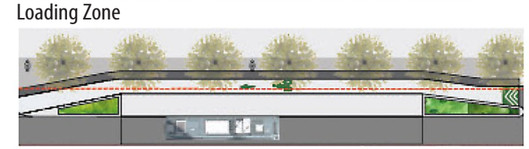
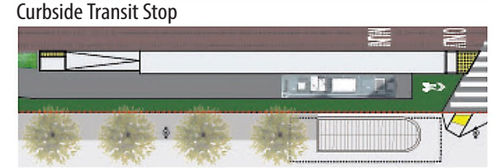
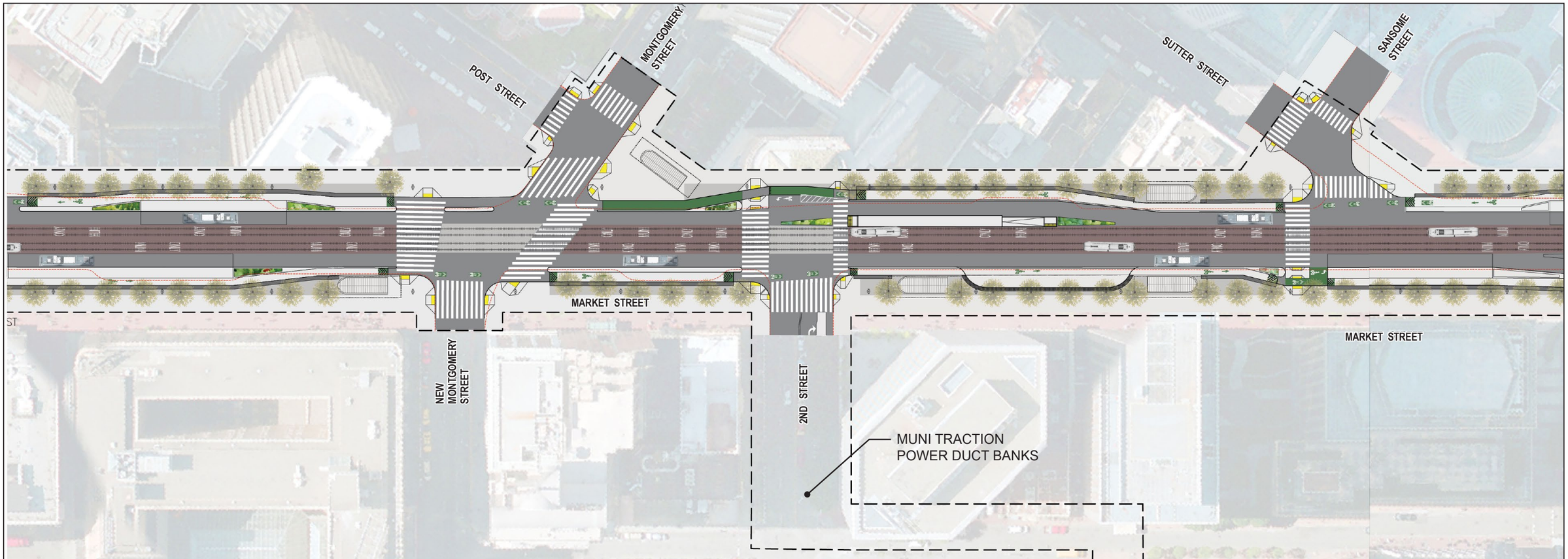

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-21-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 2 of 10)



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N

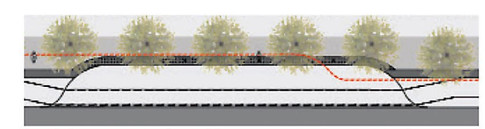
0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks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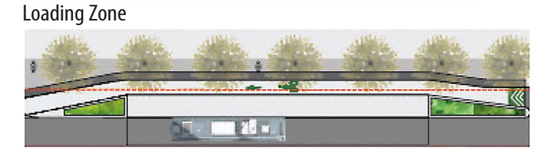
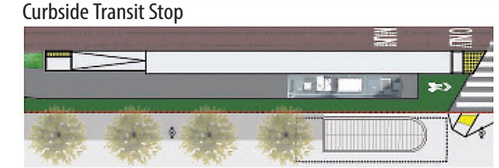
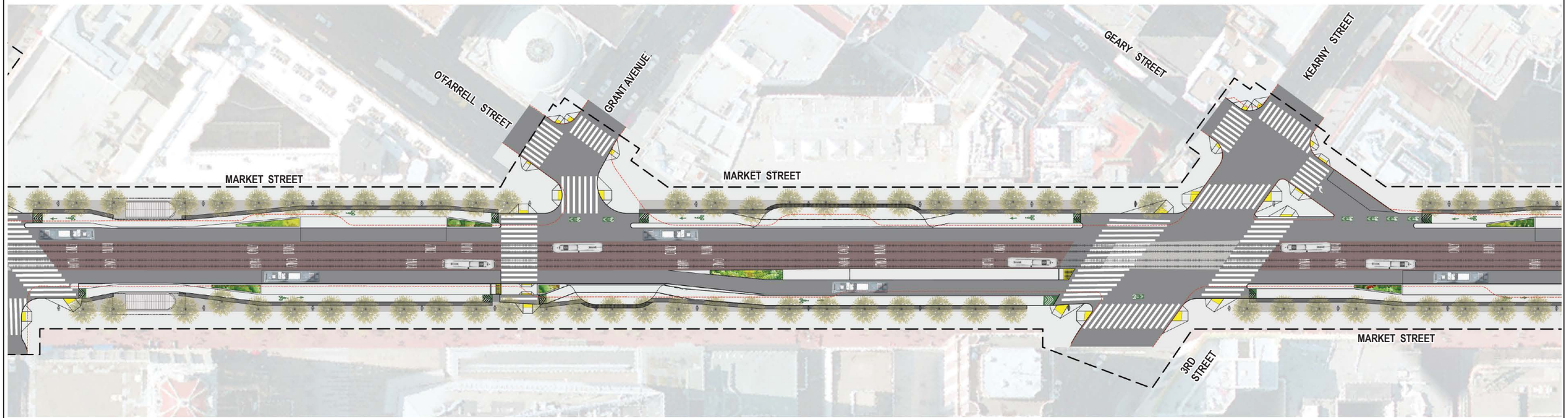

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (12-21-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 3 of 10)



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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

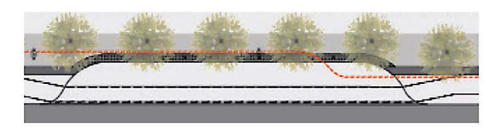
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

Streetcar Tracks



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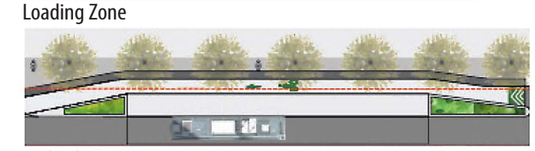
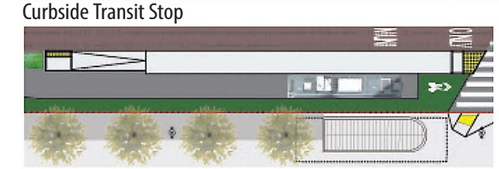


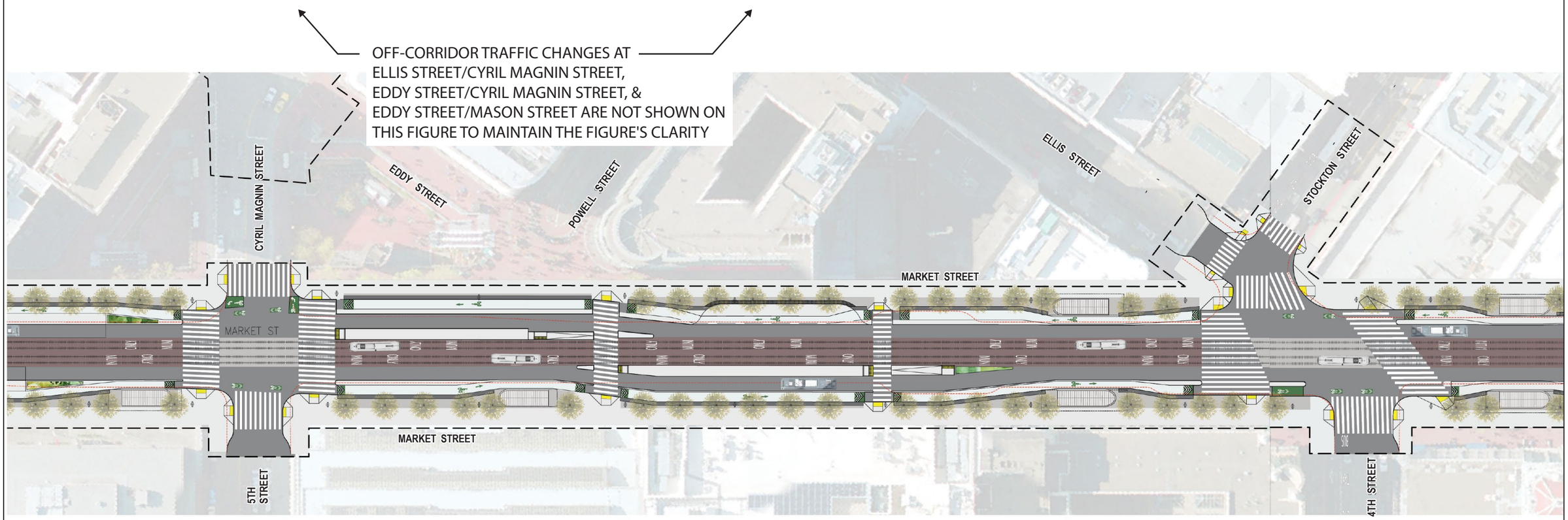
Curbside Transit Stop



Center Transit Boarding Island

00056.14 (1-21-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 4 of 10)



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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

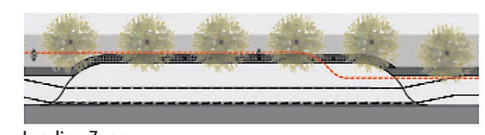
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

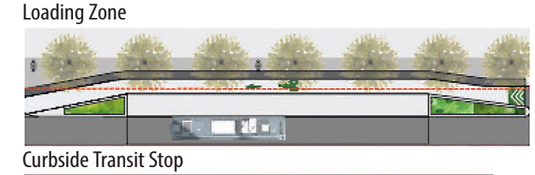
Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

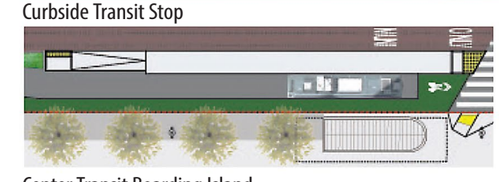
Streetcar Tracks



Loading Zone



Curbside Transit Stop

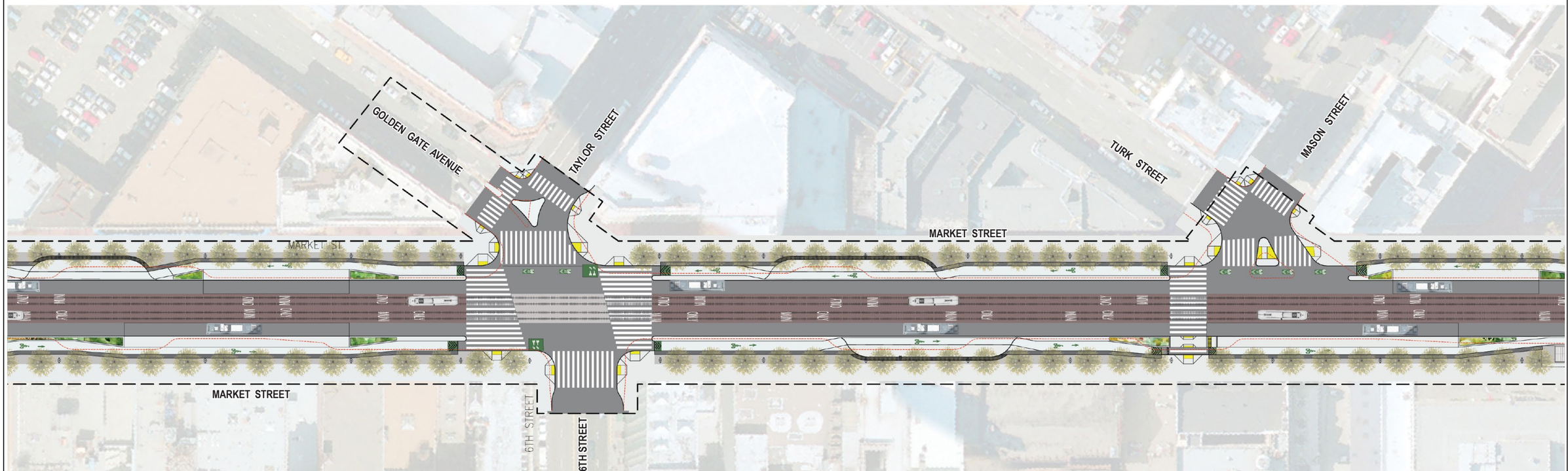


Center Transit Boarding Island

00056.14 (1-20-2020)

Figure 1-2

Proposed Project Transportation and Streetscape Improvements (Sheet 5 of 10)



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N

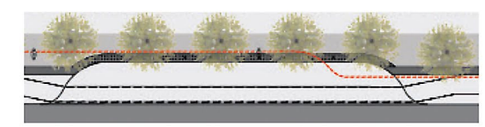
0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks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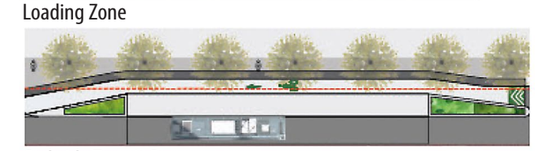
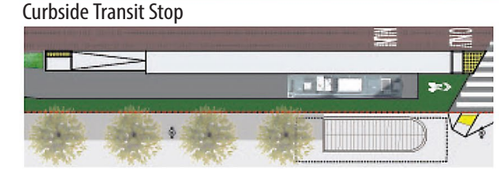
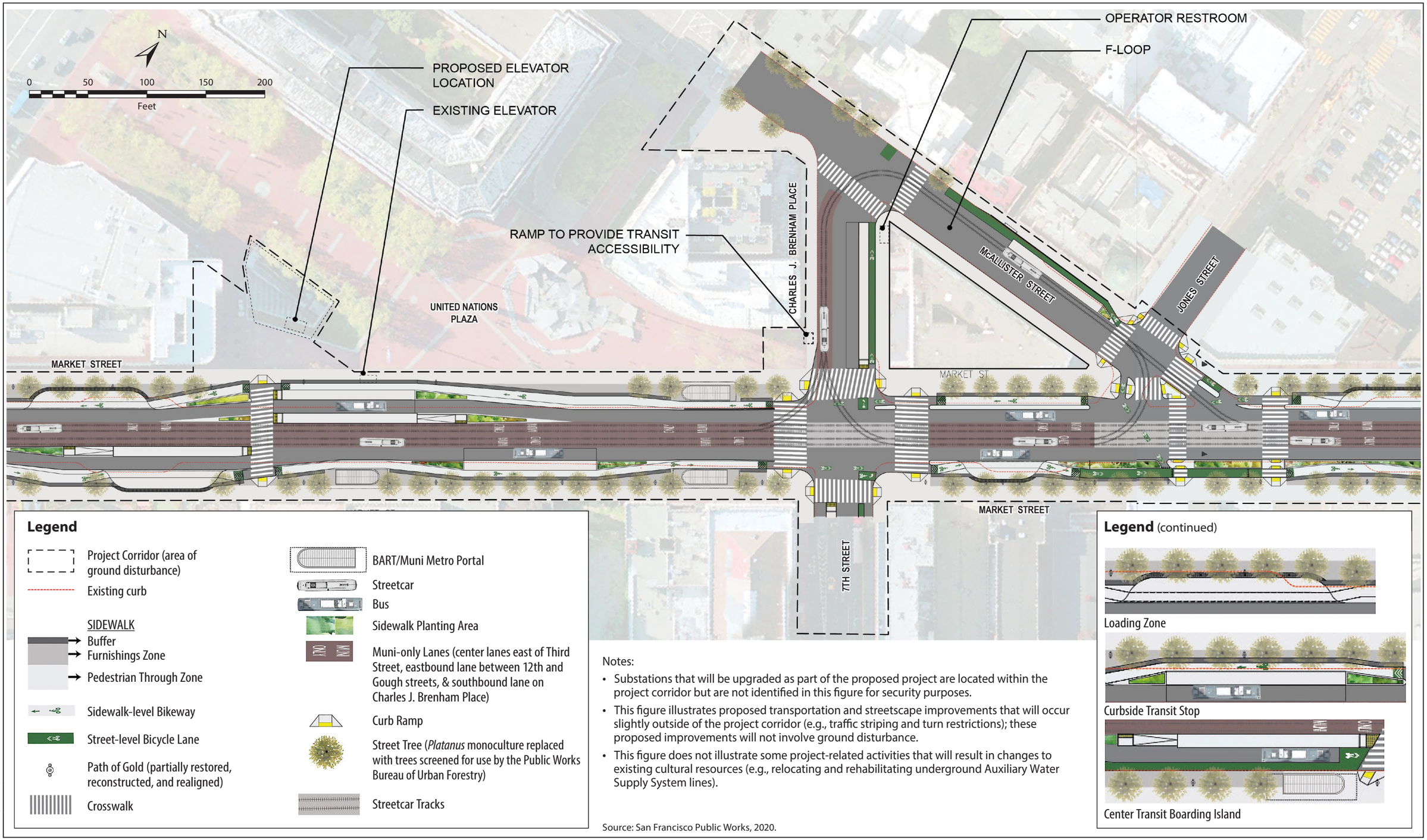

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-20-2020)

Better Market Street Project

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 6 of 10)



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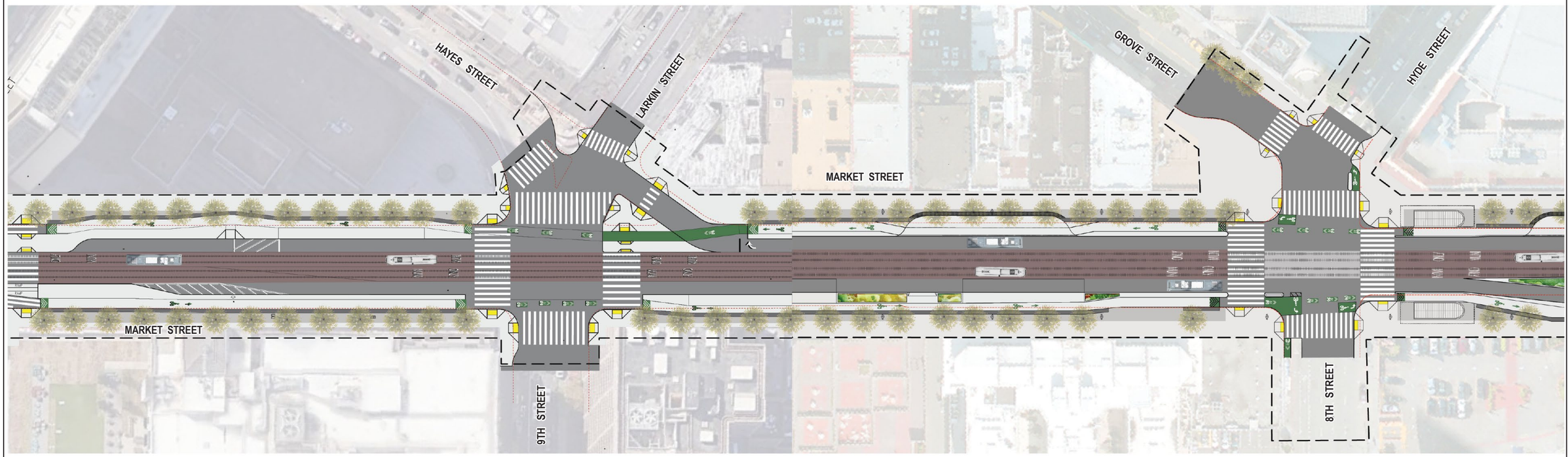
Source: San Francisco Public Works, 2020.

00056.14 (1-20-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 7 of 10)



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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

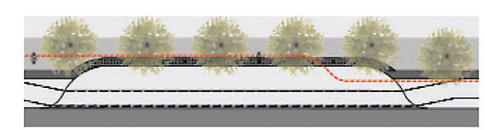
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

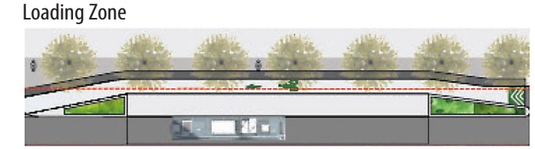
Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

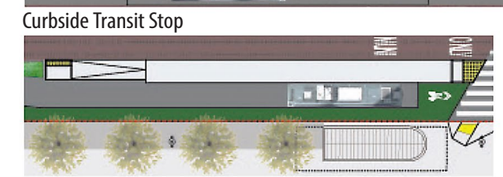
Streetcar Tracks



Loading Zone



Curbside Transit Stop



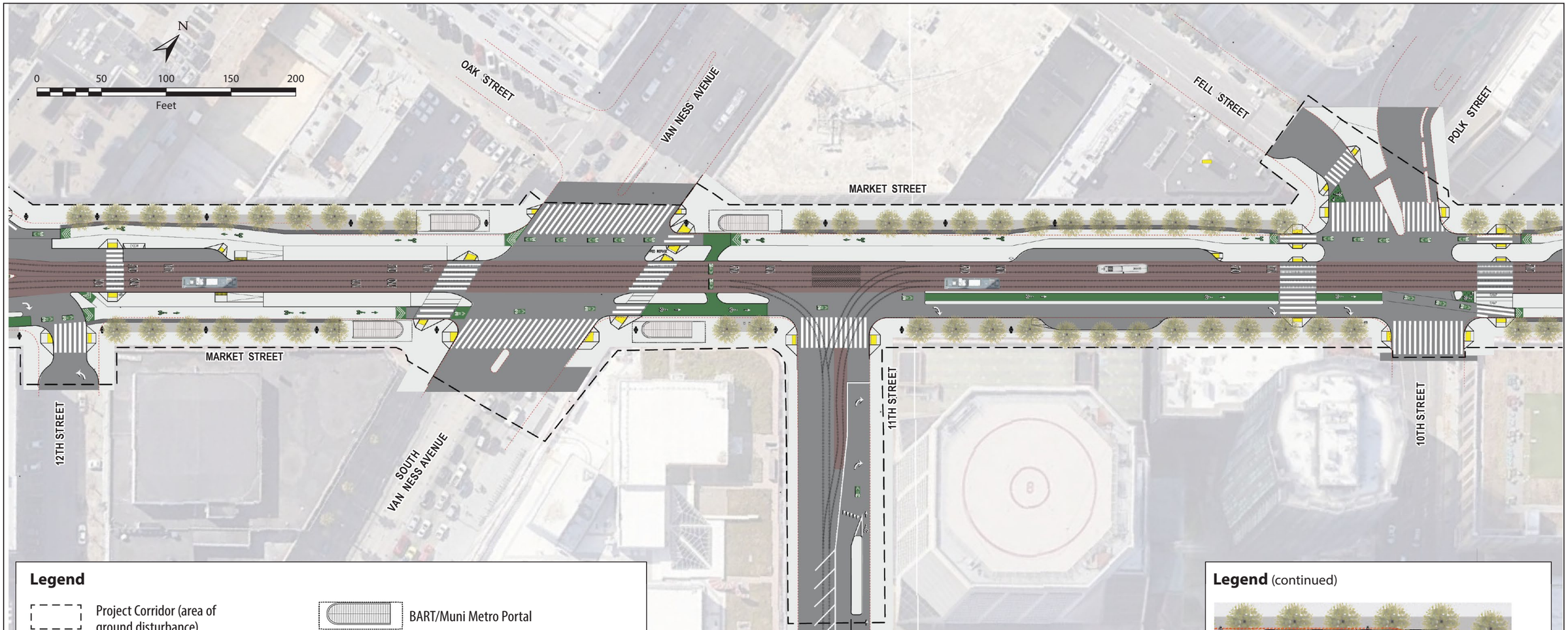
Center Transit Boarding Island

00056.14 (1-30-2020)

Better Market Street Project

Figure 1-2

Proposed Project Transportation and Streetscape Improvements (Sheet 8 of 10)



Legend

- Project Corridor (area of ground disturbance)
- Existing curb

SIDEWALK
- Buffer
- Furnishings Zone
- Pedestrian Through Zone

- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
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- Streetcar Tracks

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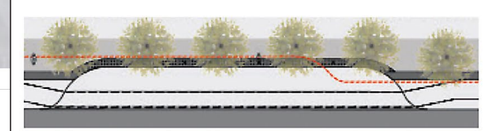
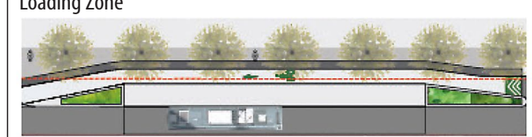
Source: San Francisco Public Works, 2020.

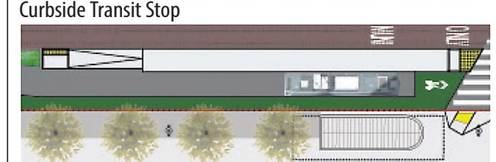
Legend (continued)



Loading Zone



Curbside Transit Stop



Center Transit Boarding Island

00056.14 (1-20-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 9 of 10)

Notes:

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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
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- Bus
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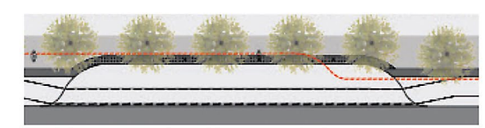
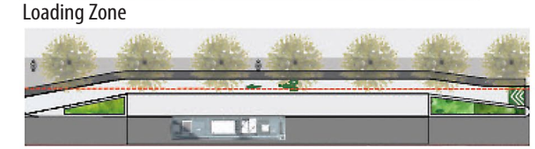
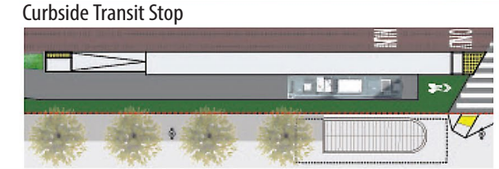
- Streetcar Tracks

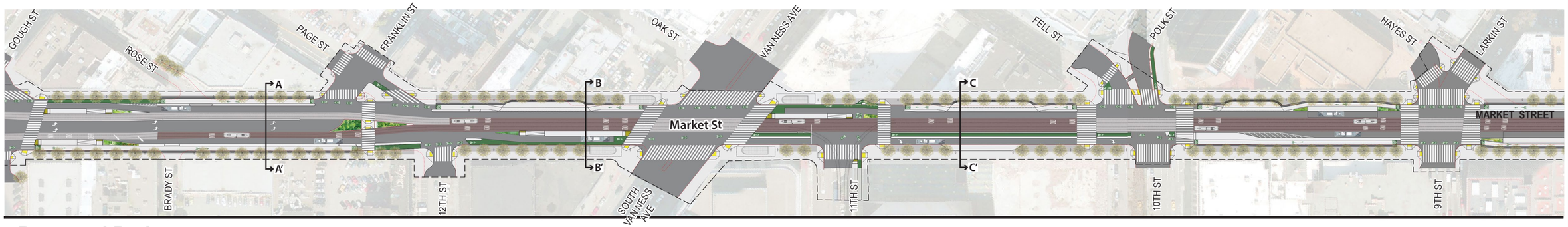

Loading Zone


Curbside Transit Stop

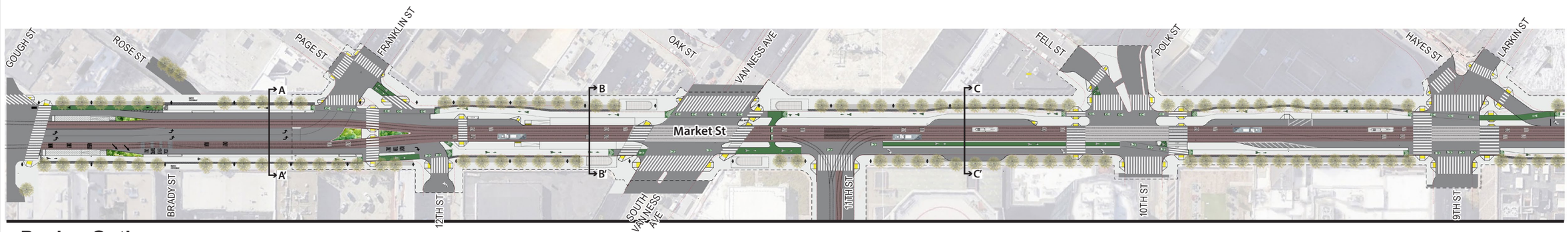

Center Transit Boarding Island

00056.14 (1-29-2020)

Figure 1-2
Proposed Project Transportation and Streetscape Improvements (Sheet 10 of 10)



Proposed Project



Design Option

N

0 100 200 300 400

Feet

Notes:

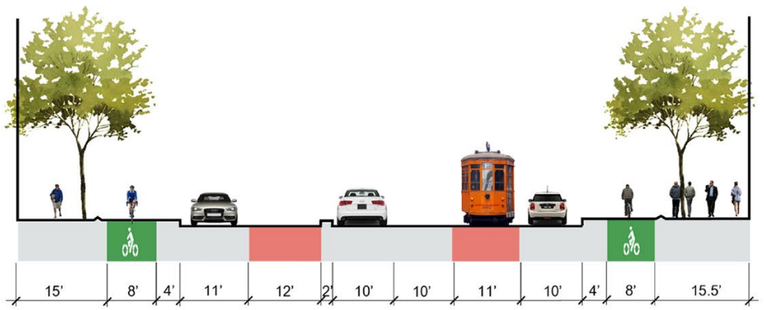
- This figure illustrates proposed transportation and streetscape improvements that will occur in the project corridor in the vicinity of Market Street and Van Ness Avenue. It does not show the full extent of the project corridor. The project's proposed transportation and streetscape improvements outside of the design option also apply to the design option.
- See Figure 1-4 for cross sections A, B, and C shown in this figure.

Source: San Francisco Public Works, 2020.

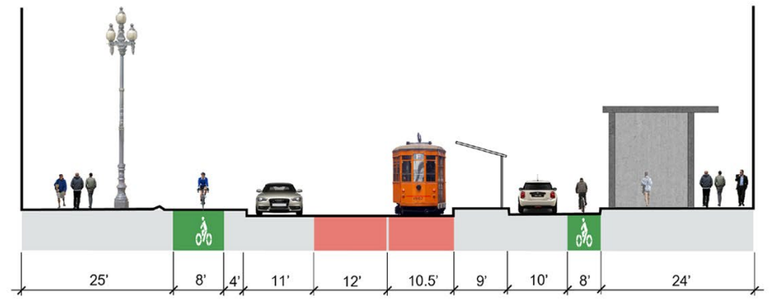
00056.14 (4-10-2020)

Figure 1-3
Proposed Project and Design Option Conceptual Plans

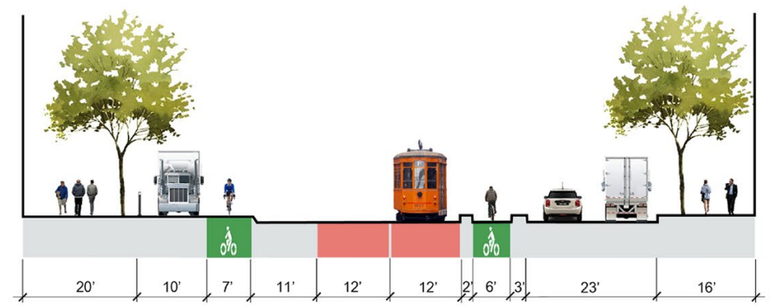
Gough Street to Franklin Street / 12th Street
Cross Section A–A'



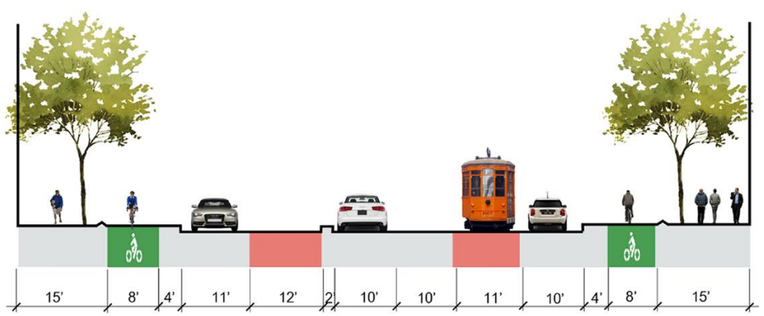
12th Street to Van Ness Avenue
Cross Section B–B'

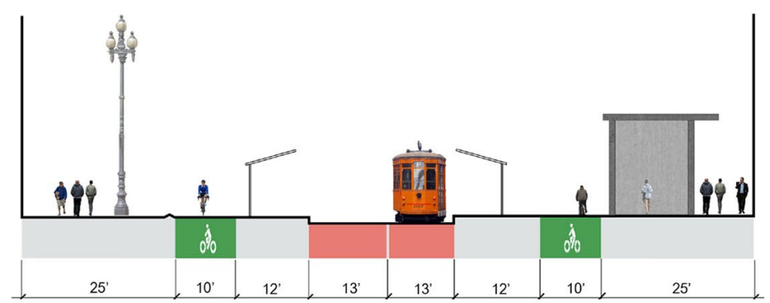


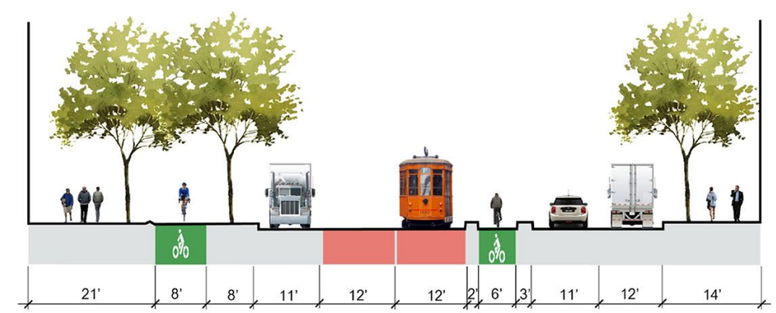
Van Ness Avenue to Fell Street / Polk Street
Cross Section C–C'



Proposed Project







Design Option

Note: See Figure 1-3 for the locations of cross sections A, B, and C.

Source: San Francisco Public Works, 2020.

00056.14 (4-10-2020)

Figure 1-4
Proposed Project and Design Option Cross Sections

1.7.1.1 Project Elements – Measures to Increase the Efficiency of the Facility for Transit, Bicyclists, Pedestrians, and Commercial Vehicles

The project proposes to increase the efficiency of the corridor for transit, bicyclists, pedestrians, and commercial vehicles and, consequently, make the facility safer for all modes of transportation. In addition, the project proposes to bring elements of city infrastructure in the corridor that are reaching the ends of their operational design lives into a state of good repair. The project elements as well as construction of staging are described below.

Roadways

The project will continue to provide four travel lanes on Market Street, with two center lanes and two curb lanes between Franklin and Beale streets, except:

- Up to seven lanes will be provided west of Franklin Street
- Three lanes will be provided east of Main/Beale streets
- Two lanes will be provided east of Spear Street.

The project will generally convert the existing center lanes on Market Street from transit-only to Muni-only lanes. These lanes will permit only Muni buses, streetcars, and emergency vehicles at all times. The Muni-only lanes will also extend from Gough Street to Main Street in the eastbound direction and from Beale Street to 12th Street in the westbound direction. In addition, a new northbound Muni-only lane will be created on 11th Street approximately 155 feet south of Market Street.

The width of the center travel lanes will remain about the same as under existing conditions (i.e., approximately 10.5 to 12 feet wide). Existing outer lanes (curb lanes) are 11 to 13 feet wide; the project will reduce these to 11 feet. Although the two center lanes will remain at approximately the same location, curbside lanes will deviate from their current alignment to allow for the inclusion of four new center boarding islands and widening of the existing center boarding islands that remain.

Some intersections will be reconfigured. Intersection reconfigurations will include, but are not limited to, curb extensions for bulb-out construction to minimize crossing distances, curb extension for sidewalk-level bikeway coordination, relocation or modification of existing traffic islands, addition of small islands for sidewalk-level bikeway protection, raised crosswalks at alleyways, updated curb radii to accommodate bus movements, and updated curb ramps to meet the latest ADA requirements and align with proposed crosswalks. Major intersection reconfigurations include:

- Modification of track and curb alignments at the Market Street/Charles J. Brenham Place/Seventh Street and Market Street/McAllister Street/Jones Street intersections.
- Reconfiguration of Market Street/Kearny Street/Geary Street intersection to accommodate a proposed traffic island.

The project will include signal timing changes, control modifications, and signal relocations at all existing signal locations. Traffic signal modifications will occur at eight intersections (Golden Gate Avenue/Jones Street, Eddy Street/Mason Street, Turk Street/Taylor Street, McAllister Street/Charles J Brenham Place, Ellis Street/Powell Street, Ellis Street/Cyril Magnin Street, Drumm

Street/California Street, and Eddy Street/Cyril Magnin Street). In addition, the project will install two new signals at 11th and Market streets and at Steuart and Market streets. The scope of work for traffic signals will include new conduits, electrical field wiring, fiber optic wires, 12C interconnect wires,[3] poles, signal heads, accessible pedestrian signals, controllers, cabinets, pullboxes, extinguishable signage for the new F-loop, and bollards. All signal timing will be designed with transit efficiency and safety as key criteria, including:

- Modifications to eight signals to accommodate new two-way/one-way changes (potential for upgrade if signal heads, controllers, conduits, cabinets are not up to standards).
- Installation of closed-circuit television cameras at intersections along the Market Street corridor.
- New conduits—square instead of U shape for additional redundancy due to track lanes.
- New poles, 12-inch signal heads, light-emitting-diode (LED) pedestrian heads, 2070 controllers, standard cabinets, and type 3 pull boxes.

The project will remove 61 spaces on adjacent cross and side streets. Additional loading zones on cross streets and in rear alleys, or on other streets, will result in part-time (i.e., time-of-day restricted) or all-day removal of parking spaces. Valencia Street between Market and McCoppin streets will have some parking removed to accommodate the new street-level parking-protected bicycle lane.

Design Option

This design option will modify the design of the Build Alternative to include additional sidewalk widening to provide a 14-foot-wide two-way bikeway along Page Street between Franklin and Market Street. The number of westbound (outbound) travel lanes on Market Street will be reduced from two to one between Hayes and 12th streets. The number of eastbound (inbound) travel lanes on Market Street will be reduced from two to one between 12th and 11th streets. These will be 12.5 to 13.5 feet wide to provide, at a minimum, a 26-foot clear width for fire department access. These lanes will be accessible only to Muni, taxis, paratransit, and emergency vehicles. Furthermore, as with the proposed project, the design option will create a new northbound Muni-only lane on 11th Street, extending approximately 155 feet south of Market Street.

The signal phase for the eastside Market Street crosswalk will be modified so that pedestrians cross the intersection at the same time that northbound 12th Street traffic turns left onto Market Street. This design option will also include reconfiguration of the intersection at 11th and Market streets, which will maintain the stop sign for 11th Street traffic, create a northbound 11th Street Muni-only lane for approximately 155 feet, and shift the northbound bus stop to midblock to create a 65-foot-long bus boarding island. In addition to the improvements described for the proposed project, the design option will also include a new F Market & Wharves streetcar line turnout on Market Street at 11th Street to allow westbound F Market & Wharves streetcars to turn directly onto southbound 11th Street.

[3] A 12C interconnect wire is a backfeed wire that runs between signalized intersections so that the traffic signals can communicate with each other.

Access Control Restrictions

No additional private vehicle restrictions will be implemented with the proposed project.

Design Option

The design option will modify the design of the Build Alternative to include additional private vehicle restrictions beyond those currently in effect. These modifications will extend private vehicle access restrictions for all westbound (outbound) private vehicles from Van Ness Avenue to 12th Street. The design option will also require a right turn for eastbound (inbound) Market Street vehicles at 12th Street. The design option will require that northbound 12th Street traffic only be allowed to turn left onto westbound Market Street. Commercial vehicles will not be permitted to travel westbound on Market Street between Ninth and 12th streets and eastbound between 12th and Ninth streets (with the exception of the general purpose curb lane between 11th and 10th streets).

Sidewalks

All existing sidewalks within the project footprint will be removed from the property line to the curb and replaced. Existing brick sidewalk surfaces will be replaced with paving materials, consistent with local implementation of federal accessibility requirements.[4] Replacement sidewalk surfaces will meet current standards for traction (a minimum coefficient of friction of 0.65 for a relatively flat sidewalk and 0.80 for sloped surfaces greater than 1:20) and be consistent with the requirements of the San Francisco Planning Department's 1995 *Downtown Streetscape Plan* for special sidewalk surfaces, which are applicable elsewhere in the downtown area. The new surface will consequently comply with the U.S. Access Board's *Public Rights-of-Way Access Advisory Committee Final Report*, part III, section X02.1.6, and its minimum requirements for public sidewalks (discussed in the section that follows titled *Americans with Disabilities Act*), which call for pedestrian routes on new sidewalk surfaces to be as free of jointed surfaces and visually uniform as possible. All new sidewalks will comply with federal accessibility requirements regarding minimum widths and allowable materials for an accessible pedestrian access route.[5] Sidewalks east of 12th Street will generally provide a 15-foot-wide "through" (i.e., walking) zone for pedestrians. West of 12th Street, the sidewalk through zone will be approximately 10 feet wide.

A furnishing zone will be provided on the inward roadway side of the pedestrian sidewalk for most of the project's length. The furnishing zone will include trees and landscaping, street furniture, and public art. In locations where curbside transit stops, center transit boarding islands, or loading zones are present, the furnishing zone will generally be 4 to 5 feet wide. Wherever there is a sidewalk without proposed transit stops or loading zones, the furnishing zone will be approximately 10 feet wide. The majority of the sidewalks along Market Street between Van Ness Avenue and Steuart Street will include these wider 10-foot furnishing zones. Specific widths for sidewalks, pedestrian through zones, and furnishing zones are provided Table 1-3, below.

[4] Public Works Order 200369 sets forth numerous regulations regarding allowable paving materials, shapes, and dimensions; it also describes the installation requirements.

[5] See Public Works Order 200369.

Table 1-3. Proposed Sidewalk and Through Zones Widths

Corridor Section	Proposed Sidewalk Width	Pedestrian Through Zone Widths	Furnishing Zone Widths
Steuart Street to Fremont Street (Embarcadero District)	19.5 to 47.5 feet	14 to 25 feet	4 to 10 feet
Fremont Street to Third Street (Financial District)	11 to 37.5 feet	11 to 20 feet	4 to 10 feet
Third Street to Fifth Street (Retail District)	28 to 37.5 feet	12.5 to 24 feet	4 to 10 feet
Fifth Street to Seventh Street (Mid-Market District)	21 to 37 feet	15 to 25 feet	4 to 10 feet
Seventh Street to Van Ness Avenue (Civic Center District)	14 to 45.5 feet	7 to 24 feet	4 to 10 feet
Van Ness Avenue to Octavia Boulevard (Octavia District)	9 to 37 feet	9 to 15 feet	4 to 10 feet

A new raised bikeway (for detail, see Bicycle Facilities discussion below) will be 5 to 8 feet in width in the outer 6 to 12 feet of the sidewalk along the curb. The area between the two will be occupied by a furnishing zone (4 to 10 feet wide), as described above.

The maximum depth of ground disturbance associated with sidewalk construction will be approximately 18 inches, exclusive of plantings, foundations for luminaires, and similar construction in the furnishing zone, as described below. Other facilities in the existing sidewalk, such as utility vaults, electrical cabinets, etc., may need to be adjusted vertically (less than 6 inches) or moved short distances horizontally (less than 2 feet). The maximum depth of excavation for these adjustments will be approximately 2 feet.

New ADA-compliant curb ramps will be installed at all crossing locations. Bulb-outs will be installed at crosswalks where possible. Most bulb-outs will shorten the side-street crossings, not the Market Street crossing. Corner curb radii along Market Street will typically be 12 to 15 feet, depending on the angle of the intersecting street, with a 33 foot radius at the intersection with Taylor Street. Bulb-outs will extend 4 to 8 feet into the street and typically be 20 to 25 feet long. The maximum depth of ground disturbance associated with the bulb-outs will be approximately 18 inches, exclusive of relocation of the stormwater catch basins because of movement of the curb line. Table 1-4, below, lists the intersections where the project will construct bulb-outs.

Table 1-4. Proposed Intersection Bulb-out Locations

Intersection	Corner(s)
Steuart Street and Market Street	NE, SE
Drumm Street and Market Street	NW
Main Street and Market Street	SW
Beale Street and Market Street	NE and SW
First Street and Market Street	SE
Sutter Street and Market Street	NE
New Montgomery Street and Market Street	SE
O'Farrell Street and Market Street	NE

Intersection	Corner(s)
Fourth Street and Market Street	NW (x2) and SE
Fifth Street and Market Street	SW and SE
Turk Street and Market Street	NW and NE
Sixth Street and Market Street	NE, SW, and SE
McAllister Street and Market Street	NW
Seventh Street and Market Street	NE
Eighth Street and Market Street	NE and SE
Ninth Street and Market Street	N, NE, and SW
10th Street and Market Street	NW
12th Street and Market Street	SE and SW
Valencia Street and Market Street	SE

Crossing distances at Market Street will depend on whether a boarding island is present and the angle of the intersecting street. Crosswalk distances at Market Street will vary from 54 feet (typical right-angle, 90-degree crossing) to 115 feet (54-degree crossing at South Van Ness Avenue). Crossing distances at side streets also will vary (typically between 40 and 50 feet).

As feasible, straight pieces of granite curb will be reused within the proposed project. The project is still in the design phase, but at this time, it is estimated that approximately 20 percent of the existing granite curb on Market Street is straight enough for reuse. The remainder of the existing granite curb is likely to be irreparably damaged during removal and therefore assumed to be not suitable for reuse.

Americans with Disabilities Act

"Alterations"[6] that affect or could affect the usability of all or part of the Market Street corridor, as proposed under the project, must comply with the ADA. The ADA is a federal civil rights law that prohibits discrimination against people with disabilities. Under this law, people with disabilities are entitled to all rights, privileges, advantages, and opportunities that others have when participating in civic activities. Title II of the ADA applies to all state and local governments as well as all departments, agencies, special purpose districts, and other instrumentalities of state or local government ("public entities"). It applies to all programs, services, or activities of public entities. The City has broad obligations under Title II of the ADA, providing its programs, services, and activities in a manner that is accessible to persons with disabilities.

New facilities and additions or alterations to existing facilities require compliance with federal, state and local design standards for accessibility. According to the *Joint Technical Assistance on the Title II of the Americans with Disabilities Act Requirements to Provide Curb Ramps when Streets, Roads, or Highways are Altered through Resurfacing* (U.S. Department of Justice and U.S. Department of Transportation 2013), public-rights-of-way are to be upgraded to current ADA standards whenever a facility is altered.

[6] An alteration is defined as a "change in a building or facility that affects or could affect the usability of a building or facility or portion thereof." (United States Access Board n.d.: Section 202.3).

Alterations of streets, roads, or highways include activities such as reconstruction, rehabilitation, resurfacing, widening, and projects of similar scale and effect (U.S. Department of Justice 2010).[7]

The proposed project constitutes an alteration of the transportation facility provided by Market Street in the project area, as the scope of the project includes substantial renovation and upgrading of the transportation, transit, cycling, and pedestrian infrastructure.

For an alteration that affects or could affect the usability of or access to an area of a facility containing a primary function, the entity shall make the alteration in such a manner that, to the maximum extent feasible, the path of travel to the altered area is readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs (28 CFR § 35.151(b)(4); 49 CFR § 37.43(a)(2).). Therefore, for a facility such as Market Street, accessible routes are required from site arrival points such as transit stops, public streets and sidewalks, from accessible passenger loading zones, and from accessible parking spaces. It is essential to provide continuous accessible routes that connect a City facility with the pedestrian and transportation network of the City in the public right-of-way.

The brick surfacing of the existing sidewalk, installed using 4-inch by 8-inch by 2-inch (Figure 1-5) standard brick in a herringbone pattern, does not comply with the standards set by the United States Access Board (Access Board), the federal agency that produces the de facto standards and guidelines and standards for the built environment and transportation. The Access Board produced its *Public Rights-of-Way Access Advisory Committee Final Report* in January 2001 (United States Access Board 2001a), with a supplement published in the *Federal Register* on July 26, 2011 (United States Access Board 2011). Section X02.1 presents New Construction: Minimum Requirements: Public Sidewalks (Table 1-5). General provisions relating to the proposed replacement of the existing herringbone-pattern brick sidewalk surface are as follows:

Figure 1-5. From Contract Drawings for Market Street Reconstruction: Herringbone Brick Pattern

[7] Maintenance activities on streets, roads, or highways, such as filling potholes, are not alterations.

Table 1-5. Pedestrian Route Accessibility Requirements from the United States Access Board

Chapter	Requirement
X02.1.1 General.	Where provided, public sidewalks shall comply with this section.
X02.1.2 Pedestrian Access Route X02.1.2.1 General.	Where public sidewalks are provided, they shall contain a pedestrian access route. The pedestrian access route shall connect to elements required to be accessible in Section X02.3 and shall meet the requirements set forth in Section X02.1.1 through Section X02.1.7.
X02.1.2.2	General Reduced Vibration Zone. Within the pedestrian access route, there shall be an unobstructed reduced vibration zone meeting the requirements of this section. The reduced vibration zone shall be a contiguous part of the pedestrian access route that connects to elements required to be accessible in Section X02.3, and shall meet the requirements set forth in Section X02.1.1 through Section X02.1.7.
X02.1.6.1	General. The surfaces of the pedestrian access route shall comply with proposed ADAAG Section 302 and shall be as free of jointed surfaces and as visually uniform as possible. The accessible route should be the same, or be located in the same area as, the general route used by people without mobility disabilities.

The number of perpendicular joints encountered in a representative section of the sidewalk along Market Street along a line drawn down the path of travel surfaced with the herringbone brick pattern is a minimum of two per foot. This density of perpendicular joints results in a rough surface that is a barrier to accessibility. The following extract from the "Discussion" for X02.1.6.1 in the 2001 Public Rights-of-Way Access Advisory Committee Final Report (United States Access Board 2001a) explains why this is so:

> The requirement related to joints in the surface of the pedestrian access route is intended to eliminate, to the greatest extent possible, surfaces that tend to cause the front end of a wheelchair to vibrate or bounce as one travels across the surface. For many people, this vibration can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability of the wheelchair. Allowances need to be made for expansion and contraction of the sidewalk material. This smooth surface would also serve as a reliable, uniform surface for the placement of crutches, free of unpredictable surface anomalies. The ADAAG [ADA Accessibility Guidelines] Manual, developed by the Access Board in July 1998, states in Section 4.5.4, "Irregular paved surfaces, where jointed surfaces may be recessed below the level of the paving unit, can disrupt wheelchair maneuvering even if the differences in level are less than 1/4 inch." As stated on page 20 of FHWA's Designing Sidewalks and Trails for Access, "Surface quality significantly affects ease of travel for walking aid users. Grates and cracks wide enough to catch the tip of a cane can be potentially dangerous for walking-aid users. Icy or uneven surfaces can also be hazardous because they further reduce the already precarious stability of walking-aid users." The FHWA document further states, in section 6.3.3.1.4, "Although asphalt and concrete are the most common surfaces for sidewalks, many sidewalks are designed using decorative materials such as bricks or cobblestones. Although these materials improve the aesthetic quality of the sidewalk, they may increase the amount of work required for mobility. For example, tiles that are not spaced tightly together can cause grooves that catch wheelchair casters. These decorative surfaces may also create a bumpy ride that can be uncomfortable to those in wheelchairs. In addition, brick and cobblestone have a tendency to buckle creating changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments. For these reasons, brick and cobblestone sidewalks are not recommended."

San Francisco Public Works' Order No. 200369, "Standard Paving Materials in San Francisco's Public Right of Ways," incorporates the standards for use on San Francisco streets so that any new sidewalk

installed by the City will meet the Access Board Standards (City and County of San Francisco n.d.). Current City standards for an ADA-compliant sidewalk using pavers rather than concrete require the minimum paver length to be 36 inches, with a range of widths from 6 to 12 inches. Pavers must be placed with the longest dimension parallel to the direction of travel. Additional standards are provided for warpage, lippage, and roughness.[8] Replacement of the existing brick with new pavers will reduce the number of perpendicular joints encountered to one per yard, producing a much smoother surface.

In addition to replacing the sidewalk, the project proposes "Streetlife Zones" to maximize the reuse of underutilized street space to encourage the activation of public spaces. Streetlife Zones will be extra-wide furnishing zones adjacent and complementary to the pedestrian through zone and the sidewalk-level bikeway. These Streetlife Zones will allow the installation of features such as street furniture, benches, moveable tables and chairs, small retail stands (e.g., flower sellers, food carts), public restrooms, wayfinding signs, real-time transit information, and newsstands.

The Access Board Public Rights-of-Way Access Advisory Committee Final Report additionally states that street furniture provided for pedestrian use or operation, installed on or adjacent to a public sidewalk, and accessed from the public right-of-way shall be provided access to the same standards as the for the sidewalk (United States Access Board 2001b). Accordingly, compliance with the ADA would mean that no brick sidewalk surface could be used where it would interfere with access to these Streetlife Zones.

This herringbone brick that presents a barrier to accessibility is considered a contributing element to a historic landscape, specifically the Market Street Cultural Landscape District. In California, the application of ADA standards to historic resources is the remit of the Division of the State Architect and is addressed in the State Historical Building Code. The ADA mandates standards for application of the ADA by the Department of Justice, which devolves the process of setting processes and standards for application of ADA to historic properties to the state. This delegation of authority for implementing the ADA to the state is memorialized in California in the State Historical Building Code, Part 8, Title 24, of the California Code of Regulations.[9]

In general, retaining the historic features of a cultural property where these features present barriers to access would require some form of equivalent facilitation (Chapter 8 of the California Historic Building Code). "Equivalent facilitation" means the use of alternatives that provide "substantially equivalent or greater accessibility and usability" (United States Access Board n.d.). This could include, for example, a video presentation provided in a historic structure where there is no ramp or elevator to convey visitors in wheelchairs to the upper stories of a building, when the historic fabric of the building would be irreparably harmed by the installation of ramps and/or elevators. In this case, equivalent facilitation would mean restriction of access to the upper stories of the building, but with provision for an alternative experience. Equal treatment is a fundamental purpose of the ADA. People with disabilities must not be treated in a different or inferior manner.

[8] Warpage is the variation in the planarity of the walking surface of an individual paver. Lippage is the variation in the height of the walking surface of adjacent installed pavers and adjoining materials, defined in ANSI (American National Standards Institute) Standards A108/A118/A136. Roughness, in the context of accessibility for persons with disabilities, is a measurement of whole-body vibrations caused by traveling over a surface in a wheelchair.

[9] California Government Code commencing with Section 4450 incorporates the federal accessibility requirements and the California Building Requirements for all state and local jurisdictions in California.

The terms under which the California Division of the State Architect would consider an equivalent-facilitation request are the following:

1. Such alternatives shall be applied only on an item-by-item or a case-by-case basis.
2. Access provided by experiences, services, functions, materials and resources through methods including, but not limited to, maps, plans, videos, virtual reality and related equipment, at accessible levels. The alternative design and/or technologies used will provide substantially equivalent or greater accessibility to, and usability of, the facility.
3. The official charged with the enforcement of the standards shall document the reasons for the application of the design and/or technologies and their effect on the historical significance or character-defining features. Such documentation shall be in accordance with Section 8-602.2, Item 2, and shall include the opinion and comments of state or local accessibility officials, and the opinion and comments of representative local groups of people with disabilities. Such documentation shall be retained in the permanent file of the enforcing agency. Copies of the required documentation should be available at the facility upon request (California State Historic Building Code Section 8-604).

In the case of the proposed project, any attempt to provide equivalent facilitation would entail restricting access to the public right-of-way from people with disabilities. However, persons with disabilities must be able to participate equally in basic civic activities such as using the public transportation system, traveling along sidewalks and crosswalks, enjoying a public park, and attending or participating in park events individually or with family and friends. The integration of people with disabilities into the mainstream of American life is a fundamental purpose of the ADA (Jensen 2019). In the case of a public route such as along Market Street, either a pedestrian has access, or they do not; there is no half measure.

The U.S. Department of the Interior addresses accessibility issues for cultural landscapes in its Preservation Brief No. 32, Making Historic Properties Accessible (U.S. Department of the Interior 1993). This brief does not address a situation comparable to that of Market Street. While "[f]ull access throughout a historic landscape may not always be possible," as the authors state (p.10), restricting access to the public right-of-way on San Francisco's pre-eminent ceremonial street and the main artery of the Muni transit system is not consistent with the intent of the ADA because equivalent facilitation is not feasible.

That alternative design and/or technologies could provide substantially equivalent or greater accessibility to Market Street is improbable. Also improbable would be the support of representative local groups of people with disabilities for retaining the bricks and accepting some of equivalent facilitation. Members of these groups have regularly made complaints to Public Works about the barriers to mobility posed by the bricks. A pedestrian realm focus group was convened to gather opinions from persons with disabilities on the performance of various possible surfaces to be used in the Better Market Street improvements (San Francisco Public Works, Better Market Street Project, and Mayor's Office on Disability 2013). This focus group advised that the Market Street brick does not meet the goals of accessibility for the Better Market Street project. Other paving materials and design schemes would provide better accessibility, usability, safety, durability, and maintainability, especially for those with mobility disabilities and visual and sensory disabilities. Choices for paving materials should have texture for slip resistance and color for visual cues. The group also advised that current Market Street design patterns, include location, size, and misalignment of granite curb ramps, are in conflict with good design for accessibility, safety, and maintainability.

In conclusion, in order to comply with the ADA, it is not possible to make alterations to the Market Street facility and at the same time retain the existing herringbone brick. It must be replaced with a surface meeting current ADA standards. This replacement will comply with the San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.) that incorporates these standards.

Design Option

The design option will modify the design of the Build Alternative to include widened sidewalks, approximately 37 to 48 feet wide (with a 25-foot pedestrian through zone), in most of the affected areas (Market Street between Octavia Boulevard and a point approximately 300 feet east of the Hayes and Market street intersection). There will be an approximately 8-foot-wide sidewalk area at the following three locations where there will be a proposed loading bay:

- North side of Market Street between 12th Street and the proposed Van Ness Avenue outbound stop location
- North side of Market Street between 11th and 10th streets
- North side of Market Street between 10th Street and proposed Ninth Street curbside transit stop

The design option will retain the existing crosswalk on the eastern portion of 12th Street at Market Street, unlike the Build Alternative. The design option will also provide raised crosswalks at Rose, Brady, and 12th streets and include public art at all four corners of the Van Ness Avenue and Market Street intersection.

Loading Areas

The 23 existing loading bays on Market Street between Octavia Boulevard and Steuart Street (20 for commercial loading and three for both passenger and commercial loading) will be removed and replaced by 22 loading zones, either near or at the same location as the existing loading bays. Most of the loading zones will be located at sidewalk level. The curb within the loading zones will be mountable, allowing loading vehicles to cross through the bikeway and access the loading area. During off-peak hours when a loading zone could be in use, the bikeway will narrow at loading zone locations; during peak hours when loading will not occur, loading zones will be used for additional bikeway space. Table 1-6, below, indicates the locations where loading zones will be constructed.

Table 1-6. Proposed Loading Zone Locations

	Side of Market	
Between Streets	**North**	**South**
Steuart Street and Drumm Street	X	
Steuart Street and Spear Street		X
Beale Street and Fremont Street		X
Front Street and Bush Street	X	
Fremont Street and First Street		X
First Street and Second Street		X
Kearny Street and Montgomery Street	X	
Kearny Street and Grant Avenue	X	
Third Street and Fourth Street		X
Stockton Street and Cyril Magnin Street	X	

Between Streets	Side of Market	
	North	South
Fifth Street and Sixth Street		X
Turk Street and Taylor Street	X	
Taylor Street and McAllister Street	X	
Sixth Street and Seventh Street		X
Seventh Street and Eighth Street		X
Charles J. Brenham Place and Hyde Street	X	
Hyde Street and Larkin Street (Eighth and Ninth streets)	X	X
Larkin Street and Polk Street	X	
Polk Street and Van Ness Avenue (10th and 11th streets)	X	X
Van Ness Avenue and Page Street	X	

The size of a loading zone on the north side of Market Street will vary between 63 and 100 feet, with an average length of 80 feet. The size of a loading zone on the south side of Market Street will vary between 32 and 100 feet, with an average length of 75 feet. All loading zones will be 16 feet wide, with a 1-foot mountable curb. In addition, there will be three 10-foot-wide traditional roadway-level loading zones on the south side of Market Street between 10th and 11th streets and Seventh and Eighth streets and on the north side of Market Street between Kearny and Montgomery streets. New commercial and passenger loading zones will also be established where possible on adjacent cross streets and along nearby alleys by converting general on-street parking spaces to commercial loading spaces, white passenger loading zones, or blue accessible parking spaces. Commercial zones will accommodate truck loading and promote more use of the alleyways for access to the rear of the buildings along Market Street. Nearby alleys include Angelo's Alley as well as Jessie, Stevenson, and Annie streets. Up to 43 new cross-street and alleyway commercial loading spaces will be created to provide alternative commercial loading options off of Market Street.

In addition, up to 16 new passenger loading zones and six new blue accessible zones will be created on cross streets. The project will remove one passenger loading zone on the east side of 11th Street.

Design Option

The design option will modify the design of the Build Alternative to restrict three proposed loading zones on the north side of Market Street, between Hayes and 12th streets, to paratransit and taxi use.

Bicycle Facilities

The project will provide physically separated bicycle lanes. A sidewalk-level bikeway will be constructed on Market Street in each direction between the curb lanes and the sidewalk. The bikeways will extend the entire length of the project corridor, from Steuart Street to Octavia Boulevard. The new sidewalk-level bikeway will be 5 to 8 feet in width, with buffers on both sides of the lane and a distinct paving pattern or material to help identify the designated space for bicyclists. The sidewalk-level bikeways will meet Caltrans' standard for class IV separated bikeways. However, there will be instances, such as intersections, where the space for a sidewalk-level bikeway will not be available. In these cases, the bicycle lanes will be at roadway level (about 1 percent of the project corridor).

Ramps will be constructed to return the lane to roadway level at intersections. The sidewalk-level bikeway will generally be separated from the adjacent curb lane by a 1- to 4-foot-wide buffer between the roadway curb lane and sidewalk-level bikeway. The buffer will include a standard 6-inch curb (providing grade separation) and regulatory signage, fire hydrants, planted areas, and other vertical obstructions to prevent vehicles from pulling into the sidewalk-level bikeway.

On the sidewalk side of the sidewalk-level bikeway, furnishings, signage, bicycle racks, and other vertical obstructions in the furnishing zones will act as buffers between the sidewalk and the sidewalk-level bikeway. This will include a 1- to 3-foot-wide ADA-compliant feature for separating the pedestrian through zone from the bikeway and ensuring that people with limited vision will be able to avoid accidentally crossing into the sidewalk-level bikeway. The maximum depth of ground disturbance associated with the sidewalk-level bikeway will be approximately 18 inches, exclusive of installations in the buffer zone.

At curbside transit stops, the new sidewalk-level bikeway will be placed behind the transit stop (i.e., between the transit stop and the pedestrian through zone). Pedestrians will have designated places for crossing the sidewalk-level bikeway when walking from the transit stop to the sidewalk.

The project will also include construction of the following bicycle facilities:

- A new concrete street-level bikeway between two vehicular travel lanes with 2- to 3-foot-wide buffer islands on the south side of Market Street between South Van Ness Avenue and 10th Street.
- A bicycle lane on Valencia Street between McCoppin and Market streets will be converted to a parking-protected bikeway. The northbound right turn will be facilitated by construction of a bicycle passage area and a pedestrian island for the Valencia Street crosswalk. This will shorten the existing pedestrian crossing and allow bicycles to turn onto the eastbound Market Street bikeway after they yield to pedestrians that may be crossing the bikeway.
- At 11th Street, with the proposed traffic signal and northbound 11th Street boarding island, a paint treatment for the bicycle intersection will be applied and a bicycle signal phase implemented to allow for a northbound sidewalk-level bikeway left turn as well as a westbound left turn. A bicycle jug handle will be constructed to facilitate the westbound left-turn bicycle movement while not delaying the westbound through bicycle movement.
- At 10th Street, the bicycle connection to Market Street will remain the same as today, but the bicycle connection from eastbound Market Street to northbound Polk Street will be converted to a dedicated left-turn bicycle pocket that will be protected by concrete on both sides.
- At Eighth Street, the bicycle connection from Market Street to westbound Grove Street will be created using a small contraflow bicycle lane on the northeast corner of the intersection, which will be protected by a concrete island.
- At the Seventh Street and Charles J. Brenham Place intersection, the northbound bicycle connection to McAllister Street will be improved by converting the existing Golden Gate Transit bus zone into a boarding island.
- On McAllister Street, the existing outbound transit bulb will be converted to a boarding island to separate transit, the F-loop, and bicycles. In addition, there will be more concrete protection for westbound Market Street to westbound McAllister Street bicyclists at the intersection to separate them as well as the F-loop. Eastbound bicyclists on McAllister Street will have a dedicated painted crossing, allowing them to reach the eastbound Market Street bikeway without conflicting with the proposed F-loop tracks or the inbound 5/5R Muni routes.

- At Second Street, there will be a two-stage bicycle queue box, bike signals, and a dedicated bicycle signal phase to connect the Second Street Improvement Project (currently under construction) to Market Street and vice versa.
- At Sansome Street, there will be a two-stage bicycle queue box between the Market Street pedestrian island and the inbound curbside stop. There will be a dedicated bicycle signal phase, allowing bicyclists to head north onto Sansome Street.

A bicycle signal is a three-section traffic signal that has bicycle pictograms instead of colored lenses. Bicycle signals will be installed at most intersections to maintain the separation between vehicle traffic and bicycles. Their construction and installation is similar to that of traffic signals. Exact locations for bicycle signals will be determined at the culmination of an ongoing analysis of vehicle turning movements and bicycle movements. The signals will be installed at various locations along the corridor. Bicycle signal phasing will be coordinated with traffic signal phasing; signal phasing for all modes is controlled by the same signal controller.

Two-stage turn queue boxes offer bicyclists a safe way to make left turns at multi-lane signalized intersections from a right-side sidewalk-level bikeway or bicycle lane or right turns from a left-side sidewalk-level bikeway or bicycle lane. At midblock crossing locations, a two-stage turn queue box may be used to orient bicyclists properly for safe crossings. At some locations, bicycle boxes allow bicyclists to queue at the front of the vehicle queue during red lights. Two-stage turn queue boxes are proposed for the following locations along the project corridor:

- Westbound left turn at Valencia Street
- Eastbound left turn at Polk Street
- Southbound left turn at Polk Street
- Southbound left turn at Eighth Street
- Eastbound left turn at Eighth Street
- Westbound left turn at Hyde Street
- Northbound left turn at Seventh Street
- Eastbound left turn at Seventh Street
- Southbound left turn at Golden Gate Avenue
- Northbound left turn at Sixth Street
- Northbound left turn at Fifth Street
- Westbound left turn at Fifth Street
- Northbound left turn at Second Street
- Westbound left turn at Second Street
- Eastbound left turn at Sansome Street
- Eastbound left turn at Davis Street

Bicycle parking along Market Street (50 bicycle racks per block) will be located at sidewalk level in the furnishing zone. The one exception is a bike-share station at 10th/Market streets, which is proposed to be at sidewalk level between the bikeway and the travel lane.

Design Option

The design option will modify the design of the Build Alternative to include a sidewalk-level bikeway between 11th and 12th streets. At 11th Street, bicyclists will be directed to make the westbound left turn onto 11th Street by going all the way to Van Ness Avenue, making a U-turn, then making a right turn onto 11th Street. As part of this design option, the northbound 11th Street bicycle lane will serve only bicyclists going to eastbound Market Street.

Transit

The project will modify transit stop spacing. New stop locations will accommodate surface-running streetcars, local bus routes (both rapid and local service), and regional buses.

The existing 18 curbside stops (nine inbound, nine outbound) and 23 center boarding island stops (12 inbound, 11 outbound) will be removed and replaced by 19 curbside stops (10 inbound, nine outbound) and 10 center boarding island stops (five inbound, five outbound). New transit shelters with "next bus" signs and advertising panels will also be provided. Service will be provided in the center track lane for some rapid lines (i.e., 5, 5R, 9, 9R, 7X as well as the F-line) as well as the curb lanes for local bus routes (i.e., 2, 6, 7, 19, 21, 31, 38, 38R, L Owl, N Owl). In addition, SFMTA is evaluating a transit service concept as part of the project that will have outbound bus route 5 and outbound bus route 9 stop at the curbside transit stop between O'Farrell and Stockton streets, which will require the proposed curbside transit stop to be lengthened by approximately 40 feet. In addition, bus routes 14, 14R, and 14X will continue to have drop-off-only stops at Market and Steuart streets; bus routes 81X, 30X and 10 and 12 will continue to run on Market Street but will not stop. AC Transit overnight bus route 800 will also continue to stop on Market Street.

The length and width of existing transit boarding islands will be increased to meet ADA standards. Some existing transit boarding islands will be removed or relocated. The length of transit boarding islands will be increased to up to 210 feet where an F-line boarding platform exists (compared with 110 to 120 feet for typical existing islands); the width will be increased to approximately 9 feet (compared with 6.5 feet for typical existing islands). The maximum depth of ground disturbance associated with boarding island construction will be approximately 18 inches. Wheelchair ramps will be constructed to serve the F-line. Access to the proposed transit boarding islands will continue to be from marked crosswalks. Replacement stops will have transit information signs and advertisements. Transit shelters will be included at all transit stops along the corridor. The existing northbound curbside stop on 11th Street, which is separated from the curb by motorcycle parking, will be converted to a transit boarding island as part of the project.

A new bidirectional F-line track loop (F-loop) will be constructed in the roadway to give the surface-running streetcar the ability to switch from running westbound (outbound) to running eastbound (inbound) using the new loop or from running eastbound (inbound) to running westbound (outbound). The F-loop will consist of approximately 1,000 linear feet of track along McAllister Street and Charles J. Brenham Place. New track switches will be installed on Market Street east of McAllister Street to allow westbound trains to turn onto McAllister Street as well as west of McAllister Street to allow eastbound trains to turn onto McAllister Street. A new half grand union will be installed on Market Street at Charles J. Brenham Place to allow southbound trains to turn east or west on Market Street. New palladium-coated copper wires, switch machinery, and controllers will be provided at Market Street/McAllister Street/Charles J. Brenham Place to serve the F-loop.

All F-loop movements will be controlled by a traffic signal. Therefore, F-loop turning movements will have dedicated signal phases, which will hold all conflicting traffic movement while the streetcar completes its movement. The F-loop intersections will have special train signals that will tell the F-line operator which way the track switch is set and whether the train has the right-of-way . There will also be bicycle signals and "TRAIN COMING" signs to emphasize F-loop movements and warn other street users about the train.

Construction of the F-loop will necessitate a mini-high ADA-compliant ramp and a 7-foot-wide by 13-foot-long operator restroom at the loop location.

Design Option

The design option will modify the design of the Build Alternative to integrate transit boarding islands at Van Ness Avenue into the widened sidewalks. The outbound F, 6, and 7 stops will move from east to west of Van Ness Avenue, and the northbound 9/9R stop at 11th and Market streets will be shifted south to incorporate a northbound Muni-only lane on 11th Street.

The design option will also include new F-line track alignments on Market and 11th streets, allowing for increased service flexibility and better Muni operator safety when using the 11th Street track wye[10]. Westbound trains will be able to turn directly into the southbound 11th Street track (westernmost track), and trains in the northbound 11th Street track (easternmost) will be able to turn directly into the eastbound Market Street track. The easternmost tail track will be removed south of the existing track switch to accommodate a northbound 65-foot-long bus boarding island.

Other Elements

The project will relocate fire hydrants, including AWSS hydrants and components, to accommodate changes in curb lines. Existing AWSS cisterns below Market Street will be preserved in place. Existing city water hydrants are located approximately 3 feet from the face of the curb. All new hydrants will be located in accordance with the SFPUC's requirements, as outlined in its *Asset Protection Plan.*

Stormwater catch basins will be relocated horizontally (less than 20 feet), vertically (less than 1 foot), or reconstructed, as required by curb movements or the introduction of transit islands, which will also involve adjustment or replacement of the laterals into which they feed. Sewer/stormwater lines will be relocated because of the SFPUC policy regarding facility proximity restrictions to rail. All sewer laterals within the project limits will be replaced and reconnected. Existing sewers along portions of Market and McAllister streets are directly beneath areas where streetcar track replacement is planned. All other sewer work will be for state-of-good-repair replacement. The approximate depth of excavation for stormwater facilities will be 5 feet; the maximum depth will be the depth of the sewer mains, approximately 12 feet. Work may extend horizontally up to 8 feet into the street from the edge of the curb line. Relocation of SFPUC water lines, Pacific Gas & Electric lines, NRG steam lines, AT&T lines, other communication lines, and conduits and wiring for streetlights and signals, as well as structural reinforcement of sub-sidewalk basements, will also be required to accommodate project improvements. OCS pole locations will be adjusted to accommodate sidewalk widening.

[10] A wye is a triangle of railroad track used for turning trains.

All existing street trees, the majority of which will be in the path of construction, will be removed, and new street trees will be planted. Although potentially all trees within the public right-of-way will be subject to removal as part of the proposed project, Public Works will consider the removal of trees on a case-by-case basis. New trees will be planted in a new alignment in the (previously described) furnishing zone. The arboricultural best practices to be employed in tree planting will include, but not be limited to, a fully automatic irrigation system, replacement trees sourced under a grow agreement to ensure specimen availability and high-quality plant stock, a soil trench system that includes a nutrient-rich engineered soil profile, adequate soil volumes, and a suspended pavement system to reduce soil compaction. Plant installation will consider strong westerly wind exposure and strive to prevent "wind lean" as the trees mature. Heavy-duty tree staking will be used as necessary to ameliorate the effects of wind on newly planted trees throughout their establishment period. Street tree maintenance is currently the responsibility of Public Works, and Public Works will continue to maintain street trees following the completion of construction activities.

Public Works, in coordination with a tree-selection working group, composed entirely of local arboriculture experts, has prepared a provisional tree species list, made up of seven different genera, to increase diversity and help avoid disease, which has affected the current monoculture of London plane trees.

Table 1-7, below, indicates the tree genera under consideration to meet the criteria, which include sidewalk suitability, wind tolerance, salt/fog tolerance, shade tolerance, drought tolerance, maintenance, and scale/size.

Table 1-7. Proposed Street Tree Species and Common Names

Species/Cultivar	Common Name
Ginkgo biloba	Various selections
Lophostemon confertus	Brisbane box
Magnolia grandiflora	Various selections of southern magnolia
Pittosporum undulatum	Victorian box
Platanus	Plane trees and sycamores as well as selected hybrids
Quercus	Various live oak species
Ulmus parviflora	Various selections of Chinese elm

The project will include relocation of a BART/Muni elevator at the Civic Center station on the north side of Market Street, near United Nations Plaza, to the current location of a staircase entrance to Civic Center station within United Nations Plaza. Alternatively, the BART/Muni elevator may remain in its current location.

The 236 Path of Gold light standards within the project corridor will be partially restored (the tridents), reconstructed (base and poles), and realigned. Specifically, the existing poles will be replaced with larger poles, the tridents will be salvaged and reinstalled, and the clamshell bases will be recast and modified to accommodate the larger poles. The standards will be reinstalled in a consistent alignment to create a visible linear edge to the pedestrian zone. Although some individual standards may need to be located out of alignment with adjacent standards or removed to accommodate conflicts in the furnishing zone or sub-sidewalk basements, no more than 24.6 percent of the 236 standards will be removed or located out of alignment with other standards.

This percentage translates to an estimated 58 of the 236 light standards in the project corridor, less than 18 percent of the total number of standards (327) within the entire article 10 landmark. At the currently available level of project design, the project sponsor cannot conclude at this time with certainty exactly how many standards will need to be relocated out of alignment or permanently removed.

Generally, the current linear arrangement of the standards follows the Market Street Redevelopment Plan–era installation of replicated Path of Gold standards between The Embarcadero and Octavia Boulevard; however, individual standards have been moved as needed to accommodate changes within the public right-of-way. The installation was completed in 1976 and included placement of the standards approximately 100 feet apart in pairs on the north and south sides of Market Street, an average of 11 to 23 feet from the property line along Market Street.

Surface-mounted Path of Gold features, such as utility control boxes, will be relocated to the furnishing zone, as feasible.

The existing support poles will be replaced with larger poles that will be better for supporting the OCS wires (i.e., wider spans for the OCS will require the poles to resist more weight and tension). Existing poles are 24 feet, 10 inches tall and have a 9-inch diameter. The replacement poles will be 30 feet tall and 13 inches in diameter. The existing tridents will be salvaged and retrofitted with upgraded electrical units, then reinstalled atop the new poles. The existing and proposed tridents will be 8 feet tall (total height of each standard will be 38 feet).

Because the Path of Gold light standards are the primary source of light along Market Street, the retrofit will be guided by a photometric study to determine the appropriate lighting requirements and address safety concerns. The new lighting units will match the color and tone of the historic lights as much as possible. The existing globes will be retained and reused where possible, or new globes will be installed that will be consistent in shape, size, material, and design and similar to the existing globes.

The new standards will be increased in size by approximately 15 percent and scaled to match the overall proportions of the existing standards, and the existing clamshell bases will be recast and enlarged to accommodate the larger support poles.

Lighting installed as part of the project will be required to conform to American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00) and the Caltrans Roadway Classification. To provide power to the new lighting, an N36 box will be added between every city manhole and the first streetlight pole, along with associated conduit work. A second 2-inch, galvanized rigid-steel conduit will be installed, running east to west, along Market Street on both sides of the roadway. New tie-in locations will be added as needed. The structural designs of the walls for sub-sidewalk basement abatement, as well as related fill material, are intended to accommodate new light pole foundations or new loading zone locations.

The project will not otherwise modify or relocate any monuments, statues, clocks, etc., in the public right-of-way.

1.7.1.2 Project Elements – "State of Good Repair" Upgrades

Transit

The project will replace almost all components of the F-line streetcar, including the in-street tracks, the OCS, OCS support poles, the underground traction-power duct banks that power the OCS, and both of the power substations that feed the duct.

Track Replacement

The project will replace all track from Octavia to Steuart streets with track that will be directly fixed to a concrete plinth. The joints at the BART vent structures will be eliminated if possible. Additional joints will be added at the F-loop area and the 11th Street turnouts. These new joints will be at all track circuits and at both ends of special track work components (special track work consists of turnouts, switches, crossovers, and track crossings). Existing track will be realigned by approximately 3 feet at the following locations:

- Drumm Street to Steuart Street (because of curb realignment)
- Davis Street to Fremont Street (known location of BART grates)
- Octavia Street to 12th Street (because of curb realignment)

Removal/relocation of certain track switches will be required, depending on the final locations for new boarding islands.

Overhead Contact System Replacement

The proposed project will also replace existing OCS-only streetcar/trolleybus poles with new steel poles along Market Street and on cross streets as needed to accommodate the OCS streetcar/trolleybus wire alignment; the poles will be relocated to the furnishing zone.

The project will replace all feeder/equalizer/tangent spans along Market Street from Octavia Street to Steuart Street, including approximately 100,000 feet of streetcar/trolleybus wire, with new 2/0 or 4/0 streetcar wires. Streetcar/trolleybus wire will be replaced largely in its existing alignment. Additional OCS wires between 10th and Eighth streets will be included to accommodate curb-lane trolleybus operations. Existing eyebolts will be reused at locations where they can support the new OCS support wires, pending a pull test. New eyebolts will be installed at locations where streetcar/trolleybus poles are not able to be installed.

Streetcar/trolleybus wires on cross streets will be replaced to the closest special works assemblies (curve segments, switch assemblies, cross-over assemblies) as needed. Streetcar/trolleybus wire will be replaced in its existing alignment, except at the following locations:

- Between 10th Street and midblock between Eighth Street and Seventh Street (new set of in-bound trolleybus wires at curbside)
- Between 10th Street and Ninth Street (extend outbound trolleybus wires at curbside to allow trolleybuses to access new far-side boarding island at Ninth Street, after island; provide switch back into center set of outbound wires)

- At Market Street and McAllister Street (modify inbound wires from McAllister Street to replace crossover at center set of wires with a trailing switch and provide new switch from center set of wires to curb-side set of wires)
- On Market Street between McAllister and Sixth streets (outbound wires will need a leading switch and trailing switch to allow trolleybus movement from center to curb-side set of wires).

Traction-Power System Replacement

Existing traction-power duct banks consist of continuous runs of electrical conduits that have been encased in cast concrete, forming a rectangular block in cross section that extends the length of Market Street in the project area, generally outside the curbs on the south side and in the public right-of-way under Second Street and Stevenson Street at depths of 6 to 25 feet below the surface. Existing duct banks will be excavated and removed or abandoned in place. Two new duct banks will be constructed through the project corridor in the same alignment so as not to conflict with other project elements. These duct banks will consist of a minimum of four 6-inch polyvinyl chloride conduits plus two 6-inch spare conduits for future electric distribution through backbone feeders at a medium voltage level. Power duct banks will split north and south along Market Street. Duct banks will be capped on both ends of the project corridor. The project's upgrades at the Civic Center and Downtown traction-power substations that feed the duct will consist of replacement of internal traction-power equipment to be in compliance with current codes.

Roadway

The entire roadway and roadway base throughout the project area will be removed. The sub-base will be compacted, and a new concrete street base will be placed and topped with an asphalt surface. Utility castings, such as manhole covers, catch basins, and similar street iron, will be protected and adjusted to meet the new resurfaced street surface. After resurfacing, pavement markings will be reapplied (e.g., Muni-only lanes, lane striping).

Utilities

The project will relocate or rehabilitate wastewater lines, water lines, AWSS lines, SFPUC power lines, and fiber optic conduits to maintain a state of good repair. Some rehabilitated utility lines will occupy a new joint trench for a number of the "dry" utilities. All "wet" utilities will be the same size as the existing lines; no additional capacity will be provided.

In conformance with San Francisco's "Dig Once Ordinance," eight 2-inch high-density poly-ethylene fiber conduits will be installed along Market Street, with termination vaults on each side of Market Street. The vaults (48-inch length by 30-inch width by 36-inch height) will be installed in the right-of-way and outside of the paved surface/vehicular traffic lanes, as close to the curb/gutter as possible. Existing fiber (for public safety infrastructure, fire and police communications, etc.) will be relocated out of existing AT&T conduits and placed in this new facility.

The project will replace and install approximately 17,500 linear feet of water lines, consisting of 8- to 36-inch ductile iron pipe with associated fittings, valves, and service laterals. These will include corrosion-resistance measures, such as bonding joints, sacrificial anodes, and isolation joints, and the installation of steel casing sleeves for water mains that cross below Muni tracks at various locations. Low-pressure fire hydrants and associated fittings and valves will be replaced as needed.

Existing 3- by 5-foot brick sewers under the center of Market Street will be replaced with a dual sewer system under the new sidewalks on either side of Market Street. The project will install approximately 13,800 linear feet of 12- to 33-inch vitrified clay pipe main sewer lines and 1,200 linear feet of 12- to 33-inch steel pipe main sewer lines.

The project will include state-of-good-repair replacement of AWSS facilities, as required, to maintain the system in a state of readiness. Existing AWSS facilities will be relocated to accommodate new pedestrian and bus bulb-outs, as well as related improvements to Market Street, and maintain access to both San Francisco Fire Department and SFPUC facilities. This includes relocating, where necessary, AWSS hydrants and laterals, main lines, vaults, and gate valves. Existing valve box and valve vault access covers will be raised as required to accommodate pavement and sidewalk grade changes.

Electrical

There will be a complete upgrade of all the existing signal infrastructure on Market Street between Octavia and Steuart streets, which will include new poles, conduits, accessible pedestrian signals, vehicle/pedestrian/bicycle signals, signal cabinets, and interconnects.

1.7.1.3 Construction and Staging

Construction will begin in 2020, with work divided between up to seven separate multiple-block segments of Market Street. Work will continue for at least a six-year period (and, potentially, up to 14 years), including inactive periods. Construction will proceed in both directions along up to two segments simultaneously. Active construction is expected to last a minimum of one year per segment.

Areas of active construction on Market Street will vary in size but always be separated from traffic and pedestrians by a buffer that will include a temporary barrier. All openings in the street and sidewalk will be closed by backfilling and paving or plating over to provide a safe and adequate passageway for bicyclists, motorists, transit, and pedestrians. Adjacent to the construction zone, transit speeds will be reduced. Loading spaces will be relocated away from active construction zones. Depending on local conditions, there may be opportunities to allow loading when a construction zone is inactive.

Construction will typically be restricted to 7:00 a.m. to 5:00 p.m., seven days a week. In consultation with stakeholders, the City may agree to waivers, thereby extending work hours to expedite the construction schedule in areas where land uses are primarily commercial. Nighttime or weekend construction will not occur every night or weekend. Work hours and days will be adjusted to accommodate transit operations, bike movements, pedestrian needs, and local businesses along the corridor during different stages of construction. Further study of each block and side streets will be performed during detailed design work to finalize the hours.

Some night work and weekend work may be required in areas where land uses are primarily commercial. An example of construction activity that will require both nighttime and weekend work is the construction of tracks at intersections. Tracks will be constructed at each intersection over the course of one weekend to minimize potential impacts on transit riders. In addition to day-to-day hourly restrictions, the City and County of San Francisco's construction holiday moratorium (Thanksgiving to January 1) places additional restrictions on construction work in the public right-of-way; Market Street between Fremont and Eighth streets falls under the moratorium as well as any city block where at least 50 percent of the frontage is devoted to business use.

Vehicles and bicycles will be rerouted from Market Street during some stages. For utilities, limited construction may need to take place over multiple stages; however, any excavations will be plated. Some of the deeper excavations will be required for minor changes to existing stormwater collection.

The following construction stages will occur in different orders within different segments:

- Closure of center lanes to allow for rail track replacement and demolition and installation of new center transit islands. Curbside lanes will remain open to public transit. F-line streetcar service will be maintained as much as possible but will require substitution with bus service when travel in the center lane is not possible.
- Closure of curbside lanes for relocation and reconstruction of the curb, along with accompanying removal and planting of trees; relocation of fire hydrants, light poles, catch basins, and other utilities; and demolition and installation of center transit islands. The center lanes will remain open to public transit.
- Closure of sidewalks for reconstruction; access will be maintained through the use of temporary walkways to buildings and businesses. Curbside lanes and United Nations Plaza will be available for pedestrian detours, while the center lanes will be available to public transit.
- Closure of intersections and the demolition, relocation, and installation of utilities that cross Market Street. All pavement work will occur in quadrants (each one-quarter of the intersection) to accommodate traffic across Market Street and transit along Market Street. Construction for each stage and sub-stage will generally proceed in the following order:
    - Mobilization of contractor equipment, facilities, materials, and personnel into construction staging areas
    - Installation of construction area signs and circulation of construction announcements
    - Establishment of work-zone and perimeter buffers and limits
    - Installation of temporary street lighting, OCS lines, and traffic signals, as needed
    - As-needed, local de-energization of the OCS lines
    - Execution of removal work, including bus platforms, pavement, streetlights, signals, OCS lines, and interfering underground utilities, to prepare the work zone for construction of new infrastructure
    - Construction of infrastructure within the work zone, including large-scale underground utilities (replacement or relocation); installation of pole foundations, roadway pavement, tracks, tree trenches, curbs, sidewalks, bike lanes, delineation, boarding islands, hydrants, streetlights, OCS lines, traffic signals and poles, streetscape features, etc.; and lane resurfacing.
    - Installation of transit stop amenities and landscaping, signage, lane striping, and lane coloring
    - Demobilization

Construction Staging

All construction and staging will occur within the operational public right-of-way. The mobilization of personnel and materials will require areas for field offices and trailers, parking, material delivery, storage, and handling. These areas will need to be in proximity to active

construction areas, ideally no more than 200 feet away. Construction staging areas will be located on Market Street or adjacent side streets, within 200 feet of active construction areas, and able to move in tandem with the shifting work zone.

Temporarily stockpiled materials at staging areas will include excavated soil, crushed concrete, reinforcing steel, imported soil, pipe, appurtenances, streetcar tracks, OCS lines, overhead poles, and other building materials that are customary of street and utility construction. Material delivery and removal, as well as onsite handling, will, in some cases, involve platoons of vehicles.

New infrastructure for the proposed project will require all existing Path of Gold light standards, which support the OCS, along the project corridor as well as traffic signals to be removed and then reinstalled or replaced at other locations. Temporary lighting, OCS lines, and signals will be needed. Temporary poles will most likely have above-grade foundations, such as large reinforced-concrete cylinders. Some temporary poles for the OCS will be timber direct-burial poles; others could be placed within new foundations. The poles will be within the street right-of-way or construction staging areas, depending on the available space.

Construction equipment will include track-mounted vehicles, including, but not limited to, excavators, asphalt cold planers, asphalt pavers, dozers, and earth-compacting rollers. Conventional equipment that can be transported on street-legal rubber tires will make up the remainder of the construction vehicles.

Demolition of bus platforms, curbs, and sidewalks will require hammers, excavators, hoe rams, loaders, hydraulic breakers, demolition shears, pulverizers, grapples, brooms, and similar equipment.

Transportation Conditions during Construction

Vehicular traffic on the Market Street corridor will be restricted to public transit vehicles, including paratransit, but may be interrupted periodically. Emergency vehicles will be allowed at all times, including in transit-only lanes, such that emergency vehicle access is maintained. At least one transit travel lane will be maintained in each direction on Market Street, with a minimum temporary width of 11 feet.

Transit access will be preserved, but some stops may be temporarily relocated and the number of stops temporarily reduced. Detours of some transit routes (e.g., to Mission Street) may be required for the duration of the construction period, as described in the coordinated construction management plan or focused construction transit plan that will be developed prior to final design and construction. Enhanced transit priority features will be provided on Mission Street during detours.

Pedestrian access throughout the corridor will be preserved, including access to transit stops and land uses along or near the project corridor. However, periodic sidewalk, plaza, or crosswalk closures will occur during sidewalk reconstruction and utility work. Sidewalk improvements will be completed over multiple stages of construction to maintain access. During each stage, pedestrian access to portions of the sidewalks and United Nations Plaza will be limited or narrowed but not completely restricted. Some intersection crosswalks may need to be closed, with pedestrians detoured to the nearest intersection. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain ADA compliance and ensure that pedestrian overcrowding does not occur at busier corridor locations.

Bicycle access will be temporarily detoured at some locations or along the entire corridor to streets such as Mission Street, Howard Street, and/or Folsom Street. Bicycle facility changes will be completed in multiple stages to maintain access where possible.

Commercial loading activities will take place on adjacent side streets and/or during restricted hours along Market Street (e.g., staggered hours for loading and construction). Loading within an active construction zone will not be permitted at any time. Loading areas within active construction zones will be relocated as close to the construction zone as is practical. Temporary loading zones (within a mixed-flow lane adjacent to an inactive construction zone) may be possible in some circumstances.

Parking along adjacent side streets will be subject to restrictions, beyond existing restrictions, to accommodate construction staging. When feasible, temporary alternative access may be provided at a location outside the construction zone or within an acceptable location within the construction zone.

In addition to construction-related effects on transit service along Market Street, transit lines that run perpendicular to Market Street will be subject to temporary changes. In general, bus access along the Market Street corridor and transit lines that cross the corridor will be maintained during construction. However, some bus stops or routes will be changed during the course of construction. Potentially affected transit routes include 1AX California A Express, 1BX California B Express, 3 Jackson, 8 Bayshore, 8AX Bayshore A Express, 8BX Bayshore B Express, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant, 30 Stockton, 30X Marina Express, 31AX Balboa A Express, 31BX Balboa B Express, 38AX Geary A Express, 38BX Geary B Express, 41 Union, 45 Union-Stockton, 47 Van Ness, 49 Van Ness-Mission, 81X Caltrain Express, 82X Levi Plaza Express, 83X Mid-Market Express, 90 San Bruno Owl, 91 Third Street-19th Avenue Owl, the PresidiGo Downtown Shuttle, Golden Gate Transit routes, SamTrans, and privately operated shuttles.

Standardized Measures

This project contains a number of standardized measures that are used on most, if not all, Public Works projects and were not developed in response to any specific environmental impact resulting from the proposed project. These measures are addressed in more detail in the Environmental Consequences sections in Chapter 2.

Public Works requires all construction contracts to include Public Works' standard construction measures (SMs) in bid packages for the purposes of protecting human health and safety as well as environmental resources. The SMs that apply to the proposed project are related to the following: visual/aesthetics, geotechnical considerations, air quality, water quality, traffic, noise, bird protection, tree conservation, and environmentally sensitive areas. The SMs are listed below:

- SM-TRA-1, Construction Management Plan:
    - Establish Temporary Transit-only Lanes and Extend Bus Zones on Mission Street during Detours – When detours are implemented, the SFMTA shall implement additional transit priority features, such as all-day transit-only lanes and extended bus zones on Mission Street, to accommodate the increased level of bus service on streets adjacent and parallel to Market Street during construction. Full or partial temporary restrictions may be implemented on Mission Street between 11th and Steuart streets. The temporary restrictions will permit only public transit vehicles, taxis, and commercial vehicles on Mission Street in the eastbound and/or westbound directions. The temporary restrictions could be implemented under the following conditions: (1) At least one travel lane is closed on Mission Street between 11th and Steuart streets and that travel-lane closure results in

only one open lane, either in the eastbound or westbound direction, or (2) there is construction activity on Market Street in the project corridor that will restrict transit operations. If implemented because of condition #1, the temporary restrictions may apply to the block(s) on Mission Street where the travel-lane closure is occurring and up to two blocks adjacent to the affected block(s) in the eastbound and westbound directions. If implemented because of condition #2, the temporary restrictions may apply to the block(s) on Mission Street to which Muni routes will be diverted with the full lane closure on Market Street. If implemented, the temporary restrictions shall be in place only during the above-mentioned conditions. When such conditions no longer exist, the temporary restrictions shall be removed.

- Active Monitoring of Detours – When detours for transit, other vehicles, and/or bicyclists and pedestrians are implemented, the SFMTA shall require police officers or parking control officers to monitor critical locations along the detour to promote unobstructed travel for transit as well as other vehicles and/or bicyclists and pedestrians.
- Coordinated Construction Management Plan – If construction of the proposed project will overlap with any nearby project(s) involving temporary travel-lane closures or temporary sidewalk closures and/or using the same truck access routes in the project vicinity, the SFMTA shall require the construction contractor(s) to consult with various City departments, as deemed necessary by the SFMTA, Public Works, and the San Francisco Planning Department, to develop a coordinated construction management plan and minimize the severity of any disruptions regarding access to land uses and transportation facilities.
- Emergency Access Response Plan – The SFMTA shall require the contractor(s) to submit a segment-specific emergency access response plan as part of compliance with bid specifications. This plan shall include fire department and emergency service access to construction areas and maintaining emergency services, such as fire hydrants.
- Carpooling, Bicycling, Walking, and Transit Access for Construction Workers – The construction contractor(s) shall include methods that encourage construction workers to consider carpooling, bicycling, walking, or riding transit to the project corridor (e.g., providing secure bicycle parking spaces, participating in a free-to-employee or an employer ride-matching program from www.511.org, participating in an emergency ride-home program through the City [www.sferh.org], providing transit information to construction workers).
- Construction Coordination with Adjacent Businesses – During construction of the proposed project, access to all abutting businesses shall be maintained, either through the existing sidewalk or a reduced sidewalk area or temporary access ramp. Signs shall be installed, indicating that the businesses are “open during construction.” All temporary access ramps shall be in compliance with the ADA.
- Project Construction Updates for Adjacent Businesses and Residents – To minimize construction impacts on access, the project sponsor shall provide adjacent and nearby businesses and residents with regularly updated information regarding project construction, including construction activities, peak construction vehicle activities, travel-lane closures, and other lane closures. At regular intervals, to be defined in the construction management plan, a regular email notice shall be distributed by the project sponsor that

provides current construction information of interest to neighbors as well as contact information for specific construction inquiries or concerns.

- SM-TRA-2: All projects will implement traffic control measures sufficient to maintain traffic and pedestrian circulation on streets affected by construction of the project. The measures will also, at a minimum, be consistent with the requirements of San Francisco Municipal Transportation Agency (SFMTA)'s Blue Book. Traffic control measures may include, but not be limited to, flaggers and/or construction warning signage of work ahead; scheduling truck trips during non-peak hours to the extent feasible; maintaining access to driveways, private roads, and off-street commercial loading facilities by using steel trench plates or other such method; and coordination with local emergency responders to maintain emergency access. Any temporary rerouting of transit vehicles or relocation of transit facilities would be coordinated with SFMTA Muni Operations.
- SM-AES-1: All project sites will be maintained in a clean and orderly state. Construction staging areas will be sited away from public view, and on currently paved or previously disturbed areas, where possible. Nighttime lighting will be directed away from residential areas and have shields to prevent light spillover effects. Upon project completion, project sites on City-owned lands will be returned to their general pre-project condition, including re-grading of the site and re-vegetation or re-paving of disturbed areas to the extent this is consistent with Public Works Bureau of Urban Forestry policy and San Francisco Code. Project sites on non-City land will be restored to their general pre-project condition so that the owner may return them to their prior use, unless otherwise arranged with the property owner.
- SM-WQ-1: All projects will implement erosion and sedimentation controls to be tailored to the project site, such as fiber rolls and/or gravel bags around stormdrain inlets, installation of silt fences, and other such measures sufficient-to prevent discharges of sediment and other pollutants to storm drains and all surface waterways, such as San Francisco Bay, the Pacific Ocean, water supply reservoirs, wetlands, swales, and streams. As required based on project location and size, a Stormwater Control Plan (in most areas of San Francisco) or a Stormwater Pollution Prevention Plan (SWPPP) (in certain areas of San Francisco) will be prepared. If uncontaminated groundwater is encountered during excavation activities, it will be discharged in compliance with applicable water quality standards and discharge permit requirements. Groundwater contamination is addressed in item 6 (see Public Works Standard Construction Measures for Public Works Projects dated June 26, 2017).
- SM-GEO-1: The project manager will ensure that projects that project activities that could be affected by existing soil, slope, and/or geologic conditions will be screened for liquefaction, subsidence, landslide, fault displacement, and other geological hazards along the project corridor are engineered and designed as necessary to minimize risks related to safety and reliability due to such hazards. As necessary, geotechnical investigations will be performed.
- SM-AQ-1: All projects will comply with the Construction Dust Control Ordinance. Major construction projects that are estimated to require 20 or more days of cumulative days of work within the Air Pollutant Exposure Zone must comply with the additional clean construction requirements of the Clean Construction Ordinance (see Attachment B of Public Works Standard Construction Measures for Public Works Projects dated June 26, 2017).
- SM-NOI-1: All projects will comply with local noise ordinances regulating construction noise. Public Works shall undertake measures to minimize noise disruption to nearby neighbors and sensitive receptors during construction. These efforts could include using best available noise control technologies on equipment (i.e., mufflers, ducts, and acoustically attenuating shields),

locating stationary noise sources (i.e., pumps and generators) away from sensitive receptors, erecting temporary noise barriers, and other such measures.

During nighttime construction activities, the following shall apply: impact tools and vibratory pile drivers shall have intake exhaust mufflers and/or acoustically attenuating shields or shrouds recommended by the manufacturers and approved by the Director of Public Works; the construction contractor shall avoid using water blasters; the use of vehicles that are legally required to be equipped with backing warning alarms will be reduced to the extent feasible; and administrative controls as defined in the California Code of Regulations, Title 8 Sec. 1592 will be used for worker protection for backing movements by other vehicles. Hours of vibration-intensive activities, such as vibratory pile driving, shall be restricted to between 7:00 a.m. and 8:00 p.m.

- SM-NOI-2: Construction Vibration Control Procedures

  A. Where the project includes or is directly adjacent to a resource susceptible to vibration, as shown on project plans, the Contractor shall institute a vibration-monitoring program to protect such properties from excess vibration during demolition and construction activities associated with the project.

  B. The Contractor shall submit a Vibration Control Plan to San Francisco Public Works for review and approval, to be fully implemented upon approval.

     1. For purposes of this subsection, "limiting value" shall be:

        a. For Vibration Control Plans for historic buildings or historic structures, 0.12 inches per second peak particle velocity (in/sec PPV) for sustained vibration (e.g. impact pile drivers, vibratory equipment) in any direction, unless a greater value is approved in writing by San Francisco Public Works.

        b. For Vibration Control Plans for all other resources, 0.2 inches per second peak particle velocity (in/sec PPV) for sustained vibration (e.g. impact pile drivers, vibratory equipment) in any direction, unless a greater value is approved in writing by San Francisco Public Works.

     2. The Contractor's vibration-monitoring personnel shall include a Qualified Vibration Instrumentation Engineer approved by San Francisco Public Works. The Qualified Vibration Instrumentation Engineer shall:

        a. Be on site and supervise the initial installation of each vibration-monitoring instrument.

        b. Supervise interpretations of vibration-monitoring data.

     3. Contractor shall collect seismograph data prior to any vibration-producing demolition or construction activities to document background vibrations at each monitoring location. The background monitoring shall be performed for a minimum of two non-consecutive workdays, spanning the hours during which demolition and construction activities will take place. Monitoring shall consist of a continuous recording of the maximum single-component peak particle velocities for one-minute intervals, which shall be printed on a strip chart.

4. Contractor shall have seismographs in place and functioning at least 24 hours prior to any such activity within 200 feet of the monitoring locations. No significant vibration-producing activity shall occur within this zone unless the monitoring equipment is functioning properly, as determined by San Francisco Public Works.

5. Contractor shall monitor vibration during demolition and other significant vibration-producing construction activities as determined by San Francisco Public Works. This monitoring shall consist of a continuous recording of the maximum single-component peak particle velocities for one-minute intervals, which shall be printed on a strip chart. During the monitoring, Contractor shall document all events that are responsible for the measured vibration levels, and submit the documentation to San Francisco Public Works with the data.

6. All vibration monitoring data shall be recorded contemporaneously and plotted continuously on a graph by the data acquisition equipment. Each graph shall show time-domain wave traces (particle velocity versus time) for each transducer with the same vertical and horizontal axes scale.

7. The Contractor shall interpret the data collected, including making correlations between seismograph data and specific construction activities. The data shall be evaluated to determine whether the measured vibrations can be reasonably attributed to construction activities.

8. The equipment shall be set up in a manner such that an immediate warning is given when the peak particle velocity in any direction exceeds the Threshold Value in the previously submitted Vibration Monitoring Plan. The warning emitted by the vibration-monitoring equipment shall be instantaneously transmitted to the responsible person designated by Contractor by means of warning lights, audible sounds or electronic transmission.

9. If a Limiting Value is reached, the Contractor shall:

    a. Immediately notify San Francisco Public Works and suspend activities in the affected area, with the exception of those actions necessary to avoid exceeding the Limiting Value.

    b. Meet with San Francisco Public Works to discuss the need for response action(s).

    c. If directed by San Francisco Public Works during the above meeting that a response action is needed, submit within 24 hours a detailed specific plan of action based as appropriate on the generalized plan of action submitted previously as part of the vibration-monitoring plan.

    d. If directed by San Francisco Public Works, implement response action(s) within 24 hours of submitting a detailed specific plan of action, so that the Limiting Value is not exceeded.

10. Where the subject of the Vibration Monitoring Plan is a historic building or structure, Contractor shall engage a Qualified Historic Architect or Historic Preservation Professional to document and photograph the properties that are the subject of the Vibration Monitoring Plan to ensure structural damage does not result from construction activities that could cause ground vibration.

a. The post-construction survey and monitoring results will be evaluated to determine whether the new structural and/or architectural damage was caused by vibration due to Contractor's performance of this Work.

b. If, following completion of construction, changes in the architectural or structural conditions the properties that are the subject of the Vibration Monitoring Plan have occurred, Contractor shall restore the buildings to pre- construction conditions, and to the satisfaction of Public Works.

- SM-BIO-1: Public Works will comply with all local, State, and federal requirements for surveys, analysis, and protection of biological resources (e.g., Migratory Bird Treaty Act, Federal and State Endangered Species Acts, etc.). All project sites and the immediately surrounding area will be screened to determine whether biological resources may be affected by construction. If biological resources are present, a qualified biologist will carry out a survey of the project site to note the presence of general biological resources and to identify whether habitat for special-status species and/or migratory birds is present. If necessary, measures will be implemented to protect biological resources, such as installing wildlife exclusion fencing, establishing work buffer zones, installing bird deterrents, monitoring by a qualified biologist and other such measures. If tree removal is required, Public Works will comply with any applicable tree protection ordinance.

1.7.2 No-Build Alternative

The No-Build (No-Action) Alternative consists of those transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Consequently, the No-Build Alternative represents future travel conditions on Market Street without the Build Alternative; it is the baseline against which the Build Alternative will be assessed to meet National Environmental Policy Act (NEPA) requirements. Generally, the roadway configuration; surface transit, such as Muni service; streetscapes; commercial and passenger loading; vehicular parking; and utilities will remain in their current condition. Limited physical changes will be made on Market Street (e.g., regularly scheduled or emergency repairs, electrification of the two track switches on Market Street at 11th Street, replacement/repair of BART/Muni ventilation grates, additional concrete protection to bike lanes, refreshing existing crosswalk and other pavement markings, minor signal timing changes to improve vehicle progression, other minor physical changes to respond to maintenance or operational needs).

Reasonably foreseeable land use projects, plans, and transportation projects are included in the No-Build Alternative analysis, based on inputs from the City and County of San Francisco. These projects include development projects (e.g., residential, commercial, mixed-use projects), area plans (e.g., Market and Octavia Area Plan, Eastern Neighborhoods Rezoning and Area Plans) that will amend land use designations (e.g., plus zoning, height, bulk, etc.), and transportation/streetscape projects. Transportation projects that will overlap some portion of the project corridor include:

- Muni Forward
- Van Ness Improvement Project
- Geary Rapid Project
- Electrification of the two existing track switches on Market Street at 11th Street
- Replacement/repair of BART/Muni ventilation grates

- Addition of concrete protection to bike lanes
- Refreshing of existing crosswalk and other pavement markings
- Minor signal timing changes to improve vehicle progression

1.7.3 Alternatives Considered but Eliminated From Consideration

This section presents alternatives considered but eliminated from consideration. The evolution of the proposed project builds upon an extensive history of public outreach that has been conducted for the proposed project.

1.7.3.1 Early Design Concepts

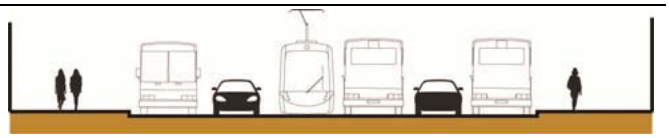
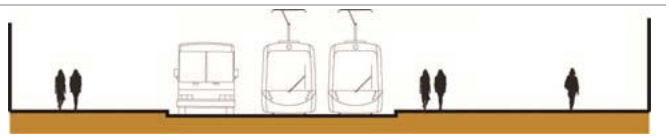
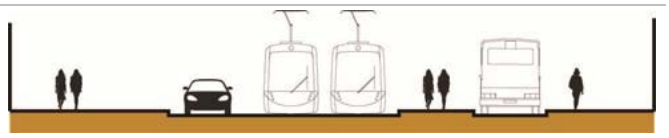
Formal public outreach for the proposed project's conceptual design began in early 2011. People from both the immediately adjacent neighborhoods and all over the city provided broad input through a series of coordinated workshops, online comments, social media, and other outreach venues. Three rounds of public outreach workshops and webinars were conducted from May 2011 to July 2013. Through the public outreach process, several design priorities and drivers were established in coordination with the proposed project's goals and publicly identified design drivers, which evolved over time to the purpose and need for the proposed project.

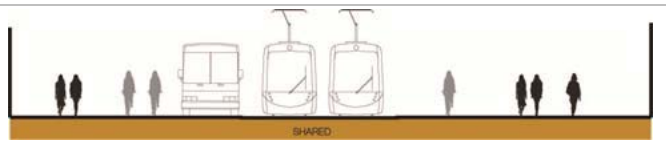
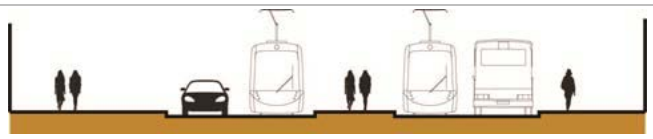
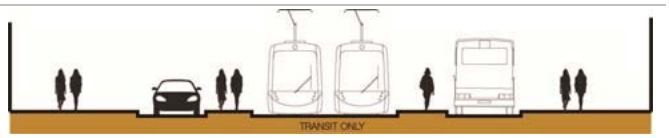
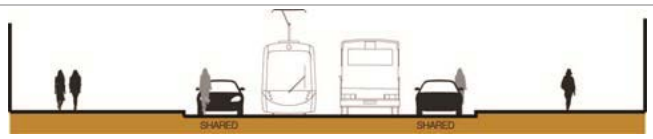
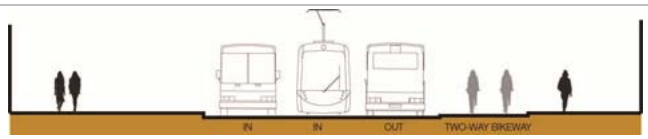
Based on the design priorities and design drivers, such as improving mobility and safety for bicyclists and pedestrians and improving transit speed, reliability, and capacity, 17 potential project corridor design concepts were identified for consideration.

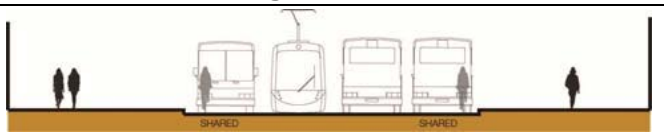
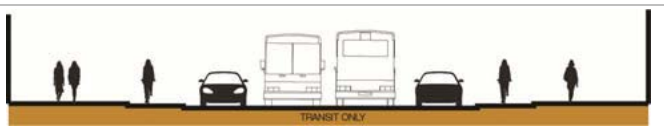
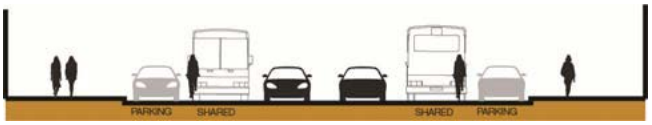
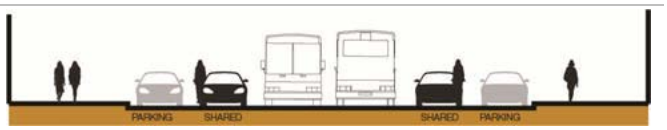
The 17 design concepts were evaluated by the interagency team at that time (Public Works, SFMTA, the San Francisco Planning Department, San Francisco County Transportation Authority, and SFPUC), based on their consistency with the proposed project's goals and compatibility with community-identified design priorities.

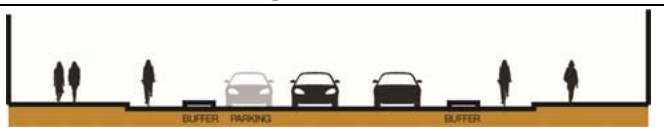
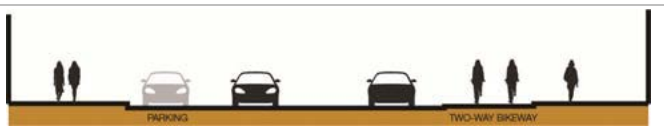
Of the 17 design concepts evaluated, 13 were focused primarily on Market Street streetspace allocation and/or allowable operations; four introduced proposed modifications of the parallel section of Mission Street. Table 1-8, below, provides summary information about the 17 design concepts, as excerpted from the 2013 *Better Market Street Final Report*. As shown in Table 1-8, the concepts contemplated major modifications to the allocation of streetspace. In particular, concepts 5 and 6 explored the possibility of reducing substantial portions of Market Street to two transit-only lanes (one in each direction) with or without the addition of multi-use lanes. Concept 5 would have implemented this solution between Van Ness Avenue and The Embarcadero; concept 6 would have extended from Fifth Street to The Embarcadero. Similarly, concept 10 contemplated condensing all transit operations (streetcar and bus) to two transit-only lanes.

Table 1-8. Stage I Initial Design Concepts

Design Concept Description	Cross-Section Drawing
I. Widen to Provide Total of Six Travel Lanes • Reduces sidewalk width to accommodate six travel lanes	
II. One Lane along Boarding Area, Two Lanes in Opposite Direction • Buses share the center transit-only lane where there are boarding islands; otherwise, there will be four lanes • Requires a new third-signal phase, resulting in shorter phases overall	
III. Replace Historic F-line with Modern High-Speed, ADA-accessible Tram • Maintain current street alignment but replace historic cars with modern tram cars	
IV. Limited Transit Turnarounds during Peak Hours and All Transit Operates in Transit-only Center Lanes • Center lanes would be transit only • During peak hours, limited number of bus lines would turn around at Market Street • F-line service would be supplemented with modern low-floor streetcars during peak to alleviate transit-transit conflicts and improve speed, reliability, and accessibility • Transit service would resume to operate as normal during off-peak hours but still in center lanes • Bicyclists would share curb lane with private vehicles, taxis, and loading	
V. Rail-only Service between Fifth Street and The Embarcadero, with Bicyclists and Pedestrians • All transit lines would be rerouted such that riders would alight at Market Street and Fifth Street and transfer to augmented Market Street rail service • Creates possibility of new significant transit node, with associated economic development potential and public realm activation • Could free up space along the curb to accommodate a bike lane and loading zones	

Design Concept Description	Cross-Section Drawing
VI. Rail-only Transit Service between Van Ness Avenue and The Embarcadero, with Bicyclists and Pedestrians • Remove all transit, except for F-line, supplemented by additional modern trams • Allows for flexibility in the streetscape design to accommodate bicyclists and pedestrians and capture Complete Street objectives	
VII. Single-Surface Shared Space between Fourth and Fifth Streets • Curbless shared space for all modes, with a paving treatment, street layout, and signage that encourages cooperative use of the space • Reflects prominence of this block in the city as the most-visited street in San Francisco • Captures public life potential of confluence with Powell Street, Hallidie Plaza, Westfield Mall, and Market Street	
VIII. Create Ramblas (i.e., large center medians, allowing active uses) and Realign Tracks with Center Boarding and Wide Center-street Public Spaces • Shift F-line to provide 20-foot center space along length of corridor to act as shared waiting space for center-running transit (F-line and bus routes) • For stretches without transit stops, space could be engaged with varied streetscape and recreational opportunities	
IX. Boulevard Layout, Local Access, and Center through Lanes • Maintains four lanes of traffic • Maximizes private vehicle access to buildings • Potential to improve quality of waiting experience for transit riders, depending on design of local-access lane	
X. Skip Stop • Transit concentrated into center lanes • Curbside lane shared by taxis, paratransit, private vehicles, and bicyclists	
XI. 3:1 Concept • Two inbound Market Street lanes and one outbound lane/couplet with Mission Street for a portion of Market Street's outbound transit • Two-way cycle tracks on Market Street	

Design Concept Description	Cross-Section Drawing
XII. Limited Auto Restriction and Shared Transit/Bicycle Lane • Transit-only center lanes • Auto restrictions, with curb lane shared by transit, paratransit/taxis, private autos, and bicycles	
XIII. Curbside Cycle track • Transit only center lanes • Auto restrictions, with curb lane shared by transit, paratransit/taxis, and private autos but not bicycles • Directional, separated bicycle facilities at mid-grade or sidewalk grade	
XIV. Mission Street Transit Effectiveness Project Moderate Concept with Side-running Bus Lanes • Miscellaneous features (e.g., extending right-turn lanes) • Bus stops: Extend existing bus zones, select stop consolidations, provide new boarding island at Transbay Transit Center (inbound) • Provide 24-hour transit-only lanes between Beale and 11th • No parking between 7:00 a.m. and 7:00 p.m.	
XV. Mission Street Transit Effectiveness Project Expanded Concept with Center-running Bus Lanes • Miscellaneous features (e.g., extending right-turn lanes, required right turns, queue jumps) • Bus stops: Extend existing bus zones, select stop consolidations, provide near-side boarding islands • Provide 24-hour transit-only lanes between Beale and 11th; center-running transit lane between Fremont and Sixth • No parking 24 hours a day between Fremont and Sixth	

Design Concept Description	Cross-Section Drawing
XVI. Mission Street Bikeway with One-way Cycle track on Each Side • Two 6- to 8-foot wide bikeways on each side of Mission Street, with two- to five-foot painted buffer • Floating parking on one side of the street • Introduce left-turns from Mission Street at select intersections • Move Muni 14-Mission line, Golden Gate Transit buses, and SamTrans lines to Market Street • Time traffic signals to prioritize bicycle progression along Mission Street	
XVII. Mission Street Bikeway with Two-way Cycle track on One Side • A 12- to 16-foot wide two-way bikeway on the north side of Mission Street • Curbside parking on the south side of Mission Street • Move Muni 14-Mission line, Golden Gate Transit buses, and SamTrans lines to Market Street • Time traffic signals to prioritize bicycle progression along Mission Street	

Cycle track = a class IV protected bikeway that is partially grade separated from motor vehicle traffic for use exclusively, or primarily, by bicycles
Source: City and County of San Francisco et al. 2013.

Of the 17 concepts in Table 1-8, concepts 12, 13, and 16 were carried forward for further analysis and are discussed in more detail below. The 14 other concepts were discarded from further development/exploration in 2013 (documented in the *Better Market Street Final Report*), based on conclusions by the project team and/or Technical Advisory Committee (i.e., the concepts were inconsistent with the design drivers, impractical because of cost and/or transit operations, and/or likely to introduce undesirable conflicts). As set forth in the *Better Market Street Final Report*, most of the concepts were dismissed for multiple reasons.

Concepts 12, 13, and 16 were further refined and evolved into three complete alternatives and two related design concepts, all described in detail below. These were considered the end products of Stage I of outreach. These alternatives and design concepts were subsequently refined and the subject of the initial study prepared for the proposed project in 2016. However, the project team continued its evaluation of these three alternatives and two design concepts as the environmental review phase progressed after publication of the initial study. As noted in the discussion of each alternative below, this evaluation following the initial study concluded that all three alternatives were infeasible or did not meet the project purpose and need because of the following key issues:

- Safety concerns regarding private vehicle operation on Market Street
- Substantial delays for surface transit

- Protection of bicyclists from vehicle conflicts
- Restriction or elimination of commercial and passenger loading on Market Street

Most of these alternatives and related design concepts did not avoid the proposed project's adverse effects on cultural resources and transportation.

Of the 13 concepts that were limited to potential modifications along Market Street, the vast majority entailed modifications to the streetscape (e.g., increasing the number of traffic lanes on Market Street, widening sidewalks, adding new medians or ramblas, converting the roadway and sidewalk to a single-level surface, adding separated bicycle lanes), with similar adverse effects on the Market Street Cultural Landscape District as well as a substantial construction period for implementation. Therefore, the concepts did not avoid the adverse construction-related transportation and noise effects.

Some of the concepts, such as concepts 3 and 10, contemplated operational changes, such as new tram service, within the current configuration of Market Street. Although such options may have avoided the adverse effects of the proposed project, particularly impacts on the cultural landscape district, they were rejected because they inadequately addressed the project purpose and need, particularly inclusion of a fully protected bicycle facility.

1.7.3.2 Alternatives Evaluated in CEQA Initial Study

Alternative 1: Market Street (Complete Street and Transit Priority Improvements)

Alternative 1: Market Street (Complete Street and Transit Priority Improvements) was evaluated in the 2016 initial study prepared for the proposed project. This alternative, along with alternatives 2 and 3, was developed as a result of the public outreach process that began in early 2011. In addition, two design concepts associated with this alternative were developed for the bicycle facilities on Market Street: Design Concept A and Design Concept B.

- Design Concept A would provide an enhanced version of the existing shared vehicle and bicycle lane, with the addition of painted sharrows (shared lane pavement markings) where a dedicated bicycle facility is not already present. This design concept was evaluated as Design Option A in the 2016 initial study prepared for proposed project.
- Design Concept B would provide a new raised cycle track (i.e., a class IV protected bikeway that would be partially grade separated from motor vehicle traffic for use exclusively, or primarily, by bicycles) along the entire length of Market Street, except where BART/Muni entrances or other obstructions would not allow it. The cycle track would be 3 to 4 inches higher than the roadway and would not have any horizontal separation from vehicles in the curb lane. Design Concept B also would provide a new protected cycle track on Valencia Street between Market and McCoppin streets. This design concept was evaluated as Design Option B in the 2016 initial study prepared for the proposed project.

This alternative would have prohibited private vehicles on Market Street between Steuart Street and Van Ness Avenue in the westbound direction and between 10th and Main streets in the eastbound direction.[11] In addition, this alternative would not have allowed commercial or passenger loading on Market Street, with the exception of paratransit users.

This alternative was rejected from further consideration because, based on the conclusions of pilot project analysis, the design of the bicycle facilities under both Design Concepts A and B would not meet the project need to address design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation. The shared vehicle and bicycle lane proposed as part of Design Concept A would not include a buffered bicycle facility and therefore would provide inadequate protection for bicyclists. The results of a 2015 SFMTA and Public Works pilot project for a bicycle facility, similar in concept to Design Concept B, indicated that there were safety issues for bicyclists because of commercial vehicles that block bikeways to perform loading activities, requiring bicycles to enter vehicle travel lanes. Therefore, neither design concept under Alternative 1 would meet needs for addressing design deficiencies related to bicycle safety. An additional reason this alternative was rejected from further consideration was because the loading restrictions associated with this alternative could result in the elimination of loading options for some businesses and residences and substantial loading impacts.

Alternative 2: Market Street – Moderate Option (Complete Street and Moderate Transit Priority Improvements)

This Alternative 2 was evaluated as Alternative 2: Market Street – Moderate Alternative (Complete Street and Moderate Transit Priority Improvements) in the 2016 initial study prepared for the proposed project. This alternative was the same as Alternative 1, except that Alternative 2 would have allowed commercial and passenger loading on Market Street. It also proposed slightly fewer private vehicle restrictions.[12]

Alternative 2 was rejected from further consideration because it would not meet the project need to address design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation. The design of the bicycle facilities (Design Concepts A and B) would be the same as under Alternative 1. As explained above, these facilities would not address design deficiencies related to bicycle safety, which would result in a continuation of conflicts among vehicles, bicyclists, and pedestrians under Alternative 2. These conflicts result in corresponding reductions in the performance of the surface transit system and bicycle facilities and therefore Alternative 2 would not meet the project need regarding a safer experience for pedestrians and bicyclists.

Alternative 3: Market Street + Mission Street (Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission)

This Alternative 3 was evaluated as Alternative 3: Mission Street (Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission) in the 2016 initial study prepared for the proposed project. This alternative would have provided the same

[11] As described in Section 1.5, *Existing Conditions*, private vehicles are not permitted on Market Street eastbound (inbound) between 10th and Main streets and westbound (outbound) between Steuart Street and Van Ness Avenue. Where permitted to travel on Market Street, vehicles are restricted from using transit-only lanes at all times. Eastbound private vehicles are required to turn right at 10th Street.

[12] Ibid

modifications to Market Street as described under Alternative 1, Design Concept A but would have also included modifications to Mission Street. Mission Street would have been reconfigured to include one travel lane in each direction (with right-turn pockets where feasible) as well as a new street-level bikeway in each direction. This alternative would have relocated all existing transit service on Mission Street between the Transbay Terminal and 11th Street (provided by SFMTA, Golden Gate Transit, and SamTrans) to Market Street. In addition, this alternative would have resulted in the removal of all loading spaces on Market Street and a significant number of loading spaces on Mission Street.

Alternative 3 was rejected from further consideration because it would not meet the project need to address design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation. Preliminary traffic analyses indicated that the rerouting of transit from Mission Street to Market Street would cause substantial delays for Muni routes 14/14R. This conflicts with the project need to provide faster and more reliable surface public transit. Furthermore, the design of the bicycle facilities (Design Concept A) is the same as the design under Alternative 1; as explained above, these facilities do not address design deficiencies related to bicycle safety. In addition, this alternative was rejected from further consideration because the loading restrictions could result in the elimination of loading options for some businesses and residences.

1.7.3.3 Alternatives Evaluated in CEQA EIR

The following alternatives were presented in Chapter 6, Alternatives, of the *Better Market Street Draft Environmental Impact Report*.

Alternative B: Full Preservation Alternative

The Full Preservation Alternative would minimize impacts to the Market Street Cultural Landscape Historic District by substantially reducing the scope of proposed project changes such that several priority 1 character-defining features of the landscape district would remain intact. Alternative B would omit many project-related alterations to physical features of Market Street. Accordingly, transit stop spacing and service, bicycle facilities, and commercial and passenger loading facilities would be similar to existing conditions. The F-Loop would not be constructed under this Alternative. Similarly, Path of Gold light standards would remain as existing. Alternative B would retain all existing curblines as well as all brick sidewalks and plazas. Existing trees in poor condition would be replanted with new trees to preserve the Platanus monoculture, selecting from one of two varieties, similar in character to the trees that would be removed but with greater disease tolerance. This alternative would have included the same roadway access changes for private vehicles and changes to on-street parking as the proposed project evaluated in the EIR.[13] Alternative B was rejected from further consideration because it would not meet the project purpose to make Market Street safer and more efficient for all modes of transportation, and would not meet the ancillary purposes of the project to replace infrastructure in the Market Street corridor that is reaching the end of its operational design life and to improve the accessibility of the corridor and quality of its streetscape environment.

[13] Ibid

Alternative C: Partial Preservation Alternative 1

Alternative 6 would modify/replace key components of the proposed project with other components intended to preserve and/or complement character defining features of the Market Street Cultural Landscape Historic District, but less expansively so than Alternative B. Alternative C would include more alterations to Market Street than Alternative B, but different in number/character than those associated with the proposed project. The color of sidewalk pavers would be as close as possible to the existing red brick. The size of the pavers would be uniform throughout the sidewalk. This is in contrast to the proposed project, which would use a variety of approved, accessible materials. Alternative C would replace the existing Platanus monoculture with trees of three to five genera that would have similar canopy shape and height as the existing Platanus. Although Alternative C would incorporate features intended to reference/complement certain character defining features of the landscape district (sidewalk paving and trees), it would still result in impacts to the eligible landscape district as a whole. Similar to the proposed project, Alternative C would add a sidewalk-level bikeway for the entirety of Market Street between Octavia Boulevard and Steuart Street. Alternative C would include partial restoration, reconstruction, and realignment of the Path of Gold light standards; existing traffic signals would be replaced; and transit stop spacing and service would be similar to the proposed project. The F-Loop would be constructed as part of this alternative. Alternative C was rejected from further consideration because it would only partially meet the ancillary project purpose of the project to improve the quality of the Market Street streetscape environment because this alternative does not reflect the desirable design and placemaking characteristics of the Build Alternative, specifically the use of sidewalk pavers that are distinct in color and pattern from the existing red brick material, and this alternative does not reflect the use of street tree species that provide more visual nuance and character relative to the existing monoculture of London plane trees.

Alternative D: Partial Preservation Alternative 2

Alternative D would modify/replace key components of the proposed project with the intent to preserve and/or complement character defining features of the Market Street Cultural Landscape Historic District. Alternative D would reduce impacts to the landscape district relative to the proposed project by reducing the scope of alterations/modifications to character defining features of the landscape district. Alternative D would generally retain streetscapes that would be similar to existing conditions on 22 block faces where no modifications to center boarding islands or curbside transit stops would occur. In contrast, 20 block faces of Market Street where modifications to center boarding islands and/or curbside transit stops are needed would see streetscape improvements similar to the proposed project. The existing Class II and Class III bicycle facilities would remain the same. Alternative D would include partial restoration, reconstruction, and realignment of the Path of Gold light standards; existing traffic signals would be replaced; and transit stop spacing and service would be similar to the proposed project. The F-Loop would be constructed as part of this alternative. Alternative C was rejected from further consideration because it would not meet the project purpose to make Market Street safer and more efficient for all modes of transportation, and would not meet the ancillary purposes of the project to replace infrastructure in the Market Street corridor that is reaching the end of its operational design life and to improve the accessibility of the corridor and quality of its streetscape environment.

1.7.3.4 Alternative E: Core Elements Alternative

Alternative E was developed in recognition that some project-related effects are not directly associated with core elements of the proposed project but with associated upgrades/replacements of

major infrastructure that exists beneath the roadway and sidewalk which would be replaced/upgraded as part of the proposed project. The elements of this alternative associated with roadway configuration, transit facilities and operations, and pedestrian and bicycle facilities would be the same as the proposed project. However, Alternative E would not include the sub-surface "state of good repair" infrastructure work proposed by the project. Removal of those elements would allow the core elements of the proposed project to proceed with lessened construction-related effects. Alternative E was rejected from further consideration because it would not meet the project purpose to make Market Street safer and more efficient for all modes of transportation, and would not meet the ancillary purposes of the project to replace infrastructure in the Market Street corridor that is reaching the end of its operational design life and to improve the accessibility of the corridor and quality of its streetscape environment.

1.8 PERMITS AND APPROVALS NEEDED

Project implementation will require numerous permits, licenses, agreements, and certifications (PLACs). Table 1-9, below, lists the anticipated PLACs that will be needed.

Table 1-9. Permits and Approvals

Agency	PLAC	Status
San Francisco Board of Supervisors	Approval of sidewalk legislation Approval of encroachment permit program to facilitate Streetlife Zone activity	Approvals anticipated following selection of construction contractor but before construction commences
San Francisco Public Works	Approval of tree removal and replanting in public right-of-way Approval of construction-period encroachment permits Approval of nighttime construction work, as needed	Approvals anticipated following selection of construction contractor but before construction commences
San Francisco Municipal Transportation Agency	Approval of changes to each bus route/streetcar line and stop location Approval of certain parking and traffic measures, in accordance with the San Francisco Transportation Code Special traffic permit for instances where work will not comply with Blue Book regulations or traffic routing specifications in a City contract	Approvals anticipated following selection of construction contractor but before construction commences
San Francisco Planning Commission or Planning Department	Approval of general plan referral (required for any proposed changes to curb-to-curb width of public right-of-way. Review by Citywide Planning Division; ratification by Board of Supervisors)	Approvals anticipated following selection of construction contractor but before construction commences

Agency	PLAC	Status
San Francisco Public Utilities Commission	Approval of stormwater control plan Approval of erosion and sediment control plan Approval of construction site runoff control permit Batch discharge permit (required by SFPUC, per the 2009 *Keep It On Site!* guide) for the release of any construction wastewater, including groundwater, into the City's combined sewer system Permit from the Wastewater Enterprise Collection System Division for discharges to the combined sewer system National Pollutant Discharge Elimination System permit for construction activities, issued by SFPUC; this includes contractor's preparation of a stormwater pollution prevention plan	Approvals anticipated following selection of construction contractor but before construction commences
San Francisco County Transportation Authority	Approval of some funding sources	Approvals anticipated prior to selection of construction contractor
San Francisco Historic Preservation Commission or Planning Department	Approval of certificates of appropriateness regarding work involving planning code–designated districts or landmarks	Approvals anticipated following selection of construction contractor but before construction commences
Bay Area Rapid Transit District	Approval of permit to enter for construction of temporary and permanent improvements over subway structures along Market Street.	Approvals anticipated following selection of construction contractor but before construction commences
State Historic Preservation Officer (SHPO)	Coordination for Memorandum of Agreement (MOA)	Approvals anticipated prior to issuance of Finding of No Significant Impact
Caltrans	Approval of encroachment permit	Approvals anticipated following selection of construction contractor but before construction commences

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Chapter 2

Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures

This chapter explains the impacts that the project and design option would have on the environment. It describes the regulatory setting, existing environment that could be affected by the project, potential impacts (environmental consequences), and proposed avoidance, minimization, and/or mitigation measures. Potential impacts are broken up into construction impacts, which are temporary impacts during construction, and operational impacts, which occur permanently during project operation. The environmental resource discussions presented in this chapter are based on the technical studies cited at the beginning of each discussion.

As discussed in Chapter 1, Public Works requires all construction contracts to include Public Works' standard construction measures (SMs) in bid packages for the purposes of protecting human health and safety as well as environmental resources. The SMs that apply to the proposed project are related to the following: visual/aesthetics, geotechnical considerations, air quality, water quality, traffic, noise, bird protection, tree conservation, and environmentally sensitive areas. As applicable, the SMs for the aforementioned environmental resource areas are presented in Chapter 1. Avoidance and minimization measures are coded as AMM and are presented in the resource areas in this chapter. A summary of the AMMs is included in Appendix F.

As part of the scoping and environmental analysis carried out for the project, the following environmental issues were considered but no adverse effects were identified. As a result, there is no further discussion about these issues in this document.

- **Coastal Zone:** The project corridor is not within a coastal zone; therefore, no effect on this resource is anticipated (Data Basin 2018). In addition, the project corridor is not within San Francisco Bay Conservation and Development Commission jurisdiction.
- **Wild and Scenic Rivers**: There are no wild and scenic rivers within the project corridor, as defined by the National Wild and Scenic Rivers System. The closest wild and scenic rivers are Big Sur River in Big Sur and the American River in Sacramento, each of which is more than 75 miles from the project corridor (National Wild and Scenic Rivers System 2018). Therefore, no effect related to wild and scenic rivers is anticipated.
- **Farmlands/Timberlands:** There are no farmlands or timberlands within the project corridor; therefore, no effect on these resources is anticipated.
- **Relocations and Property Acquisitions:** All proposed project elements will be constructed entirely within public right-of-way areas; most project elements will be constructed within the operational public right-of-way. The proposed project will not require any relocations or the acquisition of any private property. Therefore, no effect related to relocations or property acquisitions is anticipated.

- **Wetlands and Other Waters**: Because of the extent of urban development and sub-surface filling in the project corridor, there are no federally protected wetlands or other waters of the United States (U.S.) within the project corridor. Therefore, no effect on wetlands or other waters is anticipated.

The following topics were evaluated in technical studies prepared for the project, but determined to have no potential for adverse environmental impacts. As a result, there is no further discussion about these issues in this document.

- **Hydrology and Floodplain**: As discussed in the *Location Hydraulic Study and Floodplain Report Summary Forms* prepared for the proposed project (September 2019), the project is not located in San Francisco City's 100-year Storm Flood Risk Zone. The project will not change the overall land use within the project corridor, will not increase impervious areas, will not change the 100-year water surface elevation, will not have an impact on sea level rise, and no fill will be added to the existing base floodplain. Therefore, the risk associated with the project will be low and no effect related to hydrology and floodplain is anticipated.
- **Paleontology**: Paleontological sensitivity of the geologic units in the project corridor was assessed using the Impact Mitigation Guidelines Revisions Committee's guidance in the Standard Guidelines (Society of Vertebrate Paleontology 2010). A review of the local landscape history and geoarchaeological studies reveals that the project corridor contains fill at the ground surface and is underlain by dunes and tidal flats. It is anticipated that the fill and tidal flats have limited sensitivity for buried resources, while the dunes have higher sensitivity for buried resources. However, the project corridor is in a highly developed urban area. Consequently, there is limited potential for unique paleontological resources, sites, or geologic features within the project corridor. This, in combination with the relatively shallow depth of excavation necessary to implement most of the proposed project elements, indicates that it is unlikely an environment conducive to the deposition and preservation of fossils would be encountered. The implementation of Caltrans' Standard Specification 14-7 to stop work in case of the accidental discovery of paleontological materials would ensure that there would be no effect on paleontological resources.
- **Land Use:** The proposed project will occur within the existing right-of-way and will not result in changes in land use designations or zoning. As discussed in the *Community Impact Assessment Technical Memorandum* prepared for the proposed project (March 2020), the area plans in the project corridor contain goals, objectives, and policies that support improving the project corridor to create a high-quality pedestrian experience overall. In each of the plans, the common themes include increasing transit, bicycle, and pedestrian facilities and amenities, improving safety, increasing connectivity, adding streetscaping and open space, limiting parking, and rerouting traffic off Market Street. The proposed project will be consistent with the San Francisco Transportation Plan, Transit Center District Plan, Downtown Area Plan, Market and Octavia Area Plan, Hub Plan, San Francisco Bicycle Plan, Transit First Policy, Better Streets Plan, Muni Forward, Proposition M, Regional Transportation Plan/Sustainable Communities Strategy, 2017 Clean Air Plan, or other plans or policies. In addition, implementation of the proposed project will be consistent with allowable uses in the San Francisco Planning Code and the objectives and policies of the transportation, environmental protection, and air quality elements of the San Francisco General Plan elements. The proposed project will provide faster and more reliable surface public transit along Market Street and maximize transit to support planned growth. The proposed project will improve pedestrian safety, comfort, and mobility by creating

pedestrian through-zones and a separate furnishing zone, streetscaping, and Streetlife Zones. Bicycle facilities will be improved throughout the corridor, including a separated bikeway with buffer and bicycle signals and parking. Therefore, the proposed project is consistent with and supports applicable land use plans and no land use-related effects are anticipated.

- **Growth:** As discussed in the *Community Impact Assessment Technical Memorandum* prepared for the proposed project (March 2020), the two-phase approach to the evaluation of growth-related impacts described in Chapter 5 of the Caltrans Environmental Handbook Volume 4 has been applied in this analysis (California Department of Transportation 2006). The first phase, called a "first-cut screening," is designed to determine the likely growth potential effect and whether further analysis of the issue is necessary. The second phase involves the additional analysis of growth in the event the first-cut screening analysis suggests growth impacts would occur.

  Based on the analysis in the *Community Impact Assessment Technical Memorandum*, the project does not include the construction of any new housing, commercial or industrial land uses, and therefore will not directly stimulate growth. The proposed project will support planned growth in the study area and the revitalization of the mid-Market Street corridor. The transit improvements planned as part of the proposed project (e.g., the proposed modified transit stop spacing, increased length and width of existing transit boarding islands, and F-loop) will contribute to a slight improvement in transit travel times and will improve accessibility for users of the transit system, which may result in a slight increase in the rate of growth that is already occurring and planned for under the 2014 Housing Element of the San Francisco General Plan. While the rate of growth in the study area may slightly accelerate as an indirect result of the proposed project, this is not expected to result in any impacts on resources of concern (e.g., cultural resources and historic buildings in the study area) because of the limitations placed by the city's planning documents and zoning code, the city's planning controls and environmental processes include protections for resources of concern, and the fact that the proposed project will not increase the amount or location of growth in the study area.

- **Natural Communities:** There are no natural communities of concern in the Biological Study Area (BSA). The 30-acre BSA is the project footprint (i.e., the project corridor). The project is required to comply with the Urban Forestry Ordinance for significant or street trees that will be removed by the project. Public Works will require construction contractors to adhere to standard construction measures during construction of the proposed project, including compliance with all local, state, and federal requirements for surveys, analysis, and protection of biological resources. Therefore, no effect on natural communities of concern is anticipated.

- **Plant Species:** Based on California Natural Diversity Database (CNDDB) search results, the California Native Plant Society Inventory, and the USFWS list for the U.S. Geological Survey (USGS) 7.5-minute San Francisco North quadrangle, 51 special-status plant species were determined to have been documented within the project region. All of these species were eliminated from further consideration in relation to the BSA due to the absence of habitat (e.g., scrub, vernal pools, cliffs, alkaline soils, riparian, wetland, chaparral, marsh, rivers, and streams), unsuitable elevation, lack of habitat connectivity to source populations, and/or the developed and disturbed condition of the BSA. Public Works will require construction contractors to adhere to standard construction measures during construction of the proposed project, including compliance with all local, state, and federal requirements for surveys, analysis, and protection of biological resources. Therefore, no effect on federally listed or endangered plant species is anticipated.

- **Threatened and Endangered Wildlife Species:** Based on a reconnaissance-level survey of the project corridor, the BSA contains no suitable habitat for federally or state-listed wildlife species, including candidate and fully protected species. The BSA is entirely developed with concrete and asphalt surfaces and contains no natural landscapes, seminatural landscapes, or parks. Based on CNDDB search results and the USFWS list for the USGS 7.5-minute San Francisco North quadrangle, 17 federally or state-listed wildlife species were determined to have been documented within the project region. All of these species were eliminated from further consideration in relation to the BSA due to the absence of habitat (e.g., scrub, vernal pools, cliffs, alkaline soils, riparian, wetland, chaparral, marsh, rivers, and streams), unsuitable elevation, lack of habitat connectivity to source populations, and/or the developed and disturbed condition of the BSA. Several federally or state-listed special status wildlife species occur within 5 miles of the BSA, but have no potential to occur in the BSA. Additionally, most of these occurrences are now considered extirpated by the CNDDB. Public Works will require construction contractors to adhere to standard construction measures during construction of the proposed project, including compliance with all local, state, and federal requirements for surveys, analysis, and protection of biological resources. Therefore, no effect on federally listed or state-listed species is anticipated.
- **Invasive Species:** Based on the reconnaissance-level survey of the project corridor, the BSA contains no existing invasive plant or wildlife species, as defined by Executive Order 13112, which requires federal agencies to combat the introduction or spread of invasive species in the United States. The BSA is entirely developed with concrete and asphalt surfaces and contains no natural landscapes, seminatural landscapes, or parks. Public Works will require construction contractors to adhere to standard construction measures during construction of the proposed project, including compliance with all local, state, and federal requirements for surveys, analysis, and protection of biological resources. As such, there is no potential habitat for invasive plant or wildlife species in the BSA, and no effect on invasive species is anticipated.

2.1 HUMAN ENVIRONMENT

2.1.1 Parks and Recreational Facilities

2.1.1.1 Affected Environment

Information in this section is from the *Community Impact Assessment Technical Memorandum* prepared for the proposed project (March 2020). Where other data sources were used, citations have been provided.

Parks and Recreational Facilities

The San Francisco Recreation and Parks Department owns and maintains approximately 3,433 acres of publicly accessible recreational and open space in the city (City and County of San Francisco 2014). Together with the approximately 2,457 acres of open space properties that are owned and managed by other City, state (255 acres, including the Candlestick Point State Recreation Area and Mount Sutro), and federal (1,642 acres, including the Presidio, Ocean Beach, Fort Funston, Fort Mason, Lands End, Sutro Heights, and China Beach) agencies, approximately 5,890 acres of parkland and open space are available within the city. These publicly owned open spaces make up approximately 20 percent of the city's land area and include a variety of parks, walkways, landscaped areas, recreational facilities, and

unmaintained open space. Overseen by the Recreation and Park Commission, the San Francisco Recreation and Parks Department administers more than 220 parks, playgrounds, and open spaces, including two outside the city limits. The system includes 25 recreation centers, nine swimming pools, five golf courses, and numerous tennis courts, baseball diamonds, soccer fields, and other sports venues. Included in the San Francisco Recreation and Parks Department's responsibilities are the Marina Yacht Harbor, San Francisco Zoo, and Lake Merced Complex.

City residents benefit from the Bay Area's regional open space system. Regional resources include public open spaces managed by the Midpeninsula Regional Open Space District in Santa Clara, San Mateo, and Santa Cruz counties; the East Bay Regional Park District in Alameda and Contra Costa counties; and the National Park Service in Marin and San Mateo counties. In addition to state park and recreational areas throughout the area, thousands of acres of watershed and agricultural lands are preserved as open spaces by water and utility districts or in private ownership; however, these lands are generally not accessible to the public.

Table 2.1.1-1 lists the 21 parks and street-level plazas located within one block of the project corridor.[1] None of the parks and street-level plazas listed in Table 2.1.1-1 are subject to the National Trails System Act (P.L. 90-543, as amended through P.L. 116-9) or the Park Preservation Act.

Table 2.1.1-1. Parks and Street-Level Plazas Within One Block of the Project Corridor[1]

Name	Type	Location	Ownership
1. Ferry Plaza	Plaza	Behind the 1 Ferry Building	Public
2. Bay Trail	Trail	The Embarcadero	Public
3. Harry Bridges Plaza/Ferry Building Square	Plaza	Across The Embarcadero from Ferry Building	Public
4. Sue Bierman Park	Park	Washington and Clay streets	Public
5. Embarcadero Plaza[2]	Plaza	1 Market Street	Public
6. Robert Frost Plaza	Plaza	Market, California, and Drumm streets	Public
7. Beale Street Plaza	Plaza	Beale Street	Private
8. Mechanics Monument Plaza	Plaza	Market and First streets	Public
9. One Bush Plaza	Plaza	Market, Sansome, and Bush streets	Private
10. McKesson Plaza	Plaza	Market and Montgomery streets	Private
11. Crocker Plaza	Plaza	Market, Post, and Montgomery streets	Private
12. Yerba Buena Gardens	Park	750 Howard Street	Public
13. Mark Twain Plaza	Plaza	673 Market Street	Public
14. Jessie Square	Park	Mission and Jessie streets	Private
15. Union Square	Plaza	Post and Stockton streets	Public
16. Hallidie Plaza	Plaza	Powell and Market streets	Public
17. United Nations Plaza	Plaza	Market and Hyde streets	Public

[1] The project corridor is located in a heavily urbanized area. Thus, this analysis considers parks and street-level plazas within one block of the project corridor rather than the standard 0.5-mile radius.

Name	Type	Location	Ownership
18. Civic Center Plaza/ Joseph Alioto Piazza (including Helen Diller Civic Center Playground)	Park/Plaza	Larkin and Grove streets	Unknown
19. Page and Laguna Mini Park	Mini-Park	Page and Laguna streets	Public
20. SoMa West Dog Park	Park	Valencia and Otis streets	Public
21. SoMa West Skate Park	Park	Valencia and Otis streets	Public

Note:
[1] Parks and plazas indicated as privately owned are privately-owned public open spaces that are publicly accessible spaces in forms of plazas, terraces, atriums, small parks, and snippets which are provided and maintained by private developers.
[2] Formerly known as Justin Herman Plaza.

Parks listed in Table 2.1.1-1 which are within, or immediately adjacent to, the project corridor are described briefly below.

Ferry Plaza – The 1.85-acre plaza is located behind the 1 Ferry Building. The plaza contains public art, bicycle rentals, and a weekly farmers market. The public plaza is maintained by the Port of San Francisco.

Bay Trail – The Class 1 multi-use trail is a total of 500 miles planned to extend around SF Bay. Currently, 350 miles built along The Embarcadero. The trail is publicly owned and within the jurisdiction of the Association of Bay Area Governments and the Metropolitan Transportation Commission.

Harry Bridges Plaza/Ferry Building Square – The 1.9 acre plaza is located at The Embarcadero. The plaza contains public art, bicycle rentals, a war memorial, and an open-air market. The public plaza is maintained by the Port of San Francisco.

Sue Bierman Park – The 4.3-acre park is located on Clay Street and The Embarcadero. The park includes benches, walking trails, and play structures. The public park is managed and maintained by the San Francisco Recreation and Parks Department.

Embarcadero Plaza[2]—The 1.2-acre plaza is at the end of Market Street and The Embarcadero across from the Ferry Building. The plaza includes the Vaillancourt Fountain, located in the lower portion of the plaza. The plaza also contains landscaped areas with seating, as well as a children's play area and bocce courts. The plaza is owned by the Port of San Francisco, but is managed and maintained by the San Francisco Recreation and Parks Department. Access to the plaza is via Market Street and The Embarcadero.

Robert Frost Plaza—The small, triangular plaza is just outside of the BART and Muni Embarcadero stations at the corner of Drumm and Market streets. The middle of the plaza contains a small plaque dedicated to Robert Frost, as well as a four-faced clock and advertising kiosk. The plaza is paved with a few scattered trees. Access to the plaza is via Market, California, and Drumm streets. San Francisco Public Works manages and maintains the plaza.

[2] Formerly known as Justin Herman Plaza.

Beale Street Plaza – The small plaza is located on Beale Street. The Bechtel Museum is centrally located in the plaza. Benches and landscaping are also present in this public plaza, which is privately owned.

Mechanics Monument Plaza—The approximately 0.1-acre triangular plaza is at the intersection of Market and First streets. The centerpiece of the plaza is the Mechanics Monument, which is a large bronze sculpture that was originally erected in 1901. The plaza is small and completely paved. Access to the plaza is via Market, First, and Bush streets. San Francisco Public Works manages and maintains the plaza.

One Bush Plaza—The sunken, triangular plaza is at the intersection of Market, Sansome, and Bush streets. The plaza is 1.3 acres and contains a circular building. The plaza is landscaped with scattered trees and sloped groundcover. The plaza is paved with geometric patterns of river rock and slate and surrounded by a stone wall. Access to the plaza is via a set of limestone steps that connect to Market Street. The plaza is a privately owned public open space.[3]

McKesson Plaza—The plaza is at the intersection of Market and Montgomery streets. The plaza is minimally landscaped, sunken, and contains several retail and dining businesses. The plaza provides access on Market Street to the Montgomery BART and Muni stations. Access to the plaza is via steps at Post and Market streets. The plaza is a privately owned public open space.

Crocker Plaza—This plaza is on the street level above McKesson Plaza at the intersection of Market and Montgomery streets. The small plaza is completely paved and provides seating on steps that surround the McKesson Plaza. The steps that create the plaza's octagonal platform are used for seating and are backed by an iron fence. The plaza provides access to the BART station. Access to the plaza is via Market, Post, and Montgomery streets. The plaza is a privately owned public open space.

Yerba Buena Gardens – The 5-acre park is located on Howard Street and includes open space, performance facilities, public art, and cafes. The Office of Community Investment and Infrastructure maintains the publicly owned park.

Mark Twain Plaza – The small plaza is located on Market Street at the intersection of Annie Street. The plaza contains landscaping. San Francisco Public Works manages and maintains the plaza.

Jessie Square – The small public park is located at Mission and Jessie streets. The park is adjacent to the Jewish Contemporary Museum and contains benches, reflective pools, and a tiered terrace. The Office of Community Investment and Infrastructure maintains the publicly owned park.

Union Square – The 2.6 acre square is located on Post and Stockton streets. The square contains a performance stage, seasonal ice skating, a restaurant and café, and picnic areas. The San Francisco Recreation and Parks Department manages the publicly owned park.

Hallidie Plaza—The plaza is a three-level, sunken gathering space below Powell and Market streets. The plaza contains a monument to Andrew Hallidie, which is located at the turntable for the Powell Street cable-car line. Additionally, the plaza includes the Benjamin H. Swig Pavilion. The space is minimally landscaped and contains no seating areas. The plaza also provides access to the Powell

[3] Privately-owned public open spaces are publicly accessible spaces in forms of plazas, terraces, atriums, small parks, and snippets which are provided and maintained by private developers.

BART and Muni station, and access is via Powell and Market streets. San Francisco Public Works manages and maintains the plaza.

United Nations Plaza—The 2.6-acre plaza is at the intersection of Hyde and Market streets. The plaza contains several historic statues and a fountain. The plaza is landscaped with grassy areas and has scattered seating. The plaza provides access to the Civic Center BART and Muni station. Access to the plaza is via Market and Hyde streets. San Francisco Public Works manages and maintains the plaza.

Civic Center Plaza/ Joseph Alioto Piazza (including Helen Diller Civic Center Playground)— The 4.53-acre park/plaza is located at Larkin and Grove streets and contains a parking garage, recreational facilities, open space, and landscaping. The park/plaza is a public open space maintained by the San Francisco Recreation and Parks Department.

Page and Laguna Mini Park—The 0.2-acre mini-park is located at Page and Laguna streets. The park includes community gardens with ornamental beds and apple trees, a winding path, and benches. The park is a publicly owned park maintained by the San Francisco Recreation and Parks Department.

Soma West Dog Park—The 0.6–acre park is located between Valencia and Otis streets under Central Freeway. The park includes a dog play area with an artificial lawn. It is a publicly owned park maintained by San Francisco Public Works.

Soma West Skate Park—The 0.6–acre park is located between Valencia and Otis Streets under Central Freeway. The park includes a skate park with skateboarding structures. It is a publicly owned park maintained by San Francisco Public Works.

Bicycle Routes and Facilities

In addition to parks and recreational facilities, several existing bicycle facilities are within and near the project corridor. Existing bicycle facilities within the project corridor consist of dedicated lanes or shared lanes that are marked with sharrows, depending on location. There is a protected sidewalk-level bikeway with plastic safe-hit posts as well as partially raised bikeways in the project corridor between Gough Street and halfway between Ninth and Eighth streets in the eastbound direction and between Eighth Street and Octavia Boulevard in the westbound direction. Sharrows are painted in the curb lanes at all other locations on Market Street to indicate that bicycles and vehicles share these lanes. Valencia Street has an existing road-level bikeway in each direction between Market and McCoppin streets.

Near the project corridor, class II or class IV bicycle lanes are provided on The Embarcadero and 2nd, Turk, Seventh, Eighth, Grove, Polk, 11th, and Valencia streets and on Golden Gate Avenue.[4] A class III

[4] Class I bikeways are bike paths with exclusive rights-of-way for use by bicyclists and pedestrians. Class II bikeways are bicycle lanes striped within the paved areas of roadways and established for the preferential use of bicycles. They include a striped, marked, and signed bicycle lane buffered from vehicle traffic. These facilities are located on roadways and reserve 4 to 6 feet of space exclusively for bicycle traffic. Class III bikeways are routes that allow bicyclists to share travel lanes with vehicles and may include sharrow markings. A class IV bikeway is an exclusive bicycle facility that is separated from vehicular traffic and parked cars by a buffer zone (also referred to as a protected bicycle lane).

shared lane bicycle route is provided on Steuart, Battery, Sansom, Sutter, Post, Fifth, McAllister, Larkin, 10th, and Page streets, and on Octavia Boulevard.

2.1.1.2 Environmental Consequences

Construction Impacts

Build Alternative

Construction activities associated with the Build Alternative and design option may temporarily disrupt access for recreational users of adjacent and nearby parks. However, alternate pedestrian detours will be provided so access to these recreational facilities is maintained during construction. Bicycle access will be temporarily detoured at some locations or along the entire corridor to streets such as Mission Street, Howard Street, and/or Folsom Street during some periods of construction. Bicycle facility changes will be completed in multiple stages to maintain access where possible.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor. Thus, there will be minimal impacts on parks and recreational facilities under the No-Build Alternative.

Operational Impacts

Build Alternative

The Build Alternative and design option will modify transit stop spacing and add new stop locations along the project corridor. Increased opportunities will be provided throughout the length of the project corridor for passive recreation through streetscapes and bicycle and pedestrian facilities. In general, the Build Alternative and design option will have beneficial impacts on recreation by improving bicycle, and pedestrian facilities and access, and creating additional opportunities for passive recreation throughout the length of the project corridor.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Thus, there will be no impacts on parks and recreational facilities under the No-Build Alternative.

2.1.1.3 Section 4(f)

As discussed in Appendix B, *Draft Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations*, (May 2020), 28 parks and recreational facilities, including Class 1 paths, were evaluated relative to Section 4(f) requirements. Embarcadero Plaza, Robert Frost Plaza, Mechanics Monument Plaza, Mark Twain Plaza, and United Nations Plaza, are located in the project corridor that overlaps portions of these parks and will

result in *de minimis* impacts. None of the remaining 23 parks or recreational resources are located adjacent to the project corridor, so the project will not result in impacts on any of the other 23 parks and recreational facilities: no land from the resources will be acquired for the project, no land within the parks will be required for temporary construction easement, access will not be disrupted, and no aesthetic, air quality, noise, or vibration impacts will result from project implementation.

The Section 4(f) analysis considered other resources and plazas as not being eligible for Section 4(f) protection as recreation resources, because it is privately owned (One Bush Plaza, McKesson Plaza, Crocker Plaza, and Beale Street Plaza) or because the school facilities have no joint use agreement for public use (Larkin Street Youth Services Academy).

2.1.1.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.1.2 Community Impacts

2.1.2.1 Community Character and Cohesion

Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, established that the federal government use all practicable means to ensure for all Americans safe, healthful, productive, and aesthetically and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). The Federal Highway Administration (FHWA) in its implementation of NEPA (23 USC 109[h]) directs that final decisions on projects are to be made in the best overall public interest. This requires taking into account adverse environmental impacts, such as destruction or disruption of human-made resources, community cohesion, and the availability of public facilities and services.

Affected Environment

Information in this section is from the *Community Impact Assessment Technical Memorandum* prepared for the proposed project (March 2020). Where other data sources were used, citations have been provided.

The project corridor consists of the 2.2 miles of Market Street between Octavia Boulevard and The Embarcadero in the city and county of San Francisco, spanning the Downtown/Civic Center, South of Market, and Financial District neighborhoods. Census tracts (CTs) are typically used to determine the community impact assessment study area for projects in rural areas, and block groups (BGs), or individual blocks, are used for projects in urban areas. The proposed project will be located on a 2.2-mile stretch of Market Street in the city, which is densely developed. Therefore, for the purposes of this analysis, the study area is the 17 BGs that intersect the project corridor (CT 061500 BG 1, CT 017601 BG 5, CT 012402 BG 1, CT 012402 BG 2, CT 012501 BG 1, CT 012501 BG 2, CT 016802 BG 1, CT 017601 BG 4, CT 020100 BG 1, CT 020200 BG 1, CT 017601 BG 3, CT 017601 BG 1, CT 017601 BG 2, CT 017700 BG 2, CT 010500 BG 2, CT 011700 BG 1, and CT 011700 BG 2), as shown in Figure 2.1.2-1, p. 2.1.2-3.

There are five districts along the project corridor, each with a unique character: Embarcadero, Financial, Retail, Civic Center/Mid-Market, and the Hub. The Embarcadero district includes the eastern end of the project corridor and stretches from The Embarcadero to Fremont Street. The portion of the study area in the Embarcadero district is the waterfront terminus of Market Street and it includes plazas, parks, and urban recreation along the waterfront. As one travels west, the district is comprised of tall, multi-level skyscrapers that typically contain ground floor retail with office space above. Key landmarks in this district include the Ferry Building and Embarcadero Plaza. Users of this district include tourists, retail shoppers, workers, and transit riders.

The Financial district stretches from Fremont to Third streets. This district is defined by tall commercial buildings and large-footprint buildings and facades. It is the most popular destination for weekday users of Market Street, such as workers and transit riders, and the quietest during evenings and weekends. Key landmarks in this district include the Palace Hotel at New Montgomery.

The Retail district extends from Third to Fifth streets and is the main shopping district of the city, attracting tourists, workers, and retail shoppers to shops, department stores, hotels, and offices. The district consists of large and medium-scale retail and commercial buildings and hotels, many

retaining their historic character. The district offers users connectivity to Union Square to the north of the project corridor as well as the Westfield San Francisco Center, Hallidie Plaza, Moscone Plaza, and the Yerba Buena Arts District south of the project corridor.

The Civic Center/Mid-Market district extends from Fifth Street to Van Ness Avenue. The Mid-Market area includes varied heights of buildings, changing storefront occupancy, and buildings under development. This area is experiencing the most dynamic changes in the study area. Historic buildings like the Orpheum Theatre and the Warfield Theatre are key landmarks that identify this area as an entertainment district. In the Civic Center area, taller buildings comprise the intersection of Market Street and Van Ness Avenue, but the district also has low-rise buildings that preserve views of City Hall. Large footprint, mid-rise commercial buildings dominate the south side of the project corridor within this area. Key landmarks include the Civic Center, United Nations Plaza, San Francisco Main Library, San Francisco Federal Building and the various arts/cultural destinations that existing around the area. Users of this district include tourists, retail shoppers, workers, and transit riders.

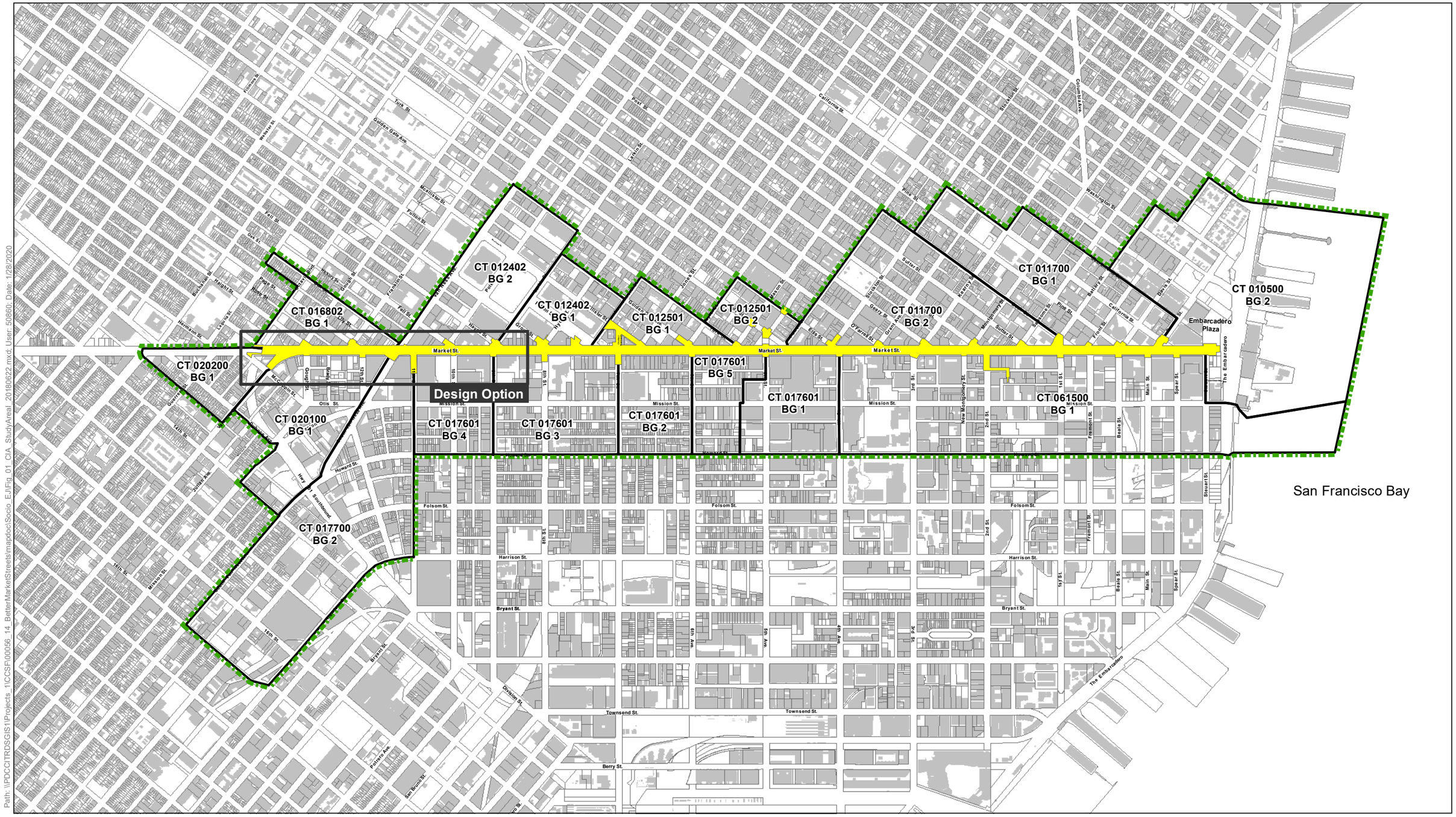
The Hub district extends from Van Ness Avenue to Octavia Boulevard and includes the western end of the project corridor. This district has a greater variety of architectural character than the other districts. This district includes narrow building fronts reflecting the narrow lot sizes and emphasizing the fine-grain character of the district. The scale of the buildings, combined with the mix of uses, provides more of a neighborhood feel than other districts along the project corridor. Users of this district are more likely to be residents and workers.

Population

According to the 2012–2016 American Community Survey, the population of the study area was approximately 23,460, representing 2.8 percent of the city's 850,282 residents. There are no specific growth projections available for the study area. The city, which includes the study area, is expected to grow to 1,048,803 by 2040 (California Department of Finance 2018). As of 2016, the civilian workforce within the City of San Francisco as a whole was 746,834 with an unemployment rate of 6.2% and a median household income of $87,701. The civilian workforce within all BGs in the study area was 14,186 and the unemployment rate within the study area ranged from 0% to 15.8%. Household median income within all BGs in the study area ranged from $0 to $173,149. Of the City's total population in 2016, the two largest racial/ethnic groups are White, at approximately 41.2%, and Asian, at approximately 33.5%, while persons of Hispanic or Latino origin of any race made up the next largest group at approximately 15.3%. Minority percentages within the study area range from 30.3% to 76.9%, and the City's average percent of minority residents was 54.5% in 2016. Between 2.6 and 41.3 percent of the population within the study area are below the poverty level, while the City's percentage of population below the poverty level was 12.5% in 2016.

Residential Conditions

While the Market Street corridor is known for business activity and tourism, the study area does contain a number of residents and households. Table 2.1.2-1 shows the housing characteristics of the study area as compared to the City as a whole. The study area contains households with a lower average household size than the City, indicating less families live in the study area than in other parts of the City. Most of BGs in the study area also contain housing units that are predominately renter-occupied as opposed to owner-occupied, indicating a population that may move apartments more frequently. This is in contrast to the City which has a higher percentage of owner-occupied housing units. The study area also has a number of BGs with a high percentage of vacant housing units as compared to the City.



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Better Market Street Project

Source: Parcels, City and County of San Francisco 2014; Streets, City and County of San Francisco 2014; Building Footprints, City and County of San Francisco 2011; US Census Bureau, American Community Survey 2016

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Project Corridor
Study Area
Census Block Groups Intersected by Project Corridor

Figure 2.1.2-1
Community Impact Assessment Study Area

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Table 2.1.2-1. Housing Characteristics for the City and the Study Area in 2016

Area (Census Tract and Block Group)	Total Households	Average Household Size	Housing Units					Occupied Housing Units			
			Total	Occupied	%	Vacant	%	Owner Occupied	%	Renter Occupied	%
City of San Francisco	353,287	2.33	383,676	353,287	92	30,389	8	128,698	36	224,589	64
CT 061500 BG 1	1,210	1.34	1,808	1,210	67	598	33	219	18	991	82
CT 017601 BG 5	756	2.01	929	756	81	173	19	54	7	702	93
CT 012402 BG 1	568	1.34	674	568	84	106	16	0	0	568	100
CT 012402 BG 2	596	1.46	632	596	94	36	6	0	0	596	100
CT 012501 BG 1	1,435	1.75	1,380	1,435	97	35	3	20	1	1,325	99
CT 012501 BG 2	834	1.43	1,241	834	67	407	33	42	5	792	95
CT 016802 BG 1	640	1.45	729	640	88	89	12	162	25	478	75
CT 017601 BG 4	763	1.82	915	763	83	152	17	0	0	763	100
CT 020100 BG 1	654	1.71	780	654	84	126	16	287	44	367	56
CT 020200 BG 1	666	1.63	755	666	88	89	12	118	18	548	82
CT 017601 BG 3	1,391	1.74	1,845	1,391	75	454	15	222	16	1,169	84
CT 017601 BG 1	0	0	0	0	0	0	0	0	0	0	0
CT 017601 BG 2	1,520	1.56	1,841	1,520	83	321	17	58	4	1,462	96
CT 017700 BG 2	677	2.36	694	677	98	17	2	88	13	589	87
CT 010500 BG 2	1,163	1.50	1,393	1,163	83	230	17	137	12	1,026	88
CT 011700 BG 1	450	1.80	490	450	92	40	8	17	4	433	96
CT 011700 BG 2	611	1.35	818	611	75	207	25	31	5	580	95

Source: U.S. Census Bureau, 2012–2016 American Community Survey, 5-Year Estimates.

Economic Conditions and Business Activity

Workers and Retail

Between 2020 and 2040, about 88,270 jobs are expected to be created in San Francisco. Job growth is expected to be strongest in the professional and managerial services industry (53,830 new jobs), followed by the health and educational services category (23,800 new jobs) and the arts, recreation, and other services segment (25,460 new jobs) (City of San Francisco 2015). San Francisco has a higher percentage of commuters than the rest of the San Francisco Bay Area counties. As of 2010, San Francisco commuters held 27.3 percent of the jobs in the city; by 2020, it is estimated that commuters will hold up to 43 percent of the jobs in San Francisco (City of San Francisco 2015). The office sector is the largest employer, with 231,908 jobs. The retail and industrial sectors had 106,305 and 75,637 jobs, respectively. The cultural/institutional sector also had a large number of jobs, with 132,851 employees as of 2012 (City of San Francisco 2015).

The employment characteristics of the existing population are derived from the 2012–2016 American Community Survey. Of the city's total population, the unemployment rate is 6.2 percent, and the median household income is $87,701. Table 2.1.2-2 shows the total population, civilian labor force, unemployment rate, and median household income for the city and the study area as of 2016.

Table 2.1.2-2. Employment Characteristics for the City and the Study Area in 2016

Area (Census Tract and Block Group)	Total Population	Civilian Labor Force	Unemployment Rate	Median Household Income
City of San Francisco	850,282	746,834	6.2%	$87,701
CT 061500 BG 1	1,626	1,437	3.7%	$173,149
CT 017601 BG 5	1,582	788	6.9%	$20,104
CT 012402 BG 1	1,060	535	2.3%	$40,438
CT 012402 BG 2	873	712	15.8%	$105,287
CT 012501 BG 1	2,388	964	8.7%	$19,874
CT 012501 BG 2	1,272	510	12.3%	$14,470
CT 016802 BG 1	972	768	2.7%	$86,471
CT 017601 BG 4	1,408	556	0.0%	$19,265
CT 020100 BG 1	1,261	836	3.1%	$113,992
CT 020200 BG 1	1,085	863	0.0%	$100,714
CT 017601 BG 3	2,454	1,709	3.0%	$81,840
CT 017601 BG 1	0	0	0.0%	0
CT 017601 BG 2	2,390	1,219	6.2%	$12,164
CT 017700 BG 2	1,623	1,123	13.0%	$82,625
CT 010500 BG 2	1,750	1,013	5.6%	$115,625
CT 011700 BG 1	835	541	6.9%	$59,643
CT 011700 BG 2	881	612	8.7%	$48,454

Source: U.S. Census Bureau, *2012–2016 American Community Survey, 5-Year Estimates*.

The types and sizes of the businesses in the study area vary widely, from large office buildings and government buildings in the Financial District and Downtown/Civic Center neighborhoods to small shops and businesses near Octavia Street in the southern end of the study area. These businesses currently use existing loading zones and on-street metered parking for loading/unloading deliveries. Loading zones are located on both sides of Market Street throughout the project corridor. There are currently 23 loading zones within the project corridor, 20 of which are for commercial loading only; the remaining three serve a mix of passenger and commercial loading and typically have the capacity for one to three 30-foot trucks.

Tourism

In 2018, the total number of visitors in San Francisco is estimated to have been 25.8 million, up 1.2% from 2017 (San Francisco Travel 2019). Total direct visitor spending reached $9.3 billion in 2018, up 2.3% from 2017 (San Francisco Travel 2019). These spending estimates include all goods and services purchased directly by visitors while in the city of San Francisco, not including meetings/conventions direct spend. This tourism supported 82,538 local jobs, up 1 percent from the previous year (Li 2019). The study area contains a number of tourist attractions, including Civic Center Plaza and City Hall, United Nations Plaza, San Francisco Public Library, numerous theaters and event venues, Union Square, Yerba Buena Center for the Arts, the San Francisco Museum of Modern Art, and Embarcadero Plaza and the Ferry Building.

Community Cohesion and Neighborhood Characteristics

Market Street (i.e., the project corridor) is on one of the busiest surface streets in the city. The area is densely developed with a variety of urban land uses. Much of Market Street is lined with office buildings and retail; high-density residences are also in the study area but primarily one block off Market Street. The proposed project's northeastern limit is The Embarcadero, in the Financial District. The primary land uses in the Financial District are associated with the large office buildings. There are also several parks/plazas, ground-floor retail establishments, restaurants, and Bay Area Rapid Transit (BART)/San Francisco Municipal Transportation Agency (SFMTA, or Muni) stations. To the southwest is the Retail District, which includes Union Square and Westfield Mall north of Market Street and Yerba Buena Gardens south of Market Street. This is the main shopping district in the city, with a variety of department stores and shops, but it also includes hotels and offices. Hallidie Plaza is also in this district as well as the cable car turnaround. The district also contains BART/Muni stations. The Mid-Market/Tenderloin District contains several landmark hotels as well as commercial and office uses. This district also contains a notable amount of vacant land and empty storefronts. The Civic Center District contains the Civic Center, the San Francisco Main Library, and other government buildings. This district contains United Nations Plaza and several BART/Muni stations. The Octavia District contains smaller-scale buildings and mixed-use lots. This district has more neighborhood qualities than the other districts in the study area as well as several Muni stations. This district also contains a notable amount of vacant lots and empty storefronts.

There are a number of community facilities within or near the study area, including but not limited to 18 parks and plazas (e.g., United Nations Plaza, Hallidie Plaza, and One Bush Plaza) and 19 schools (e.g., City College of San Francisco's Downtown Center, Civic Center, and Gough Street locations).

Market Street is the most important multi-modal transportation corridor in the city. It provides three levels of rail transit (i.e., ground level and two underground levels) and serves more than a dozen local bus routes. More than 400,000 people per day travel the Market Street corridor by transit

(San Francisco Municipal Transportation Agency 2018). The majority of Muni and BART riders travel either to the Civic Center or the Financial District, the areas with the highest employment density in the city. Although Market Street is predominantly a transit- and pedestrian-oriented street, it also has considerable cross traffic. At its eastern end, Market Street is affected by automobiles traveling to and from the San Francisco–Oakland Bay Bridge.

Unsheltered Populations

A number of homeless people may occupy the study area at any given time. Therefore, every two years, the City conducts a point-in-time count and survey of homeless people in the city of San Francisco, including both unsheltered and publicly sheltered homeless persons. The most recent count was conducted in 2017. The number of individuals recorded in the 2017 point-in-time count was 7,499 for the entire city of San Francisco. Compared to the 2015 count, this reflects a 1 percent decrease. The number of unsheltered individuals recorded in the general street count was 3,840. Furthermore, the supplemental youth count identified an additional 513 unsheltered persons. The total number of unsheltered persons counted on January 26, 2017 was 4,353 (Applied Survey Research 2017).

The project will be located largely in Districts 3 and 6, as described in the point-in-time count, which recorded a combined total of 4,069 unsheltered and publicly sheltered homeless persons, more than half the total in the entire city. The number of unsheltered persons counted in Districts 3 and 6 was 2,016, 46 percent of the total number of unsheltered persons counted in the city in 2017 (Applied Survey Research 2017). The study area could contain a portion of these 2,016 unsheltered persons.

Environmental Consequences

Construction Impacts

Build Alternative

Residential Conditions

Impacts on local residents will occur during construction, and will include construction noise, dust, and temporary changes in access, all of which will cause temporary inconveniences to residents. However, there are very few residences located directly on Market Street; the majority are located along the blocks north and south of Market Street. This means that temporary construction noise and dust will be less noticeable to residents because they are not directly adjacent to construction activities.

Construction activities will also temporary affect access for commercial vehicles, taxis, bicycles, and pedestrians across and along Market Street, which will necessitate detours and alternate routes to avoid construction areas. At this time the specific approach to construction of the proposed project has not been determined. However, the proposed project will most likely be constructed in staggered multiple-block segments. The size and character of the construction zone will be shaped by construction operations and standing safety regulations, such as the *California Manual on Uniform Traffic Control Devices and the City's Regulations for Working in San Francisco Streets, eighth edition* (also known as the "Blue Book"). Temporary detours for bicyclists, pedestrians, and transit will be provided to maintain access to existing businesses for the duration of construction. Pedestrian access throughout the corridor will be preserved at all times. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain Americans with

Disabilities Act compliance. Market Street construction zones will vary in size but will always be separated from traffic and pedestrians by a buffer that will include a temporary barrier. All openings in the street and sidewalk will be closed by backfilling and paving or by plating over to provide a safe and adequate passageway for bicyclists, motorists, transit, and pedestrians. The staggered construction phasing plan will minimize impacts to local residents.

Economic Conditions and Business Activity

Impacts on local businesses and, therefore, the neighborhoods, will occur during construction, including construction noise, dust, and temporary changes in pedestrian access and loading. Construction of the Build Alternative and design option will begin in 2020 and occur at up to seven location-specific segments along Market Street over a six- to 14-year period, including inactive periods. Construction is expected to last two to three years per segment. In general, construction-related activities will typically occur between 7:00 a.m. and 5:00 p.m. on weekdays. Nighttime and weekend construction activities will occur as well to expedite the schedule; minimize disruptions to peak-period commutes, by all modes; and facilitate track replacement and construction within intersections. Construction staging will occur on the street, either within or near the segment where construction is occurring. The size and character of the construction zone will be shaped by specific construction operations and standing safety regulations, such as the *California Manual on Uniform Traffic Control Devices* and the City and County of San Francisco's (City's) *Regulations for Working in San Francisco Streets* (also known as the "Blue Book").

Construction zones will always be separated from traffic and pedestrians by a buffer that includes a temporary barrier. All openings in the street and sidewalk will be closed by backfilling and paving over or installing plating to provide a safe and adequate passageway for bicyclists, commercial vehicles, taxis, transit, and pedestrians. During construction, commercial loading activities may take place on adjacent streets and/or during restricted hours along Market Street. Loading within an active construction zone will not be permitted at any time. Loading areas within active construction zones will be relocated as close to the construction zone as practical. Temporary loading zones may be possible in some circumstances. Temporary detours for bicyclists, commercial vehicles, taxis, pedestrians, and transit will be provided to maintain access to businesses for the duration of construction.

Traffic and Transportation

Construction of the Build Alternative and design option will temporarily affect transit, bicyclists, pedestrians, loading, taxis, and commercial vehicles because of temporary construction street closures and detours, which will temporarily affect the community character of the area and cause temporary inconveniences for users of the area and local business. During the construction period, vehicular traffic on the segment of Market Street where construction is occurring will be restricted to public transit and paratransit vehicles only. All other commercial vehicles and taxis on Market Street will be detoured to other streets. Furthermore, the detours will change, depending on the location of the segment where construction is occurring. Transit access along Market Street and within the segment where construction is occurring will be maintained, but some transit stops may be temporarily relocated and/or terminated. In addition, detours may be required along some transit routes for the duration of construction to maintain access to businesses for the duration of construction. These will be identified in the traffic control and detour plans developed prior to final design and construction.

Pedestrian access throughout the corridor will be preserved during construction, including access to existing or relocated transit stops and adjacent land uses. However, periodic sidewalk, plaza, or crosswalk closures will occur during sidewalk reconstruction and utility work. Where intersection crosswalks are closed, pedestrians will be detoured to the nearest intersection. Bicycle access on Market Street may be temporarily detoured at some locations, or the entire corridor, to Mission Street, Howard Street, and/or Folsom Street. Where bicyclists are detoured to other streets, warning signs will be posted. Although bicycle facility changes will be completed in multiple stages to maintain access where possible, general accessibility for bicyclists on Market Street will be affected during project construction. Section 2.1.4, *Traffic and Transportation/ Pedestrian and Bicycle Facilities*, provides more information regarding traffic impacts during construction.

Unsheltered Populations

Construction activities within the study area have the potential to affect homeless persons who may be present within the corridor. The start of construction in any given location along the corridor will require homeless persons to move from that area to a different location in the city, which could increase the homeless population in other areas of the city. However, there is not adequate data about this population to draw conclusions about the number of people that could be affected.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative includes limited construction activity within the Market Street project corridor. Therefore, there will be minimal impacts on community cohesion and character.

Operational Impacts

Build Alternative

Residential Conditions

After construction is complete, local residents will experience the benefits of the proposed project, such as an improved streetscape and pedestrian realm, safer bicycle travel, and improved transit efficiency. See the Traffic and Transportation subsection below for a description of vehicular operation changes that will affect local residents.

Economic Conditions and Business Activity

The Build Alternative and design option will relocate or remove the 23 loading zones on Market Street to create approximately 22 new loading zones, thereby reducing the number of loading zones on Market Street by one. The new loading zones, which will be at sidewalk level and have a mountable curb, will be available for loading and unloading during off-peak hours. During peak hours, the loading zones will be used as additional bikeway space. In addition, time-of-day restrictions on loading and unloading will be in place.

The Build Alternative and design option will increase the number of cross-street and alleyway commercial loading spaces by 198. However, some activities may require carting deliveries farther between the loading space and the destination. At locations where existing bays will be eliminated and loading demand will exceed the available supply of spaces, demand will generally be accommodated at existing or proposed commercial loading spaces within 400 feet of the existing bays.

On the south side of Market Street, between Fourth and Fifth streets, where a recessed bay will be eliminated, three buildings fronting Market Street have off-street loading facilities that may be used to accommodate the loading demand currently accommodated on Market Street. In addition, on-street commercial loading spaces on the west side of Fourth Street could serve ground-floor uses. The addition of commercial loading spaces on cross and side streets will accommodate loading activities on those streets and remove conflicts associated with double parking within bicycle lanes, shared lanes, or mixed-flow vehicle lanes.

The project will remove 61 spaces on adjacent cross and side streets. This is approximately 4.5 percent of the approximately 1,350 metered spaces within one block of Market Street to the north and south. Targeted outreach to businesses in the project corridor will take place to accommodate the loading/unloading needs of each business. Therefore, although the proposed project will reduce the on-street loading supply, the loading demand will still be accommodated and will not result in vehicles double parking in travel lanes or bicycle lanes to conduct loading activities. In addition, any potential negative effects individual businesses may experience from changes in loading will be offset by increased economic activity from increased transit/bicycle/pedestrian access along Market Street. This will result in a net benefit for local businesses.

Although loading/unloading patterns for businesses will change, overall, the Build Alternative and design option project will benefit businesses by enhancing public transit and access for bicyclists and pedestrians. The proposed project will draw visitors by enhancing the pedestrian realm and encourage activities such as shopping or enjoying nighttime events.

Traffic and Transportation

During operation of the Build Alternative and design option, transit, commercial vehicle, taxi, bicycle, and pedestrian circulation will all be improved. The additional bicycle and pedestrian facilities and streetscape improvements will enhance community character. The proposed project will also change some bus stop locations along the corridor, which will increase walking distances for some transit users. This will be offset by more frequent bus service, using the local stop spacing maintained in the curb lane. Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, provides more information related to traffic impacts.

Potential operational effects on neighborhoods and businesses are described in their respective resource topic sections of this document.

Unsheltered Populations

Operation of the project would not involve any changes in enforcement of existing laws regarding loitering or camping within the project corridor, it would not change the amount of housing in the study area, nor would it change access to existing housing. Therefore there would be no adverse effects to unsheltered populations during operation of the Build Alternative.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Therefore, there will be minimal impacts on community cohesion and character under the No-Build Alternative during operation.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to community character and cohesion are minimized under the proposed project:

- AMM-CI-1: Loading areas within active construction zones will be relocated as close to the construction zone as practical. Temporary loading zones may be possible under some circumstances.
- AMM-CI-2: A Construction Management Plan will be developed and implemented by the City and San Francisco Public Works (Public Works) to manage detours for vehicles, transit, bicyclists, and pedestrians. Temporary detours for bicyclists, pedestrians, and transit will be provided to maintain access to existing businesses for the duration of construction. Pedestrian access throughout the corridor will be preserved at all times. Periodic sidewalk, plaza, or crosswalk closures may occur during sidewalk reconstruction and utility work and detours will be provided. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain Americans with Disabilities Act compliance.
- AMM-CI-3: Caltrans Standard Specification Section 14 will be implemented. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust.
- AMM-CI-4: Additional Control Measures for Construction Emissions of Fugitive Dust will be implemented. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of Caltrans' Standard Specifications and Special Provisions, a National Pollutant Discharge Elimination System permit, biological opinions, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project.
- AMM-CI-5: Implement the following measures, per Caltrans Standard Specifications Section 14-8.02, to minimize temporary noise effects from construction (California Department of Transportation 2015):
    - Control and monitor noise resulting from work activities.
    - Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.
- AMM-CI-6: Nighttime Construction Vibration Control Measures will be implemented. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan will evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan will also require vibration levels at vibration-sensitive

receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources.

- AMM-CI-7: Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access changes, routing and scheduling.
- AMM-CI-8: Utility lines will be relocated by the utility companies, in coordination with the City. Potentially affected utility customers will be notified of potential service disruptions before relocation.
- AMM-CI-9: Targeted outreach to businesses in the project corridor will take place to accommodate the loading/unloading needs of each business.
- AMM-CI-10: San Francisco Public Works will conduct targeted outreach to homeless persons along the project corridor to notify them at least three days in advance of construction activities.
- AMM-CI-11: San Francisco Public Works will work with local or nonprofit groups that assist the homeless, such as the Department of Homelessness and Supportive Housing – Homeless Outreach Team, to move homeless persons from construction zones to shelters, transitional housing, or supportive housing to the extent feasible.

2.1.2.2 Environmental Justice

Regulatory Setting

All projects involving a federal action (funding, permit, or land) must comply with Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President William J. Clinton on February 11, 1994. This EO directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. Low income is defined based on the Department of Health and Human Services poverty guidelines. For 2019, this was $25,750 for a family of four.

All considerations under Title VI of the Civil Rights Act of 1964, and related statutes, have also been included in this project. Caltrans' commitment to upholding the mandates of Title VI is demonstrated by its Title VI Policy Statement, signed by the Director, which can be found in Appendix C of this document.

Affected Environment

Information in this section was drawn from the *Community Impact Assessment Technical Memorandum* that was prepared for the proposed project (March 2020). The study area is the same as that analyzed for effects on community character and cohesion in Section 2.1.2.1. The following criteria determine if a BG is an environmental justice population:

1. The total minority population of the BG is more than 50% of the total population or is substantially higher than the city or county where it is located; or
2. The proportion of the BG population that is 100% below the poverty level is substantially higher than of the city or county where it is located.

Because the City has a minority population over 50%, the substantially higher criteria (i.e. >15%) has been used in this analysis.

Race and Ethnicity

A racial and ethnic profile of the existing population is derived from the 2012–2016 American Community Survey. The ethnic groups that were analyzed were in the Hispanic or Latino (of any race, White, Black or African American, Native American, Native Hawaiian/Pacific Islander, Other Race, and Two or More Races categories.

Of the city's total population, the two largest racial/ethnic groups are white, at approximately 41.2 percent, and Asian, at approximately 33.5 percent. Hispanic or Latino persons of any race make up the next largest group, at approximately 15.3 percent. Table 2.1.2-3 shows the minority populations in the city and the study area in 2016. Figure 2.1.2-1 shows the 17 BGs that intersect the project corridor and make up the study area.

Minority and low-income populations exist throughout the study area. There is no clear pattern with respect to minority concentrations. Several BGs in the study area have concentrations of certain racial/ethnic groups that are higher than those of the city as a whole. CT 012402 BG 1, CT 017601 BG 3, and CT 017700 BG 2 have higher percentages of persons of Hispanic or Latino origin of any race (37.1 percent, 20.1 percent, and 34.1 percent, respectively). CT 017601 BG 5, CT 012501 BG 1, CT 012501 BG 2, CT 017601 BG 3, and CT 017601 BG 2 have higher percentages of black/African American residents than the city as a whole, with the highest population in CT 012501 BG 2, at 17.6 percent. CT 020100 BG 1 has a Native American population of 5.4 percent. Several BGs, including CT 017601 BG 5, CT 12501 BG 1, and CT 017601 BG 4, have higher percentages of Asian residents (57.6 percent, 45.4 percent, and 65.6 percent, respectively). CT 012402 BG 2 has a native Hawaiian/Pacific Islander population (7.3 percent). CT 020200 BG 1 has a population identified as two or more races totaling 14.3 percent. There are BGs throughout the study area that contain environmental justice populations (including higher percentages of minority residents or higher poverty levels than those of the city as a whole). Overall, the racial/ethnic make up of study area varies and is as richly diverse as the city as a whole.

With respect to income, U.S. Census Bureau data collected at the BG level show that per capita income in the study area varies but is generally lower than that of the city as a whole (Table 2.1.2-3).

Table 2.1.2-3. Race and Ethnicity Data for the City and the Study Area (2016)

				Not Hispanic or Latino															
Area (Census Tract and Block Group)[1]	**Total**	**Hispanic or Latino (of any race)**	**%**	**White**	**%**	**Black or African American**	**%**	**Native American**	**%**	**Asian**	**%**	**Native Hawaiian /Pacific Islander**	**%**	**Other Race**	**%**	**Two or More Races**	**%**	**% Minority[2 3]**
City of San Francisco	850,282	129,898	15.3	350,088	41.2	43,758	5.1	1,427	0.2	285,040	33.5	2,922	0.3	4,217	0.5	32,921	3.9	54.5
CT 061500 BG 1	1,626	162	10.0	856	52.6	0	0.0	0	0.0	608	37.4	0	0.0	0	0.0	0	0.0	47.4
CT 017601 BG 5	1,582	87	5.5	261	16.5	171	**10.8**	0	0.0	912	**57.6**	0	0.0	47	3.0	104	6.6	**74.0**
CT 012402 BG 1	1,060	393	**37.1**	347	32.7	83	7.8	0	0.0	224	21.1	0	0.0	7	0.7	6	0.6	66.0
CT 012402 BG 2	873	90	10.3	440	50.4	47	5.4	0	0.0	216	24.7	64	**7.3**	0	0.0	16	1.8	47.8
CT 012501 BG 1	2,388	472	19.8	551	23.1	271	**11.3**	11	0.5	1,083	**45.4**	0	0.0	0	0.0	0	0.0	**76.9**
CT 012501 BG 2	1,272	179	14.1	479	37.7	224	**17.6**	0	0.0	373	29.3	0	0.0	0	0.0	17	1.3	61.0
CT 016802 BG 1	972	107	11.0	567	58.3	12	1.2	21	2.2	244	25.1	0	0.0	0	0.0	21	2.2	39.5
CT 017601 BG 4	1,408	75	5.3	340	24.1	44	3.1	0	0.0	924	**65.6**	0	0.0	0	0.0	25	1.8	**74.1**
CT 020100 BG 1	1,261	121	9.6	509	40.4	102	8.1	68	**5.4**	395	31.3	0	0.0	37	2.9	29	2.3	54.4
CT 020200 BG 1	1,085	106	9.8	601	55.4	0	0.0	0	0.0	223	20.6	0	0.0	0	0.0	155	**14.3**	30.3
CT 017601 BG 3	2,454	494	**20.1**	705	28.7	319	**13.0**	0	0.0	698	28.4	0	0.0	0	0.0	238	9.7	61.6
CT 017601 BG 1	0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0	0.0	0.0
CT 017601 BG 2	2,390	319	13.3	833	34.9	246	**10.3**	0	0.0	876	36.7	0	0.0	46	1.9	70	2.9	60.3
CT 017700 BG 2	1,623	553	**34.1**	628	38.7	12	0.7	7	0.4	236	14.5	0	0.0	71	4.4	116	7.1	49.8
CT 010500 BG 2	1,750	72	4.1	920	52.6	145	8.3	0	0.0	523	29.9	0	0.0	0	0.0	90	5.1	42.3
CT 011700 BG 1	835	127	15.2	295	35.3	0	0.0	0	0.0	369	44.2	0	0.0	35	4.2	9	1.1	59.4
CT 011700 BG 2	881	167	19.0	278	31.6	73	8.3	0	0.0	341	38.7	0	0.0	0	0.0	22	2.5	65.9

Source: U.S. Census Bureau, *2012–2016 American Community Survey, 5-Year Estimates.*

1. The study area comprises the BGs through which the project corridor passes.

2. Minority populations include the Hispanic or Latino (of any race), Black or African American, Native American, Asian, and Native Hawaiian/Pacific Islander categories.

3. A **bold** number indicates an environmental justice population.

Income and Poverty

The region's high cost of living presents substantial challenges for low-income residents (Metropolitan Transportation Commission 2017). Table 2.1.2-4 shows income and poverty levels within the city and the study area in 2016.

Table 2.1.2-4. Income and Poverty in the City and the Study Area (2016)

Area (Census Tract and Block Group)	Total Population Determined for Poverty	Population 100% Below Poverty Level	Percent of Population 100% Below Poverty Level[1]
City of San Francisco	836,561	104,180	12.5
CT 061500 BG 1	1,626	43	2.6
CT 017601 BG 5	1,582	432	**27.3**
CT 012402 BG 1	761	116	15.2
CT 012402 BG 2	873	131	15.0
CT 012501 BG 1	2,388	667	**27.9**
CT 012501 BG 2	1,192	380	**31.9**
CT 016802 BG 1	972	162	16.7
CT 017601 BG 4	1,408	440	**31.3**
CT 020100 BG 1	1,257	185	14.7
CT 020200 BG 1	1,085	69	6.4
CT 017601 BG 3	2,454	361	14.7
CT 017601 BG 1	0	0	0
CT 017601 BG 2	2,390	987	**41.3**
CT 017700 BG 2	1,623	245	15.1
CT 010500 BG 2	1,750	169	9.7
CT 011700 BG 1	835	130	15.7
CT 011700 BG 2	827	197	23.8

Source: U.S. Census Bureau, *2012–2016 American Community Survey, 5-Year Estimates.*
1. A **bold** number indicates an environmental justice population.

Environmental Consequences

Construction Impacts

Build Alternative

In total, there are five environmental justice BGs in the study area: CT 017601 BG 5, CT 012501 BG 1, CT 012501 BG 2, CT 017601 BG 4, and CT 017601 BG 2.

Adverse environmental justice effects from the Build Alternative and design option will result under two conditions. First, minority or low-income populations must reside in the parts of the study area that will be adversely affected by the project. Second, any adverse impacts must fall disproportionately on minority or low-income populations rather than proportionately on all populations affected by the

project. Although there are minority and low-income populations within the study area, the proposed project will not include the selection of a location that will result in disproportionate effects on those populations, nor will cause adverse impacts with disproportionate effects on such populations.

The proposed improvements that will be occurring within CT 012501 BG 2 include construction of a sidewalk level bikeway, street level bicycle lane, transit-only lanes, sidewalk buffers, furnishing zone, and through zone, crosswalks, sidewalk planting areas, and curb ramps along Market Street. None of these proposed improvements are unique to this BG because they will occur throughout the project corridor. There would also be some off-corridor traffic changes at Eddy and Mason streets, which are unique to this BG; these changes will require changes to striping within this intersection, as well as the installation of new signal equipment. These changes are necessary at this specific intersection to accommodate changes in traffic flow proposed as part of the project and to improve pedestrian crossing times at these intersections in combination with the changes in traffic flow. These improvements will require very short-term and minor construction activities to remove existing paint, repaint new lane markers, and replace existing signal equipment. This activity will not expose populations residing in the vicinity of these intersections to adverse effects such as prolonged construction noise or diminished air quality.

Within CT 012501 BG 1, the proposed improvements will include construction of a sidewalk level bikeway, street level bicycle lane, transit-only lanes, sidewalk buffers, furnishing zone, and through zone, crosswalks, sidewalk planting areas, and curb ramps along Market Street. Along McAllister Street and Charles J. Brenham Place, construction of a street-level bicycle lane, pedestrian through zone, crosswalks, and sidewalk planting area would occur, in addition to the relocation of the F-Loop streetcar tracks, operator restroom, and ramp at Charles J. Brenham Place and Market Street. The street-level bicycle lane, F-loop, operator restroom, and ADA-compliant ramp proposed along McAllister Street and Charles J. Brenham Place are unique to this BG. The F-loop is required in this BG because the existing street configuration and geometry of McAllister Street and Charles J. Brenham Place provide the optimal space required for the F-loop to function as a turnaround for vehicles traveling westbound to turn around and head eastwards, and vice versa. In addition, the F-loop was designed to facilitate movements where there is the highest transit ridership, which is between Powell Street and Fisherman's Wharf (an area that includes this BG). Furthermore, the F-loop will serve as a secondary point to turn around trains between 11th and Powell streets because the historic streetcars experience reliability issues. The operator restroom and new ADA-compliant ramp are associated with the proposed F-loop. While the F-loop is a unique feature in and of itself, the type, scale and duration of construction activities required to construct this feature are similar to those required for streetcar track replacement on Market Street throughout the project corridor. Furthermore, the overall scale and duration of construction activities along McAllister Street and Charles J. Brenham Place will be less relative to those that will be required on Market Street because construction of the F-loop will not require the extensive subsurface utility work that will be required on Market Street. During operation, residents in close proximity to the F-loop may be exposed to a maximum increase in noise levels of up to 2.1 decibels (dB) compared to noise levels under the No Build Alternative. The maximum increase of 2.1 dB in streetcar noise is below the limit of perceptibility. Therefore, populations in the vicinity of the F-loop will not be exposed to disproportionately high and adverse impacts from construction or operation of the F-loop.

Within CT 012501 BG 1 and CT 012501 BG 2, the proposed improvements include converting several streets from one-way to two-way to improve vehicle circulation within the neighborhood north of Market Street. The proposed one-way to two-way conversion on Turk Street will allow

eastbound vehicles to reach northbound Mason Street. In addition, the proposed one-way to two-way conversion on Mason Street will allow northbound traffic to reach Eddy Street. These proposed local circulation changes will result in the addition of up to 100 vehicles on this street segment during the p.m. hour, representing an increase of approximately one to two cars per minute relative to the No Build Alternative. Thus, this level of traffic will be negligible compared to traffic volumes on surrounding streets.

Within CT 017601 BG 5 and CT 017601 BG 2, the proposed improvements will include construction of a sidewalk level bikeway, street level bicycle lane, transit-only lanes, sidewalk buffers, furnishing zone, and through zone, crosswalks, sidewalk planting areas, and curb ramps along Market Street. None of these proposed improvements are unique to these BGs because they will occur throughout the project corridor.

Within CT 017601 BG 4, the proposed improvements will include construction of a sidewalk level bikeway, street level bicycle lane, transit-only lanes, sidewalk buffers, furnishing zone, and through zone, crosswalks, sidewalk planting areas, and curb ramps along Market Street. None of these proposed improvements are unique to this BG because they will occur throughout the project corridor. Along 11th Street, the proposed project will include construction of transit only lanes, pedestrian through zone, a street-level bicycle lane, and a right-turn only lane only Market Street. These improvements are the same as those that will be constructed elsewhere throughout the project corridor and are not unique to this BG.

As described above, the construction activities within the environmental justice BGs are largely the same as the construction activities occurring throughout the entire Market Street corridor. The following construction stages will occur in different orders within different segments along the entire Market Street corridor, including the environmental justice BGs:

- Closure of center lanes to allow for rail track replacement and demolition and installation of new center transit islands. Curbside lanes will remain open to public transit. F-line streetcar service will be maintained as much as possible but will require substitution with bus service when travel in the center lane is not possible.
- Closure of curbside lanes for relocation and reconstruction of the curb, along with accompanying removal and planting of trees; relocation of fire hydrants, light poles, catch basins, and other utilities; and demolition and installation of center transit islands. The center lanes will remain open to public transit.
- Closure of sidewalks for reconstruction; access will be maintained through the use of temporary walkways to buildings and businesses. Curbside lanes and United Nations Plaza will be available for pedestrian detours, while the center lanes will be available to public transit.
- Closure of intersections and the demolition, relocation, and installation of utilities that cross Market Street. All pavement work will occur in quadrants (each one-quarter of the intersection) to accommodate traffic across Market Street and transit along Market Street. Construction for each stage and sub-stage will generally proceed in the following order:
    - Mobilization of contractor equipment, facilities, materials, and personnel into construction staging areas
    - Installation of construction area signs and circulation of construction announcements
    - Establishment of work-zone and perimeter buffers and limits

- Installation of temporary street lighting, OCS lines, and traffic signals, as needed
- As-needed, local de-energization of the OCS lines
- Execution of removal work, including bus platforms, pavement, streetlights, signals, OCS lines, and interfering underground utilities, to prepare the work zone for construction of new infrastructure
- Construction of infrastructure within the work zone, including large-scale underground utilities (replacement or relocation); installation of pole foundations, roadway pavement, tracks, tree trenches, curbs, sidewalks, bike lanes, delineation, boarding islands, hydrants, streetlights, OCS lines, traffic signals and poles, streetscape features, etc.; and lane resurfacing.
- Installation of transit stop amenities and landscaping, signage, lane striping, and lane coloring
- Demobilization

Construction impacts will occur in a linear fashion throughout the project corridor and affect populations residing within the project corridor as well as users who do not reside within the area. The construction of the new F-loop is the greatest differentiator among construction activities within an environmental justice BG. However, while construction of the new F Market & Wharves Historic Streetcar (F-line) loop (F-loop) will be within a BG that contains an environmental justice population, there will also be comparable construction activities in BGs that do not contain an environmental justice population. In addition, the impacts of constructing the F-loop will affect both the environmental justice populations that reside in the BG and non-environmental justice populations who travel through and use the area and those who use the streetcar. Therefore, the construction impacts of the F-loop, along with all construction activities under the Build Alternative and design option, will not result in disproportionate effects on environmental justice populations. The project benefits, which include additional transit, bicycle, and pedestrian facilities as well as additional safety, economic, and recreational benefits, will be shared and will benefit the entire population equally.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor that, similar to the Build Alternative and design option, will affect all populations equally. Therefore, the No-Build Alternative will not result in disproportionately high or adverse effects on minority and low-income populations.

Operational Impacts

Build Alternative

According to Section 2.2.5, *Noise and Vibration*, operation of the Build Alternative and design option will result in changes in noise levels from vehicle traffic and streetcar noise that are below levels of perceptibility. In addition, as described in Operational Impacts in Section 2.1.4, *Traffic and Transportation/Pedestrian and Bicycle Facilities*, operation of the Build Alternative and design option will result in minimal changes in vehicle volumes, a negligible redistribution of vehicles on surrounding roadways and change in VMT, minor changes in vehicle delay and parking, and improvements to transit operations and service, pedestrian accessibility and bicycle facilities, and a reduction in the potential for conflicts between different modes of transportation. The benefits of

the Build Alternative and design option will be shared by everyone throughout the study area. As such, the project will not result in disproportionately high or adverse effects on minority and low-income populations.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Therefore, the No-Build Alternative will not result in disproportionately high or adverse effects on minority and low-income populations.

Avoidance, Minimization, and/or Mitigation Measures

Based on the above discussion and analysis, the Build Alternative, design option, and No-Build Alternative will not cause disproportionately high and adverse effects on any minority or low-income populations in accordance with the provisions of EO 12898. No further environmental justice analysis is required.

2.1.3 Utilities/Emergency Services

2.1.3.1 Affected Environment

Information in this section is from the *Community Impact Assessment Technical Memorandum* prepared for the proposed project (March 2020). Where other data sources were used, citations have been provided.

Utilities

Water is supplied to the project corridor by the San Francisco Public Utilities Commission's (SFPUC's) regional water system. The local water system distributes and stores water within the city. The local water system includes 10 reservoirs, 8 water tanks, 17 pump stations, and approximately 1,250 miles of transmission lines and water mains within the city. The system also collects sewer flows and stormwater. Effluent outfalls to San Francisco Bay and the Pacific Ocean from three wastewater treatment plants. Wastewater in the project corridor is collected and treated by the SFPUC (San Francisco Public Utilities Commission 2010).

Recology provides solid waste collection, recycling, and disposal services for residential and commercial clients in San Francisco through its subsidiaries (i.e., San Francisco Recycling and Disposal, Golden Gate Disposal and Recycling, Sunset Scavenger). Collected materials are hauled to the Recology transfer station/recycling center on Tunnel Avenue, near the southeastern city limit, for sorting and subsequent transportation to other facilities.

Existing utilities along Market Street include a brick sewer line beneath the street, electrical components for the streetcar's overhead contact system (OCS), electrical conduits for the Path of Gold light standards and traffic signals, and other subsurface utilities beneath the right-of-way. Fire hydrants, in addition to the large Auxiliary Water Supply System (AWSS) hydrants, are also located within the project corridor.

Emergency Services

The San Francisco Police Department (SFPD) provides police protection services in the city. The project corridor crosses several police districts, including the Central, Tenderloin, Mission, Northern, and Southern Districts (San Francisco Police Department 2019). The nearest police stations to the project corridor include:

- Mission Station, at 630 Valencia Street
- Tenderloin Station, at 301 Eddy Street
- Central Station, at 766 Vallejo Street
- Northern Station, at 1125 Fillmore Street
- Southern Station, at 1251 Third Street

The San Francisco Municipal Transportation Agency's (SFMTA's) Security, Investigations, and Enforcement subdivision provides security and enforcement services for the agency. The Security Unit consists of the San Francisco Municipal Railway (Muni) Transit Assistance Program; a work

order with SFPD, including a contract for private security guards at all transit facilities; and the Proof of Payment (POP) Group. The POP Group administers fare inspections on all transit revenue vehicles, in the subway, and on designated platforms and bus stops.

The Investigations Unit is responsible for workplace policy violations, graffiti prevention and abatement, and Muni-related crime. The Muni Transit Assistance Program provides a community-based staff that rides transit lines with high incidences of graffiti and juvenile disturbances to assist with enforcement.

The Enforcement Unit consists of the General Enforcement Group, Special Events Enforcement Group, and Emergency Preparedness Unit. The General Enforcement Group oversees street sweeping, residential permit parking, meters, improperly used placards for the disabled, booting and towing vehicles, and removing abandoned vehicles. The Special Events Enforcement Group oversees and manages parking at various special events by enforcing restrictions and directing traffic flow prior to and after such events. The Emergency Preparedness Unit provides agency-wide leadership by coordinating efforts and initiatives that maintain a high level of awareness and readiness as well as a response to emergencies, including acts of terrorism. This unit also acts as a liaison with regional transit agencies in the San Francisco Bay Area, departments of the City and County of San Francisco (City), and state and federal emergency management officials and agencies.

The San Francisco Fire Department (SFFD), headquartered at 698 Second Street, provides fire suppression and emergency medical services in the city. The SFFD consists of three divisions, which are subdivided into 9 battalions and 46 active stations located throughout the city (San Francisco Fire Department 2019). The nearest stations to the project corridor include:

- Station 1, 935 Folsom Street (at Fifth Street)
- Station 13, 530 Sansome Street (at Washington Street)
- Station 35, Pier 22½ (The Embarcadero at Harrison Street)
- Station 36, 109 Oak Street (at Franklin Street)

2.1.3.2 Environmental Consequences

Construction Impacts

Build Alternative

Utilities

The construction-related archaeological, air quality, noise, and transportation impacts of utility relocation and rehabilitation are addressed throughout this EA. These analyses are included in each of their respective resource sections of Chapter 2, which includes Section 2.1.4, *Traffic and Transportation/Bicycle and Pedestrian Facilities*; Section 2.1.6, *Cultural Resources*; Section 2.2.4, *Air Quality*; and Section 2.2.5, *Noise and Vibration.* The project will relocate fire hydrants, including AWSS hydrants and components, to accommodate changes in curb lines. Existing AWSS cisterns below Market Street will be preserved in place. Existing city water hydrants are approximately 3 feet from the face of the curb. All new hydrants will be installed in accordance with SFPUC requirements, as outlined in its *Asset Protection Plan*.

Stormwater catch basins will be relocated horizontally (less than 20 feet), vertically (less than 1 foot), or reconstructed, as required by curb movements or the introduction of transit islands, involving adjustments to or replacement of the laterals into which they feed. Sewer/stormwater lines will be relocated because of the SFPUC policy regarding proximity to rail. All sewer laterals within the project limits will be replaced and reconnected. Existing sewers along portions of Market and McAllister streets are directly beneath areas where streetcar track replacement is planned. All other sewer work will be for state-of-good-repair replacement. The approximate depth of excavation for stormwater facilities will be 5 feet; the maximum depth will be the depth of the sewer mains, approximately 12 feet. Work may extend horizontally up to 8 feet into the street from the edge of the curb line. Relocation of SFPUC water lines, Pacific Gas & Electric lines, NRG steam lines, AT&T lines, other communication lines, and conduits and wiring for streetlights and signals, as well as structural reinforcement of sub-sidewalk basements, will also be required to accommodate project improvements. OCS pole locations will be adjusted to accommodate sidewalk widening.

Construction of the Build Alternative and design option will generate minor amounts of wastewater, but it will not result in an exceedance of the wastewater treatment requirements of the Regional Water Quality Control Board because of the project's waste discharge requirements and the Section 401 water quality certification. In addition, construction of the proposed project will also generate construction debris and waste. The excavated soil and debris will be transported offsite to the Hay Road Landfill in Solano County. Contract specifications for the proposed project will require the contractor to prepare a Construction and Demolition Debris Management Plan and recycle demolition or other construction waste to the maximum extent possible, with a goal of 75 percent diversion. The Build Alternative and design option will be subject to and comply with San Francisco Ordinance No. 27-06, Zero Waste Goal, Green Building Ordinance, and all other applicable statutes and regulations related to solid waste. The proposed project will also comply with all federal, state, and local statutes and regulations related to solid waste.

Emergency Services

During construction of the Build Alternative and design option, vehicular traffic on the Market Street corridor will be restricted to public transit vehicles, including paratransit. At least one transit travel lane will be maintained in each direction on Market Street, with a minimum temporary width of 11 feet. Emergency vehicles will be allowed at all times, including in transit-only lanes, and therefore emergency vehicle access will be maintained. However, emergency vehicle response times may be affected. Temporary travel lane closures on Market Street will be reviewed by the multi-agency Transportation Advisory Staff Committee, which involves fire and police department reviews to prevent impairment of emergency vehicle access. In addition, emergency vehicles from existing stations will be able to use other east–west arterials to reach their destinations. Pursuant to the SFMTA Blue Book, Public Works or its contractor(s) will be required to work with the SFMTA to identify detour routes and locations where detour signs will be implemented; it will also incorporate detour plans into the proposed project's construction management plan.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor. Therefore, there will be minimal construction impacts on utilities and emergency services under the No-Build Alternative.

Operational Impacts

Build Alternative

Utilities

Effects on utilities will not occur during project operation because all utility modifications and relocations will occur only during construction. Because the project is not growth inducing, the project will not result in the construction of new water or wastewater treatment facilities or the expansion of existing facilities; existing capacity is adequate for the project. Operation of the project will also not increase demand for potable water. No new or expanded entitlements will be needed to serve the project. The project will not result in substantial physical deterioration of public water facilities.

Emergency Services

The project will generally convert the existing center lanes on Market Street from transit-only to Muni-only lanes. These lanes will permit only Muni buses, streetcars, and emergency vehicles at all times. Emergency vehicles will be able to travel within the Muni-only lanes, which will have fewer vehicles than the existing mixed-flow travel lanes and the transit-only lanes. If needed, fire and rescue vehicles will be able to use the sidewalk-level bikeway to access buildings along Market Street. Upgrades to existing signal equipment will include the provision of preemption-equipped signals to accommodate emergency vehicles that are equipped with the technology. Signal preemption allows a traffic signal in front of an emergency vehicle to change the green phase and allow vehicles to clear the intersection before the emergency vehicle arrives.

The differences between the design option and the proposed project include changes regarding roadway configuration, private vehicle access, surface transit, and bicycle and pedestrian facilities in the western segment of the project corridor. SFFD Station 36 is located on Oak Street, between Franklin and Gough streets. Fire trucks use Market Street to access destinations to the east. Although the design option will narrow the roadway width and reduce the number of travel lanes for the segment of Market Street between 11th and Franklin streets, this segment is not the part of the primary access routes for Station 36. Therefore, the design option will not preclude emergency vehicle access along Market Street. Overall, the design option has the same potential to create operational impacts on utilities and emergency services as the proposed project.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Therefore, there will be minimal operational impacts on utilities and emergency services under the No-Build Alternative.

2.1.3.3 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects on utilities and emergency services are minimized under the proposed project:

- AMM-UT-1: Utilities will be relocated by the utility companies, in coordination with the City. Potentially affected utility customers will be notified of potential service disruptions before relocation.
- AMM-ES-1: Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access, routing, and scheduling changes.
- AMM-ES-2: Streets will be reviewed by the Transportation Advisory Staff Committee, including review by the fire and police departments so that emergency-vehicle access is not impaired. Pursuant to the SFMTA Blue Book, Public Works or its contractor(s) will be required to work with the SFMTA to identify detour routes and locations where detour signs will be implemented and incorporate detour plans into the project's construction management plan.

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2.1.4 Traffic and Transportation/Bicycle and Pedestrian Facilities

2.1.4.1 Regulatory Setting

Caltrans, as assigned by the Federal Highway Administration (FHWA), directs that full consideration should be given to the safe accommodation of pedestrians and bicyclists during the development of Federal-aid highway projects (see 23 Code of Federal Regulations [CFR] 652). It further directs that the special needs of the elderly and the disabled must be considered in all Federal-aid projects that include pedestrian facilities. When current or anticipated pedestrian and/or bicycle traffic presents a potential conflict with motor vehicle traffic, every effort must be made to minimize the detrimental effects on all highway users who share the facility.

In July 1999, the U.S. Department of Transportation (USDOT) issued an Accessibility Policy Statement pledging a fully accessible multimodal transportation system. Accessibility in federally assisted programs is governed by the USDOT regulations (49 CFR 27) implementing Section 504 of the Rehabilitation Act (29 United States Code [USC] 794). The FHWA has enacted regulations for the implementation of the 1990 Americans with Disabilities Act (ADA), including a commitment to build transportation facilities that provide equal access for all persons. These regulations require application of the ADA requirements to Federal-aid projects, including Transportation Enhancement Activities.

2.1.4.2 Affected Environment

Information in this section is from the *Better Market Street NEPA Transportation Report* prepared for the proposed project (March 2020). The weekday p.m. peak hour is the standard analysis period for projects in San Francisco; therefore, it is used as a tool for analyzing existing conditions and alternatives in this report. Surveys of typical vehicle speeds within the study area, as well as findings from prior projects, indicate that the weekday p.m. peak hour represents the time of day with the highest demand across all modes in San Francisco; as such, this is the period when the project is expected to have the greatest effect relative to existing conditions. During other times of day, the project will have a similar or lesser effect on each mode compared with what will occur in the p.m. peak hour.

The study area includes all aspects of the transportation network that could be measurably affected by the Better Market Street Project. The study area is defined by travel corridors and facilities such as bicycle, pedestrian, automobile, and transit infrastructure. A total of 71 intersections in the study area were identified for data collection. U.S. Highway 101 (US 101), Interstate 80 (I-80), and Interstate 280 (I-280) and their corresponding ramps and ramp signals in and near the study area were also considered.

Figure 2.1.4-1, p. 2.1.4-3, presents the project corridor and transportation study area.

Regional Roadway Network

US 101, I-80, and I-280, as well as their corresponding ramps and ramp signals, are the primary Caltrans-managed facilities in the study area. For the most part, these freeways operate south of the study area; however, the portion of US 101 on Van Ness Avenue passes through the western half.

Caltrans-managed facilities touch or pass through the study area at the US 101 northbound off-ramps at Octavia Boulevard and 13th/Duboce/Mission streets and the portion of Van Ness Avenue that crosses Market Street.

US 101 and I-80 are the primary regional access routes to the project area. US 101 serves San Francisco and the Peninsula/South Bay but also extends northward via the Golden Gate Bridge to the North Bay. Van Ness Avenue serves as US 101 between Market and Lombard streets. South Van Ness Avenue serves as US 101 between Market and Mission streets. I-80 connects San Francisco to the East Bay and points east via the San Francisco-Oakland Bay Bridge. US 101 and I-80 merge about 1 mile southeast of the Market Street corridor. Access to or from US 101 or I-80 within the study area is provided via Fremont Street, First Street, Essex Street, Fourth Street, Fifth Street, Seventh Street, Eighth Street, Ninth Street, 10th Street, South Van Ness Avenue, Mission Street/13th Street, and Octavia Boulevard.

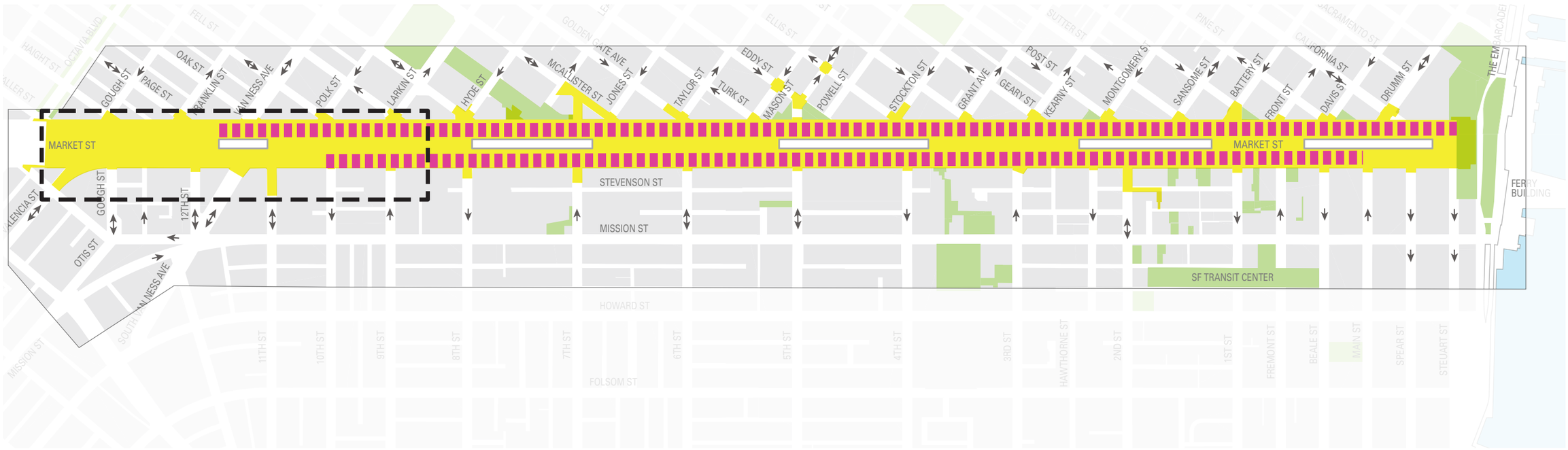
I-280 is a north–south freeway that connects San Francisco with the Peninsula and the South Bay. I-280 has an interchange with US 101 approximately 3 miles south of the project corridor; it terminates at surface streets in the South of Market neighborhood of San Francisco. Near the project corridor, I-280 is a six- to eight-lane facility. The closest access to I-280 is provided at Sixth Street (at Brannan Street) and King Street (at Fifth Street).

Local Roadway Network

Market Street runs between Steuart Street in the Financial District and Portola Drive in the Twin Peaks area. Market Street has two lanes in each direction along most of the Street. Between Steuart and Castro streets, Market Street has streetcar tracks running in each direction within the center travel lanes, which accommodate the San Francisco Municipal Railway's (Muni's) F Market & Wharves Historic Streetcar (F-line). The center lanes are designated as all-day transit-only lanes between 12th and Third streets in the eastbound direction and between Van Ness Avenue and Third Street in the westbound direction. A class II bicycle lane is located on each side of Market Street between Castro and Duboce streets (west of the project corridor), and class IV separated bikeways are on each side of Market Street between 8th Street and Duboce Avenue.

Private vehicles are not permitted to travel on Market Street eastbound (inbound) between 10th and Main streets and westbound (outbound) between Steuart Street and Van Ness Avenue. Where permitted to travel on Market Street, vehicles are restricted from using transit-only lanes at all times. Eastbound private vehicles are required to turn right at 10th Street.

Existing roadway deficiencies include the lack of existing dedicated bicycle facilities east of Eighth Street leads to bicyclists, transit, and vehicles competing for the same space. Bicyclists must navigate vehicles weaving in bus lanes, pinch zones in lanes due to encroachment from boarding islands, rails for Muni streetcars, and ventilation grates for the Bay Area Rapid Transit (BART), and do not have places to wait or turn at many intersections. Deficiencies for pedestrians include Market Street's considerable width that requires extended time to cross and the existing non-standard brick sidewalks that do not comply with the Americans with Disabilities Act (ADA). For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant.



Notes:
Market Street is shown wider than map scale for clarity.

Source: Fehr & Peers 2020.
Streets: City and County of San Francisco 2014 .

Project Corridor
Transportation Study Area
Muni Metro/BART Station
Design Option

Note: The project's proposed transportation and streetscape improvements outside of the design option also apply to the design option.

Private Vehicle Restrictions
Existing Two-Way Street
Existing One-Way Street

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Figure 2.1.4-1
Transportation Study Area

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Numerous streets within the transportation study area are one-way streets with multiple travel lanes. Within the transportation study area, Van Ness Avenue/South Van Ness Avenue, Franklin Street, and Stockton Street are the primary north–south streets. As a result of the junction of two street grids at Market Street, which runs diagonally, many streets north and south of Market Street are offset; therefore, direct access across Market Street is limited. Most of the north–south and east–west streets south of Market Street are major arterials, as are the one-way couplets north of Market Street (e.g., Oak and Fell streets, Golden Gate Avenue and Turk Street, Pine and Bush streets) as well as Drumm Street, Davis Street, Hayes Street, and Van Ness Avenue. Primary transit streets include Mission, Stockton, Powell, Battery, and Sansome streets as well as Third, Fourth, Kearny, Geary, and O'Farrell streets.

Vehicular Traffic Conditions

Intersection turning-movement counts were collected in 2011 at the 71 intersections of the transportation study area for the Better Market Street Project Draft Environmental Impact Report (February 2019); the counts were validated in 2015 when additional counts were conducted at selected intersections. The traffic counts represent roadway conditions on Market Street when private vehicles were permitted for most of the length of Market Street.

Table 2.1.4-1 presents existing traffic volumes from prior to private vehicle restrictions, including transit vehicles, at representative locations along the project corridor. During the weekday p.m. peak hour, traffic volumes on Market Street ranged from 300 to 2,500 vehicles per hour. The lowest p.m. peak hour volumes were at the eastern end of the project corridor where Market Street terminates at Steuart Street; the highest volumes were at the western end of the project corridor, between Valencia and Franklin streets. The private vehicle restrictions applied to the roadway segments east of 10th Street; therefore, the volumes west of 12th Street shown in Table 2.1.4-1 would generally remain similar to conditions after the recent private vehicle restrictions. Traffic volumes decreased on street segments east of 12th Street as only transit, taxis, paratransit, commercial, and emergency vehicles are permitted along these segments. The one exception is the eastbound segment between Spear Street to Steuart Street, where private vehicles are allowed to turn onto Market Street between Drumm Street/Main Street to Steuart Street. The traffic volumes would be similar on this segment to the counts presented in Table 2.1.4-1.

Table 2.1.4-1. Traffic Volumes on Market Street (Existing Conditions), Weekday P.M. Peak Hour

Street Segment of Market Street*	Eastbound Vehicles	Westbound Vehicles	Total
Spear Street to Steuart Street	186	88	274
First Street to Fremont Street	336	265	601
Second Street to New Montgomery Street	560	277	837
Fifth Street to Fourth Street	331	335	666
Eighth Street to Seventh Street	218	477	695
Twelfth Street to Van Ness Avenue	357	732	1,089
Franklin Street to Gough Street	1,191	1,249	2,440

*Representative segments. Traffic volumes include transit vehicles and represent conditions on Market Street prior to private vehicle restrictions.

Transit Conditions

Local transit service is provided by Muni buses, light rail, and historic streetcar and cable car lines, all of which can be used to access regional transit operators. Service to and from the East Bay is provided by Bay Area Rapid Transit (BART), the Western Contra Costa Transit Authority (WestCAT), AC Transit, Amtrak, and Water Emergency Transportation Authority (WETA) ferries. Service to and from the North Bay is provided by Golden Gate Transit buses and ferries as well as the Blue & Gold Fleet and WETA ferries. Service to and from the Peninsula and South Bay is provided by Caltrain, SamTrans, BART, and WETA ferries.

Muni service along the project corridor consists of the historic streetcar on the F-line, operating in the center travel lanes along the entire length of the project corridor, and 23 bus routes that cover varying distances on Market Street during the p.m. peak hour. Within the project corridor, the streetcar line and bus routes have 20 eastbound (eight curbside and 12 center boarding islands) and 20 westbound (nine curbside and 11 center boarding islands) stops. In addition to these surface routes, five Muni light-rail lines (J Church, K Ingleside/T Third Street, L Taraval, M Ocean View, and N Judah) operate within a subway along Market Street. Within the project corridor, The Embarcadero, Montgomery, Powell, and Civic Center stations are shared with BART, while the Van Ness station serves only the light-rail lines.

Three east–west bus routes operate on Mission Street. In addition, buses on 20 routes cross Market Street from north to south within the project corridor or travel along a portion of Market Street but generally do not stop. In addition to these regular routes, the 90 San Bruno Owl and the 91 Third Street/19th Avenue Owl late-night routes cross Market Street within the project corridor.

The most common operational conflict that was observed involved taxis or commercial vehicles blocking bus stops. There were also situations where buses were unable to proceed because vehicles were blocking an intersection. These issues occur routinely on Market Street but also other roadways within the study area during the p.m. peak period.

Pedestrian Conditions

Market Street has high levels of bicycle activity, pedestrian activity, and transit service. It is also used frequently for rallies, parades, and marches. Pedestrian volumes from October 2017 are shown in Table 2.1.4-2. Existing sidewalks on Market Street range from 25 to 35 feet wide east of Van Ness Avenue but are only 15 feet wide west of Van Ness Avenue. Objects located on the existing sidewalks include trees, signs, public transit shelters, elevator entrances/exits, newspaper kiosks and boxes, flower stands, public art, bicycle racks, self-cleaning bathrooms, advertising signs, bollards with chains at intersection crossings, and the Path of Gold light standards.

Table 2.1.4-2. Pedestrian Volumes on Market Street Sidewalks within Project Corridor (Existing Conditions), Weekday P.M. Peak Hour

Market Street Sidewalk Location	Pedestrians per Hour
North Side of Market Street	
Drumm Street to Steuart Street	1,863
Montgomery Street to Sutter Street	1,946
Fifth Street to Ellis Street	1,574
Larkin Street to Grove Street	716

Market Street Sidewalk Location	Pedestrians per Hour
South Side of Market Street	
Fremont Street to Beale Street	2,194
Montgomery Street to Second Street	1,956
Fifth Street to Fourth Street	2,482
Eighth Street to Seventh Street	936
Valencia Street to Gough Street	377

Pedestrian crowding generally occurs only near the Market Street retail district, between Third and Sixth streets. Street furniture, bus shelters, street trees, etc., are placed in separate furnishing zones, keeping pedestrian through zones free of obstructions. Pedestrian signal heads and countdown signals are provided at all signalized intersections within the study area. The sidewalk surface, composed of red bricks that were installed in the 1970s, does not meet current ADA standards.

Crosswalks on the south side of Market Street tend to follow the direct pedestrian path of travel (i.e., the most direct route). On the north side of Market Street, however, the most direct pedestrian routes are interrupted because of the alignment of the diagonally intersecting streets. As such, some crosswalks on Market Street's north side require pedestrians to walk out of direction or cross in two stages.

Most street corners on Market Street provide curb ramps within the crosswalk. However, several side-street approaches on the north side of Market Street have curb ramps that are incorrectly positioned (e.g., located outside the bounds of the marked crosswalk); at other marked crosswalks, curb ramps are missing altogether. These missing or incorrectly positioned curb ramps are at the intersections of 12th/Franklin/Page/Market streets, Ninth/Larkin/Hayes/Market streets, Sixth Street/Taylor Street/Golden Gate Avenue/Market streets, Mason/Market streets, Third/Kearny/Geary/Market streets, Second/Market streets, Sansome/Sutter/Market streets, and Beale/Davis/Pine/Market streets.

Between January 2012 and December 2016, Market Street had 166 reported pedestrian collisions along the project corridor, consisting of 137 collisions between vehicles and pedestrians and 29 collisions between pedestrians and bicyclists. Behaviors and site conditions that were common factors in the pedestrian collisions included motor vehicle encroachment into crosswalks, motor vehicle right turns that conflicted with high pedestrian volumes, wide intersections and long pedestrian crossing distances, multistage pedestrian crossings at traffic islands, and misaligned and narrow curb ramps. Private vehicle restrictions on Market Street reduced the number of motor vehicles encroaching into crosswalks and conflicts between right-turning vehicles and pedestrians crossing Market Street or cross-streets.

Bicycle Conditions

Market Street has dedicated street-level bikeway facilities, which vary from a protected sidewalk-level bikeway with safe-hit posts to a bicycle lane between Gough Street and half-way between Ninth and Eighth streets in the eastbound direction and between Eighth Street and Octavia Boulevard in the westbound direction. Sharrows (i.e., shared-lane markings) are painted in the curb lanes at all other locations on Market Street to indicate that bicycles and vehicles share these lanes. In the segments of Market Street with a dedicated facility, bicyclists are able to travel at relatively constant speeds, with minimal interference. However, in the shared-lane segments of Market Street,

bicyclists are frequently forced to maneuver around vehicles that are parked for loading or traveling on Market Street as well as buses that are either queued or picking up/dropping off passengers at transit stops.

In October 2017, bicycle volume counts were conducted during the weekday p.m. peak period (4:00 to 6:00 p.m.) at nine representative locations on Market Street within the project corridor. The number of bicyclists along Market Street within the project corridor ranges from 100 to 630 per hour during the weekday p.m. peak hour. During the weekday p.m. peak period, the peak direction of bicyclist travel is westbound (i.e., leaving downtown), with volumes greatest in the western segment of the project corridor.

Between January 2012 and December 2016, there were 248 reported bicyclist collisions along the project corridor, including 29 collisions between pedestrians and bicyclists. Most bicyclist collisions (i.e., approximately 60 percent) occurred between Third and Eighth streets, an area where there is no designated bicycle facility. In this segment, bicyclists must share the curb lanes with vehicles, including buses, taxis, and vehicles that are loading. The greatest number of collisions occurred at the US 101 off-ramp/Octavia Boulevard/Market Street intersection. In April 2018, the San Francisco Municipal Transportation Agency (SFMTA) implemented protected bicycle lanes between Octavia Boulevard and Duboce Avenue to enhance bicycle travel through this high-collision location.

The behaviors and site conditions that were identified as common factors in bicycle collisions included pinch zones between the sidewalk/curb and transit boarding islands, weaving conflicts involving right-turning vehicles, prohibited left turns across Market Street, bicyclist encroachment into crosswalks, sight lines impeded by skewed intersection approaches, leapfrogging between bicyclists and vehicles, and double parking and loading in bicycle and mixed-flow lanes. The Private vehicle restrictions on Market Street reduced the number of weaving conflicts for bicyclists with double parking, loading, or right-turning vehicles on Market Street.

Parking Conditions

There are not any on-street parking spaces on Market Street within the study area. With the exception of streets such as Third Street, which has curb transit-only lanes, most streets in the transportation study area provide on-street parking spaces, commercial and passenger loading, or ADA-compliant accessible spaces. All of these parking or loading spaces are generally metered or time-limited. During the weekday morning and evening commute periods, on-street parking is prohibited on one or both sides of a number of transit-oriented or arterial streets (e.g., Fifth, Sixth, Mission streets). On-street parking occupancies during the weekday midday period (10:00 a.m. to 3:00 p.m.) for general parking is between 80 and 90 percent.

Construction Year and Design Year

Construction-year (2020) conditions include projects that were under construction as of 2014, when analysis began, as well as projects were approved and funded and therefore likely to be completed by the time the Build Alternative is under construction. These include the various transportation network changes that have been recently implemented, such as travel-lane reductions, new bicycle lanes, safety projects, streetscape projects, transportation projects that have been approved and funded or are under construction, and land use development projects that will be completed by 2020.

The design-year (2040) analysis assumes completion of certain planned and reasonably foreseeable transportation network changes that are not part of the alternatives but could affect circulation in the transportation study area.

2.1.4.3 Environmental Consequences

Construction Impacts

Build Alternative

Construction of the proposed project or design option will commence in 2020 and be conducted at up to seven location-specific segments along Market Street over a period of six to 14 years, including inactive periods. In general, construction-related activities will typically occur between 7:00 a.m. and 5:00 p.m. on weekdays. Nighttime and weekend construction activities will be required to expedite the construction schedule, minimize disruptions to peak-period commutes by all modes, and facilitate track replacement and construction within intersections. Construction staging (e.g., staging of construction vehicles, staging of construction materials, construction worker parking, delivery and haul trucks) will occur on street within or near the segment that is under construction.

Transit and Vehicular Circulation. During the construction period, vehicular traffic on the segment of Market Street that is under construction will be restricted to Muni and paratransit vehicles only. Therefore, all other vehicles currently using Market Street will be detoured to other streets. Detours will change, depending on the location of the segment where construction is occurring. The detours and diversions to other streets, primarily parallel streets south of Market Street, will result in an increase in overall vehicle congestion throughout the South of Market neighborhood as well as the transportation study area, which may lead to reduced vehicle speeds and longer peak-period queues.

As feasible, transit access within the segment where construction is occurring will be maintained during construction, but some transit stops may be temporarily relocated and/or terminated. Detours along some transit routes may be required for the duration of the construction period. This will be identified in the traffic control and detour plans that will be developed prior to final design and construction. A temporary overhead contact system (OCS) will be provided on Market Street to allow SFMTA to continue using electric streetcars during construction as much as possible. Where detours are necessary, additional transit priority features, such as full-time transit-only lanes and extended bus zones, may be provided to accommodate the increased level of bus service. This will be required on Mission Street specifically but may also be required on other streets. Consistent with the SFMTA Blue Book, San Francisco Public Works (Public Works) or its contractor(s) will be required to post appropriate signage, indicating temporarily discontinued stops and temporary new stops.

During stages that include construction of the center travel lanes and track replacement, as well as construction within the curb lane, all Muni routes on Market Street will need to travel within a single lane in each direction or detour off Market Street. In addition, during construction within the center travel lanes, buses will be used in place of Muni's historic streetcars on the F-line.

If all transit vehicles on Market Street were to travel within one travel lane in each direction, this would amount to approximately 100 transit vehicles per hour during the peak periods. This would exceed the capacity of the single travel lane and transit boarding islands, resulting in temporary increases in travel times for transit service on Market Street. If some or all transit routes were to shift to other streets, such as Mission Street, this would result in somewhat increased transit travel

time due to the longer distance and congestion on cross streets or Mission Street. During these periods, both nighttime and weekend construction may be required to reduce the length of time when these transit routes will have to operate in a single travel lane or take a detour.

During stages when some or all transit on Market Street shifts to other streets, such as Mission Street, it will be necessary to convert Mission Street's transit-only lanes to all-day transit-only lanes (i.e., 24 hours a day, seven days a week), extend bus zones to accommodate the higher all-day bus volumes, and implement full or partial temporary restrictions on Mission Street between 11th and Steuart streets. The temporary restrictions will permit only public transit, taxis, and commercial vehicles on Mission Street in the eastbound and/or westbound directions to facilitate unimpeded bus travel on Mission Street and minimize the increases in transit travel times. The restrictions on Mission Street, and the resulting diversions of vehicles to other streets, will result in an increase in overall vehicle congestion throughout the South of Market neighborhood as well as the transportation study area during these construction periods.

In addition to the construction-related effects on transit service along Market Street, transit routes that cross Market Street may be subject to temporary changes. In general, bus access to the transit routes that cross the corridor will be maintained during construction. However, fourteen bus stops or routes could be changed during the course of construction, including two routes operating on streets south of Market Street. Disruptions in surface transit service on Market Street and increased congestion on other streets will lead to disruptions for other local and regional bus routes.

It is possible that ongoing or planned construction of development projects along other streets in the transportation study area could result in travel lane closures while construction is occurring on Market Street. For example, construction of the 5M project (the first phase broke ground in June 2019) may require temporary travel lane closures on Mission Street during construction of the 302-unit apartment building and the Mary Court public park on the block bound by Mission, Fifth, Minna and Sixth streets. During lane closures for 5M or other projects, SFMTA will implement similar temporary restrictions to those described above for the proposed project's construction. These temporary restrictions may apply to the block(s) on Mission Street where the travel lane closure is occurring and up to two blocks adjacent to the affected block(s) in the eastbound and westbound directions. In combination with the effects of the project's construction described above, these restrictions on Mission Street and the resulting diversions of vehicles to other streets would result in a temporary increase in overall vehicle congestion throughout the South of Market neighborhood and the transportation study area.

Walking/Accessibility. Access for people walking throughout the corridor will be preserved during construction, including access to existing or relocated transit stops, BART/Muni stations, and adjacent land uses along the project corridor. However, periodic sidewalk, plaza, or crosswalk closures will occur during sidewalk reconstruction and utility work. At locations where intersection crosswalks will be closed, pedestrians will be detoured to the nearest intersection. Construction activities that require use of any part of the sidewalk are required to maintain access for all users. Where complete sidewalk closures are needed, alternative walkways and detours are required, along with adequate signage. The detours and temporary changes to stop locations for transit will increase travel distances and inconvenience some pedestrians. As part of pedestrian detours, appropriate signage, including, but not limited to, "Sidewalk Closed," will be posted. For all pedestrian facilities, the alternate path of travel will be the minimum width required to maintain ADA compliance so that pedestrian overcrowding does not occur at busier locations along the corridor.

Bicycling. Bicyclists on Market Street may be temporarily detoured at some locations, or along the entire corridor, to Mission Street, Howard Street, and/or Folsom Street. If the proposed project temporarily detours bicycle traffic to Mission Street, it will be necessary to temporarily remove parking on both sides of the roadway to provide dedicated transit and bicycle lanes. Where bicyclists will be detoured to other streets, advance warning signs will be posted. Although bicycle facility changes will be completed in multiple stages to maintain access where possible, general accessibility for bicyclists on Market Street will be substantially affected during project construction. The proposed project's construction truck traffic and detoured traffic from Market Street will also result in temporarily increased potential for vehicle-bicycle conflicts throughout the transportation study area.

Effects on Loading and Parking. On segments of Market Street that include existing loading bays, commercial or passenger loading/unloading will be relocated as close as possible to the construction site. Commercial and passenger loading activities may be relocated to adjacent side streets during restricted hours along Market Street (e.g., staggered hours for loading and construction activities). Loading activities within an active construction zone will not be permitted at any time. On-street parking on side and cross streets will be restricted beyond existing restrictions to accommodate construction staging as well as temporary commercial loading spaces. On-street parking will also be removed to accommodate rerouted bus service on some streets, such as Mission Street.

Construction workers who drive to the site will cause a temporary parking demand. The time-limited on-street parking near the project corridor restricts the hours for legal all-day parking; therefore, it is anticipated that construction workers will park in nearby public parking facilities, depending on the segment where construction is occurring. Construction workers also have access to other modes for travel to Market Street.

Caltrans Facilities. Construction activities within or adjacent to the Caltrans ROW on Octavia Boulevard and Van Ness Avenue will include track replacement, curb ramp and corner radii modifications, and sidewalk replacement. As noted above, cross traffic access at Market Street will be maintained when possible, and Public Works will develop routing plans when construction occurs within the travelway.

Summary of Construction Effects. Construction of the proposed project and the design option will result in interference with and disruptions to transit, vehicle, bicycle, and pedestrian travel along or near the project corridor over a period of six to 14 years. In particular, emergency access, many bicycle routes, and numerous transit routes on Market Street, cross streets, and nearby parallel streets will be affected by project construction. This will be an adverse effect on transportation facilities. Policies consistent with the SFMTA Blue Book will be implemented to address the effects of construction on transit and vehicular circulation, bicycle and pedestrian traffic, emergency access, and Caltrans facilities. Measures to minimize the effects of construction will be included in the construction management plan, as indicated in the section titled *Standardized Measures* of Chapter 1, Proposed Project.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction during the construction period of the proposed project. Therefore, under the No-Build Alternative, there will be some construction

activities within the project corridor, but the proposed project will not be constructed. Therefore, there will be no effect on transportation and traffic in the study area resulting from the proposed project; however, other projects will result in construction activity that will be similar to that of the proposed project. Other projects will also be subject to SFMTA requirements and will minimize construction impacts to the extent possible using similar measures.

Operational Impacts

Construction Year (2020)

Build Alternative

Vehicular Traffic

Private vehicles are not permitted on Market Street eastbound (inbound) between 10th and Main streets and westbound (outbound) between Steuart Street and Van Ness Avenue. Where permitted to travel on Market Street, all non-transit vehicles are restricted from using transit-only lanes at all times. Eastbound private vehicles are required to turn right at 10th Street. Taxis and commercial vehicles are permitted on the entire length of Market Street within the project corridor, except for the eastbound direction between Beale and Main streets. Commercial vehicles are permitted for loading activities only during off-peak hours in the off-peak direction (i.e., westbound [outbound] in the morning peak hours and eastbound [inbound] in the evening peak hours).

The proposed project will convert Spear Street between Market and Mission streets from a one-way southbound to a two-way street. Right turns will be required at northbound Spear Street at Market Street. In addition, proposed project will convert the following two one-way streets to two-way streets: Turk Street between Taylor and Market streets, and Mason Street between Market and Eddy streets. These roadway changes will facilitate local access to land uses to the north and south of Market Street. These proposed local circulation changes will result in an increase of up to 100 vehicles during the p.m. hour, or one to two cars per minute on these roadway segments. These local circulation changes will not affect broader traffic patterns within the transportation study area beyond the immediate vicinity of these roadway changes.

The design option will further alter the transportation network in the western segment of the project corridor, between Octavia Boulevard and a point 300 feet east of the intersection of Ninth/Larkin/Hayes/Market streets. In addition to the features noted above, the design option will include a reduction in mixed-flow travel lanes, sidewalk widening, raised crosswalks, and vehicle and turn restrictions. The City traffic assignment model indicates that the design option will cause some vehicular travel pattern changes west of the intersection of Market and Ninth streets.

The turn restrictions proposed by the design option will affect primarily local trips. Most vehicles on the affected segments of Market Street will travel only a few blocks to reach north–south routes or have parallel options available without a substantial detour. The southbound right-turn restriction on Van Ness Avenue at Market Street will result in approximately 300 p.m. peak hour vehicles shifting from Van Ness Avenue to Gough Street. Under the design option, the eastbound Market Street turn restrictions will cause private vehicles on Market Street destined for 10th Street to turn right at Gough Street (south of Market Street), Duboce Avenue, or 14th Street upstream of the intersection of Van Ness Avenue/South Van Ness Avenue/Market Street.

For northbound vehicles on 12th Street, the design option will force northbound vehicles to turn left and onto westbound Market Street (right turns from northbound 12th Street to eastbound Market Street will not be permitted). In general, these restrictions will not have an adverse effect on access or travel patterns beyond the first few blocks after leaving 12th Street. Because the segment of 12th Street near Market Street provides primarily local access to properties between Otis and Market streets, the redistribution of vehicles due to this change will be negligible compared with surrounding roadway volumes.

These changes will not affect movements to or from study-area Caltrans off-ramps or mainline facilities.

Vehicle Miles Traveled and Traffic Operations

The Build Alternative and the design option will alter the transportation network. This includes the conversion of transit-only travel lanes to Muni-only lanes, with only Muni transit vehicles and emergency vehicles permitted; new bicycle facilities; reconstructed sidewalks; sidewalk bulb-outs; new transit facilities; changes to transit stop locations and characteristics; upgrades to transit boarding islands; removal of on-street vehicle parking as well as on-street commercial and passenger loading/unloading zones; new traffic signals; and changes to signal timing. Additionally, the proposed project includes several changes to local circulation in the blocks surrounding Mason and Turk streets and Spear and Market streets and the design option includes several private vehicle restrictions west of 10th Street. These features fit within the general types of projects that are not likely to lead to a substantial or measurable increase in automobile travel. The proposed project and design option changes to traffic patterns are local in nature and therefore will not substantially affect VMT or traffic operations.

Implementation of the proposed project and design option will not change volumes or queues on the US 101 northbound off-ramps at Octavia Boulevard and 13th/Duboce/Mission streets. The proposed project and design option will not modify vehicular capacity where Van Ness Avenue or the Octavia Boulevard US 101 off-ramp crosses Market Street. The City trip assignment model did not indicate that substantial changes to traffic volumes will occur at other US 101, I-80, or I-280 off-ramps because the proposed project and design option will affect local, not regional, trips.

Pedestrian Facilities

Elements of the Build Alternative that will modify the pedestrian network include:

- Sidewalk reconfiguration along Market Street;
- Upgrades and new traffic signals along the project corridor;
- Sidewalk bulb-outs crossing side streets at multiple locations;
- Modification and expansion of boarding islands and curbside stops, including changes to stop spacing;
- Potential relocation of the elevator at the BART/Muni Civic Center station; and
- Other streetscape improvements, including replacement of uneven sidewalk surfaces with accessible materials and construction of ADA-compliant curb ramps.

The City will design all pedestrian facilities to be ADA compliant and consistent with relevant federal, state, and local guidance. All platforms (center boarding islands and curbside stops) and the

F-line's proposed F-loop platform at Charles J. Brenham Place will be ADA accessible, thereby allowing Muni riders with mobility impairments to use the transit system. Trees, street furniture, and lighting proposed under the Build Alternative will be installed in a manner that meets City standards and ADA requirements for maintaining wide, unobstructed paths of travel for pedestrians and wheelchair users (i.e., by maintaining a minimum clearance width of 60 inches, exclusive of the width of the curb, and a recommended clearance width of 72 inches or more in high-use areas). In addition, the brick sidewalk surface will be replaced with a new surface that is continuous, firm, stable, slip resistant, and smooth, thereby meeting City and ADA requirements. The new sidewalk surface will remove existing challenges for people with disabilities, especially users of wheelchairs and other mobility devices, such as canes. Overall, the changes included in the proposed project will replace deficient pedestrian facilities with facilities that meet federal, state, and local requirements.

Proposed relocation of bus and streetcar stops, pedestrian crossings, and BART elevator locations may require some pedestrians or transit passengers to walk farther to cross the street or access transit, which could increase the physical effort required compared with the No-Build Alternative. Furthermore, the Build Alternative will remove the existing crosswalk at 12th Street, thereby requiring people to walk 125 feet to the west to cross at Page Street. The increased distance to transit stops may inconvenience some passengers; however, curb-lane stop spacing will be consistent with SFMTA local stop-spacing standards. In addition, transit riders can transfer to routes with center-lane stops.

The proposed project will narrow sidewalks on either side of Market Street by five to 15 feet to accommodate a dedicated bicycle facility and furnishing zone. As shown in Table 2.1.4-3, under no-build and build conditions, the sidewalk LOS at nine study locations throughout the project corridor will be LOS D or better, reflecting conditions in which pedestrians travel in their desired path, but their speed and ability to pass slower pedestrians may be restricted. With implementation of the Build Alternative, the density of people walking will increase compared with the no-build condition.

Sidewalk widths will remain adequate and accommodate pedestrians without resulting in substantial overcrowding during a typical weekday peak period. As such, the Build Alternative will not have an unacceptable effect related to pedestrian accessibility or crowding.

The design option, with respect to features affecting the pedestrian realm, will be similar to the Build Alternative, as described above. The design option includes additional sidewalk widening, corner bulb-outs, and raised crosswalks on portions of Market Street west of Ninth Street. Unlike the Build Alternative, the design option will not signalize the intersection of 11th Street/Market Street. Instead, similar to the no-build condition, 11th Street will remain a minor stop-sign controlled street, and the City will not construct a new crosswalk across Market Street at this location.

The design option will retain the existing crosswalk at the intersection of 12th/Market streets and provide a nearby pedestrian crossing. The design option will also widen sidewalks on a portion of Market Street between 12th and 10th streets from approximately 37 to 48 feet wide (with a 25-foot pedestrian through zone). The City will design all pedestrian facility changes to be ADA compliant. The design option will enhance the pedestrian network along Market Street between Octavia Boulevard and Ninth Street.

Table 2.1.4-3. Pedestrian Sidewalk Level-of-Service Analysis (Near-term [2020] Conditions), Weekday P.M. Peak Hour

		No-Build Alternative			Build Alternative		
Side of Street/ Street Segment	**Pedestrians (hourly)**	**Effective Sidewalk Width (feet)**	**Density (peds/ min/ft)**	**LOS**	**Effective Sidewalk Width (feet)**	**Density (peds/ min/ft)**	**LOS**
North Side of Market Street							
Drumm Street–Steuart Street	3,836	32	2.0	B	16	4.0	C
Montgomery Street–Sutter Street	4,008	13	5.1	C	7.5	8.9	D
Fifth Street–Ellis Street	3,242	11.5	4.7	C	8.5	6.4	D
Larkin Street–Grove Street	1,474	18.5	1.3	B	15	1.6	B
South Side of Market Street							
Fremont Street–Beale Street	4,518	12	6.3	D	12	6.3	D
New Montgomery Street–Second Street	4,028	19	3.5	C	17	3.9	C
Fifth Street–Fourth Street	5,112	11.5	7.4	D	11.5	7.4	D
Seventh Street–Eighth Street	1,928	11	2.9	B	6.5	4.9	C
Valencia Street–Gough Street	776	9	1.4	B	5	2.6	B

peds/min/ft = pedestrians per minute per foot

The Build Alternative will add ADA-compliant curb ramps and replace the brick sidewalk with surfaces that meet City and ADA requirements where Van Ness Avenue and Octavia Boulevard intersect with Market Street. It will also signalize the intersection of 11th Street/Market Street adjacent to Van Ness Avenue and create an ADA-compliant pedestrian crossing on the east side of the intersection. With these changes, the Build Alternative will replace deficient pedestrian facilities at these intersections with amenities that meet federal, state, and local requirements.

Bicycle Facilities

The Build Alternative will improve bicycle facilities on Market Street by providing a raised sidewalk-level bikeway in each direction between the curb travel lane and the pedestrian through zone. The sidewalk-level bikeway will meet Caltrans' standard for class IV separated bikeways and be consistent with the relevant federal, state, and local guidance, such as the *Manual on Uniform Traffic Control Devices*; state and federal bikeway design guidelines; and the City's Better Streets Plan. This facility will be continuous in the eastbound and westbound direction between Octavia Boulevard and Steuart Street, except for an eastbound section between Franklin and 10th streets and three westbound sections between Second and Montgomery streets, 11th Street and Van Ness Avenue, and Rose and Valencia streets. The sidewalk-level portion of the bikeway will include buffers on both sides to designate space for bicyclists. The new bikeway will be at roadway level in several areas to

accommodate constrained or limited roadway widths, new or widened bicycle connections to cross streets, and widened boarding islands. These segments will include new buffers and separation from vehicle traffic where feasible, representing approximately 1 percent of the corridor. The Build Alternative also includes implementation of improved connections on cross streets, such as the new street-level parking-protected bicycle lanes on both sides of Valencia Street between Market and McCoppin streets. The Build Alternative will include bicycle signals and leading bicycle-signal intervals at locations where allowed vehicles (e.g., commercial vehicles, paratransit, taxis) on Market Street are allowed to turn right. Two-stage left-turn queue boxes will allow bicyclists to turn onto intersecting bicycle routes to travel north or south. At the intersection of Market Street/Van Ness Avenue, bicycle boxes will allow bicyclists to queue at the front of the vehicle queue during red lights.

The design option adds a sidewalk-level bikeway facility in the eastbound direction between 12th and 11th streets and in the westbound direction between 11th Street and Van Ness Avenue. The design option will meet Caltrans' standard for class IV separated bikeways through a raised curb and horizontal buffer between the bikeway and the adjacent vehicle lane and provide a wider bikeway than the class II bike lane in the Build Alternative.

These new bicycle facilities will improve bicyclist access to businesses and locations along the project corridor by providing a dedicated and separated ROW compared to the No-Build Alternative on Market Street.

The Build Alternative will provide additional bicycle infrastructure where Van Ness Avenue and Octavia Boulevard intersect Market Street. This includes the installation of sidewalk-level bikeways east of Octavia Boulevard, a mix of buffered and sidewalk-level bikeway facility on either side of Van Ness Avenue, and striping and painting to help cyclists navigate across Van Ness Avenue between sidewalk-level bikeway segments. Immediately east of Van Ness Avenue, the Build Alternative will also signalize the intersection of 11th Street/Market Street and install a "jug-handle," or left-turn pocket, to facilitate cyclists' westbound left turn onto 11th Street. With these changes, the Build Alternative will improve bicyclist access at Caltrans facilities in a manner consistent with Caltrans' standards.

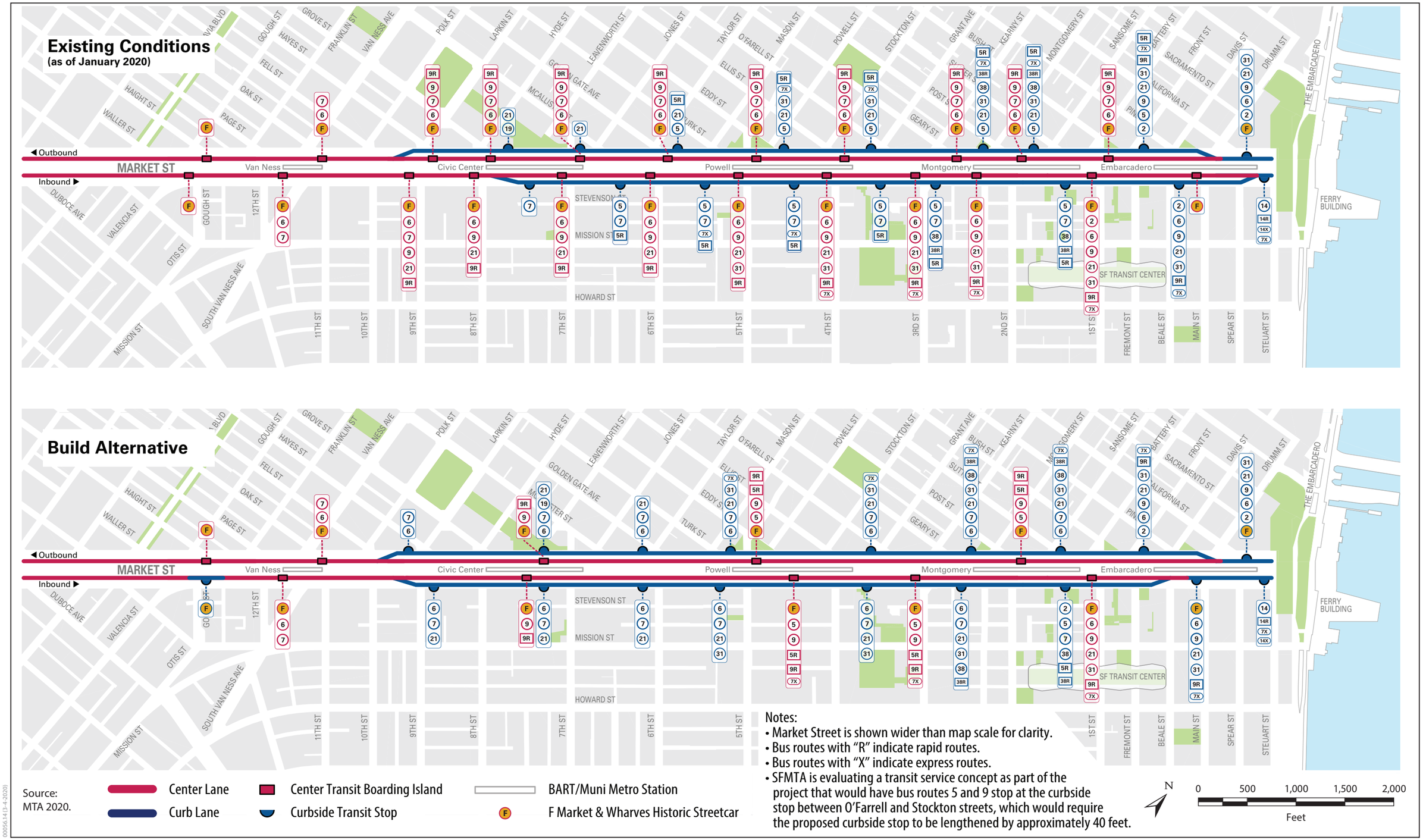
Parking Facilities

The Build Alternative will convert 61 on-street parking spaces on cross streets along Market Street or side streets north and south of Market Street to commercial loading spaces and passenger loading/unloading zones. This permanent replacement of on-street parking spaces with daylighting improvements and commercial loading spaces or passenger loading/unloading zones will reduce on-street parking in the study area. The parking loss will be spread out over the project corridor between Octavia Boulevard and Steuart Street both north and south of Market Street. Drivers will therefore shift to one of the large off-street public parking garages in the study area, which have thousands of parking spaces available, or one of the other transportation modes in the study area (e.g., transit, taxis, app-based ride-hailing services, regional transit providers, walking, biking).

The Build Alternative and design option makes no additional changes to parking supply. Effects of the design option on parking will be the same as under the Build Alternative.

Transit Operations

The Build Alternative includes multiple elements to improve transit operations along Market Street, as shown in Figure 2.1.4-2.



Source:
MTA 2020.

Notes:
- Market Street is shown wider than map scale for clarity.
- Bus routes with "R" indicate rapid routes.
- Bus routes with "X" indicate express routes.
- SFMTA is evaluating a transit service concept as part of the project that would have bus routes 5 and 9 stop at the curbside stop between O'Farrell and Stockton streets, which would require the proposed curbside stop to be lengthened by approximately 40 feet.

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Figure 2.1.4-2
Existing and Proposed Project Muni Transit Stop Spacing

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Market Street Bus Routes. Most routes operating on Market Street will experience decreased weekday p.m. peak hour transit travel times under the Build Alternative. Under the proposed project, weekday p.m. peak hour transit travel times for the Muni F-line streetcar will decrease by more than five minutes. Most of the remaining 12 bus routes that operate on Market Street will also experience decreased travel times. Five routes could see a slight increase in travel time (in one direction) under build conditions compared to no-build conditions should they shift from the center Muni-only lane to the curb mixed-flow lane. The proposed project will not increase transit travel times for routes traveling on Market Street beyond the City's threshold for acceptable transit operational performance, which is an increase of four minutes, or one-half the headway between transit vehicles.

The Build Alternative will increase transit stop spacing and walking distances for transit riders on routes that operate in the center Muni-only lane. The Build Alternative will reduce the number of center Muni-only lane transit stops from 23 to 11 to provide stop spacing for rapid service. Although the increased stop spacing for some routes may increase the physical effort required to reach a particular transit stop, the Build Alternative will maintain local stop spacing and provide more routes with frequent service in the curb mixed-flow travel lane.

Mission Street Bus Routes. The Build Alternative will not increase transit travel times on the Muni 14 Mission, 14R Mission Rapid, and 14X Mission Express routes. The Build Alternative could reduce vehicle queues on Mission Street at two congested locations where right-turning private vehicles often conflict with Muni vehicles under the No-Build Alternative. This would reduce the frequency and length of vehicle queues at these locations and allow Muni vehicles to travel slightly faster on Mission Street.

Cross-Street Bus Routes. The features of the Build Alternative and design option will not affect operations on cross-street bus routes. This includes the conversion of transit-only travel lanes to Muni-only lanes, with only Muni transit vehicles and emergency vehicles permitted; new bicycle facilities; reconstructed sidewalks; sidewalk bulb-outs; new transit facilities; changes to transit stop locations and characteristics; upgrades to transit boarding islands; removal of on-street vehicle parking as well as on-street commercial and passenger loading/unloading zones; new traffic signals; changes to signal timing. The proposed local circulation changes will not increase traffic volumes on roadway segments with cross-street transit service.

Regional Bus Routes. The Build Alternative will result in minimal changes to transit travel times on the regional routes running through the transportation study area. SamTrans 292 and KX routes operate primarily on Mission Street through the transportation study area and therefore will experience similar small changes in travel time as Muni routes on Mission Street. Travel times on Golden Gate Transit routes will not be affected by the proposed project or design option features or local circulation changes.

A travel-time analysis, similar to that for the Build Alternative, was conducted to determine whether the design option will have an adverse effect on transit travel times. For the historic streetcar on the F-line and Muni routes on Market Street, transit travel times will not be substantially different from the build condition. In addition, transit on Van Ness Avenue (including Muni and Golden Gate Transit buses) will operate within exclusive transit-only lanes, while on Market Street, Muni buses will operate within exclusive Muni-only lanes. Therefore, transit vehicles will not be subject to additional delay due to the design option.

Hazards and Safety

The Build Alternative includes elements to separate and organize the movement of transit vehicles, pedestrians, and bicycles along the Market Street corridor to address the roadway deficiencies identified for the No-Build Alternative. The new roadway elements of the Build Alternative were designed in accordance with applicable local, state, and national standards, such as FHWA and ADA requirements at the federal level; state design standards, such as the *California Highway Design Manual* and *Manual on Uniform Traffic Control Devices*; and local ordinances and plans, such as the City's Better Streets Plan. By upgrading roadway facilities to be in compliance with the standards, the Build Alternative will enhance sight lines and reduce the potential for collisions for all modes of transportation on Market Street.

The Build Alternative will include roadway modifications and traffic signal upgrades to reduce conflicts between modes of transportation on Market Street. Center lanes will be converted to Muni-only lanes to reduce conflicts between center-running transit and increase service on the new F-short streetcar route east of Seventh Street. The Build Alternative will improve other aspects of the roadway network as well, such as the signal timing and signal controllers, to incorporate current design standards. These Build Alternative elements will prioritize transit efficiency and safety along the corridor.

The Build Alternative will reduce the potential for collisions with pedestrians by providing facilities that address existing deficiencies (e.g., by providing corner bulb-outs with ADA-compliant curb ramps). These changes will reduce the likelihood of pedestrian collisions by shortening crossing distances to reduce pedestrian exposure to vehicle traffic and increasing the visibility of pedestrians by placing them in the line of sight of turning drivers. The Build Alternative will include a buffer zone to separate pedestrians from the new sidewalk-level bicycle facility through the use of markings, signs, and raised features to discourage bicyclists from cycling on the sidewalk and pedestrians from walking in the bikeway. Pedestrians will have designated places to cross the bicycle facility and connect to transit stops and platforms.

The Build Alternative will reduce the collision potential for bicyclists by providing a dedicated and separated ROW for the length of Market Street. By separating bicyclists from traffic, the Build Alternative will remove the conflicts caused by weaving movements between bicyclists and vehicles. Bicycle traffic signals and bike boxes will reduce conflicts between bicyclists and vehicles by increasing the visibility of bicyclists. Two-stage left-turn queue boxes will allow bicyclists to make left turns at multi-lane signalized intersections from a right-side sidewalk-level bikeway or bicycle lane or right turns from a left-side sidewalk-level bikeway or bicycle lane.

The movement by vehicles into the sidewalk-level loading zone will involve crossing the bicyclist's path of travel at each location. This movement will be similar to that under the No-Build Alternative, with vehicles crossing a class II bicycle lane to access loading spaces. However, the number of loading zones on either side of Market Street will be limited (about 10 zones on each side of the street), and the movement from roadway grade to sidewalk grade will require the loading vehicle to maneuver slowly into the space. The City will install lines and "Yield to Bike" signage, as appropriate, to make it clear that the bicyclist has priority over vehicles entering and exiting the loading areas. Under the Build Alternative, bicyclists will be restricted to the 6-foot bikeway next to the loading zone or need to enter the vehicle lane and move away from the loading vehicle.

No-Build Alternative

Vehicular Traffic

Under the No-Build Alternative, vehicular traffic will, for the most part, follow patterns similar to existing conditions, although there will very likely be growth in vehicle volumes due to regional growth and local land use projects. In general, vehicular traffic patterns under the No-Build and Build Alternatives will be similar, with the exception of the proposed local circulation changes.

Vehicle Miles Traveled and Traffic Operations

Under the No-Build Alternative, there will be no change in VMT on Market Street or alterations to the transportation network. Traffic volumes will not change and there will be no change in queuing conditions at Caltrans off-ramps.

Pedestrian Facilities

Under the No-Build Alternative, the pedestrian network will resemble the existing pedestrian network, with the exception of planned improvements due to the opening of the Central Subway and Van Ness Bus Rapid Transit, sidewalk and landscaping changes under the Transit Center District Plan, Vision Zero improvements to Sixth Street and Jessie Street (e.g., new crosswalks and adjusted signal timing for pedestrians), and other improvements funded by anticipated land use development.

Bicycle Facilities

Under the No-Build Alternative, the Market Street bikeway will be similar to the existing bikeway and operate at street level. Bicyclists will continue to ride with transit and commercial vehicles in locations without separated facilities, which are primarily east of Eighth Street.

Parking Facilities

Under the No-Build Alternative, there will be no change to parking supply except for those by other planned improvements on cross or parallel streets in the study area.

Transit Operations

Under the No-Build Alternative, headways and transit travel times may change as a result of land use and transportation changes as well as implementation of Muni Forward, but there will be no changes to route headways or transit travel times as a result of the No-Build Alternative.

Hazards and Safety

Under the No-Build Alternative, existing roadway deficiencies will remain, such as the shared commercial vehicle, transit, and bicycle facilities with weaving and pinch-point locations at boarding islands. Due to the private vehicle restrictions on Market Street, there would not be additional traffic on Market Street under the No-Build Alternative.

Design Year (2040)

Build Alternative

Vehicular Traffic

The City traffic assignment model projects that weekday p.m. peak hour traffic volumes at the study intersections will increase by an average of 10 percent between near-term (2020) and long-term (2040) conditions due to Citywide land use growth. Due to the private vehicle restrictions on Market Street, Market Street volumes will be consistent between 2020 and 2040 for the No-Build and Build Alternatives and the design option. Therefore, the changes to circulation patterns under the Build Alternative and design option will be similar under long-term (2040) conditions as presented for near-term (2020) conditions. Traffic volumes at Caltrans off-ramps or mainline facilities would not change with the Build Alternative.

Vehicle Miles Traveled and Traffic Operations

As discussed under near-term (2020) conditions, the transportation features of the Build Alternative and design option are consistent with the general types of projects that will not substantially induce automobile travel nor substantially change circulation patterns. This will not change under long-term (2040) conditions based on proposed surrounding land use and transportation projects. Therefore, the Build Alternative or design option will not contribute to long-term VMT increases or substantially change traffic operations. Similar to near-term (2020) conditions, since the Build Alternative and design option will not change traffic volume or capacities at Caltrans off-ramps or mainlines, queuing conditions will not substantially change under long-term (2040) conditions.

Pedestrian Facilities

Projects that include improvements to the pedestrian network are contained within the Transit Center District Plan, Central SoMa Plan, Western SoMa Community Plan, Market and Octavia Area Plan, Sixth Street Pedestrian Safety Project, Polk Street Streetscape Project, Van Ness Improvement Project, Hub Plan, and The Embarcadero Enhancement Project, among others. Furthermore, as part of Vision Zero, the SFMTA has been implementing projects near the Market Street corridor, including private vehicle restrictions on Market Street, sidewalk widening, new traffic signals, leading pedestrian intervals, continental crosswalks, corner sidewalk extensions, daylighting, and travel-lane reductions. Upcoming Vision Zero projects include improvements on streets south of Market Street, including Sixth, Seventh, Folsom, and Howard streets, as well as on streets north of Market Street, including Powell, and Taylor streets. The City will require long-term development projects along and near the Market Street corridor to comply with the Better Streets Plan requirements, which are compliant with federal and state design standards for pedestrian facilities. These additional pedestrian improvements will further improve the pedestrian environment for individuals approaching Market Street under Build Alternative and design option conditions.

The number of people walking will increase between completion of the Build Alternative or design option and long-term (2040) conditions, due to projected growth along and near Market Street. Under long-term (2040) conditions, with projected increases in the number of people walking along Market Street (i.e., about 20 percent increase over near-term (2020) conditions) and the reduction in sidewalk widths, the sidewalks will be more crowded. At locations with high volumes of people

walking (e.g., the north side of Market Street between Montgomery and Sutter streets, or between Fifth and Fourth streets), conditions for people walking will be more constrained, with greater friction and interaction between people. However, under the Build Alternative and design option, adequate sidewalk width will be provided to accommodate pedestrians without causing crowding or undue delay or interfering with accessibility along Market Street.

Bicycle Facilities

Long-term (2040) conditions including recently implemented separated bikeway projects on Valencia (north of 15th Street), Polk, Second (north of Folsom Street), Fifth, and Eighth streets, planned separated bikeway projects along Valencia (south of 15th Street), 11th, Seventh, and Second (south of Folsom Street) streets and a proposed two-way protected bikeway on The Embarcadero and on Beale Street. Improvements facilitating bicycle turns on and off these intersecting bicycle facilities will improve bicycle connectivity to existing and planned class II and class IV bicycle facilities within the Central SoMa Plan area to the south on Howard, Folsom, Brannan, Third, and Fourth streets. These bicycle projects will enhance cycling conditions in the transportation study area. The Build Alternative and design option include new separated bikeways on either side of Market Street between Octavia Boulevard and Steuart Street that will connect with the above bicycle facilities intersecting Market Street. In addition, the proposed bicycle facilities in the Build Alternative and design option will connect with parking-protected bicycle lanes on upper Market Street between Octavia Boulevard and Duboce Avenue.

The completion of these long-term bicycle projects is expected to further enhance bicycle facilities within the study area and along the project corridor. Project features discussed in the near-term (2020) analysis will continue to meet Caltrans' standard for class IV separated bikeways and be consistent with the relevant federal, state, and local guidance, such as the MUTCD, state and federal bikeway design guides, and the City's Better Streets Plan.

Parking Facilities

Within the Market Street transportation study area, development projects projected under the Transit Center District Plan, Central SoMa Plan, Eastern Neighborhoods (Eastern SoMa) Plan, Western SoMa, Hub Plan, and Market and Octavia Plan are anticipated to result in a substantial increase in residential and commercial development on or south of Market Street. Some of the new developments in these areas will include new off-street parking facilities, but not to the ratios used for many existing buildings. In addition, through the implementation of the City's Transit First Policy, Vision Zero, and Better Streets Plan programs and related projects, as well as street-network changes included in the plans identified above, on-street parking may be further removed under long-term (2040) conditions to promote other modes of travel and sustainable street designs. Similar to the Build Alternative and design option, these projects will encourage transit use through the reduction of transit travel times, will encourage bicycle use through provision of separate bicycle facilities that will offer a higher level of security than bicycle lanes, will be attractive to a wider spectrum of people, and will enhance walking conditions.

Although parking removal will occur under the Build Alternative and design option, the removal will be spread out among numerous cross and side streets along the 2.2-mile Project corridor in a similar manner to the near-term (2020) conditions and there are large off-street public-parking garages in the study area. Furthermore, while parking will continue to be scarce under both long-term (2040) Build Alternative and design option conditions, the ready availability of alternatives to

auto travel, as well as compliance by development projects with Transportation Demand Management (TDM) Ordinance requirements, may lead to a mode shift from private passenger vehicles to transit or other modes of travel.

Transit Operations

Under long-term (2040) conditions with the Build Alternative and design option, transit travel times will decrease for most routes compared to near-term (2020) conditions with the no-build alternative. Some routes that operate in the curb mixed-flow lane of Market Street could see an increase in travel time as a result of the increased service frequency and ridership under 2040 conditions. The segment of Market Street between First and Fourth streets will have the greatest number of transit routes and associated congestion in the curb lane. However, these increases in transit travel time will not exceed four minutes or one-half the headway of individual routes.

Increases in vehicle volumes (averaging around 10 to 20 percent total across the study area) will very likely result in increased delay for all vehicles traveling in shared lanes through the study area. As documented in the Central SoMa Plan EIR and the Transit Center District Plan Environmental Impact Report, this combination of land use (e.g., delay associated with additional passengers boarding transit vehicles and conflicts with additional traffic volumes on roadways) and street-network changes (e.g., travel-lane removal, conversion from one-way to two-way operations, installation of protected bicycle lanes) will have a long-term adverse effect on transit operations for Muni and other regional routes operating on cross streets and streets south of Market Street. Affected bus routes include Muni routes 8 Bayshore, 8AX/BX Bayshore Expresses, 10 Townsend, 12 Folsom Pacific, 14 Mission, 14R Mission Rapid, 14X Mission Express, 27 Bryant, 30 Stockton, 41 Union, 45 Union/Stockton, and 47 Van Ness and the Golden Gate Transit and SamTrans routes operating on streets south of Market Street. The SFMTA recently implemented changes to the Muni 27 Bryant route to enhance this route's operations north of Market Street as a part of the 27 Bryant Transit Reliability Project and south of Market Street as a part of the Fifth Street Improvement Project. These changes include shifting the route from Mason Street onto Eddy Street to avoid increased traffic congestion on Mason Street, consolidating bus stops, and creating bus boarding islands.

The Build Alternative and design option will not generate new vehicle trips, nor will they generate new transit riders. The circulation changes are local in nature and will not affect roadways with service. Therefore, the Build Alternative and design option will not worsen operations for Muni, Golden Gate Transit, and SamTrans routes compared to near-term (2020) conditions.

Hazards and Safety

Conditions on Market Street with the Build Alternative and design option will be similar to near-term (2020) conditions, with the exception of growth in planned transit service and additional pedestrian, bicycle, and commercial loading traffic associated with the increase in land uses by 2040. Similar to near-term (2020) conditions, the Build Alternative and design option will address roadway deficiencies and reduce the collision potential by organizing the movement for all modes on Market Street. Reducing the number of vehicles mixing with bicyclists will reduce the potential for conflicts between bicyclists and vehicles. Due to the existing private vehicle restrictions, the long-term increase in vehicles on surrounding study area streets will not create potentially hazardous conditions or otherwise interfere with bicycle and pedestrian accessibility along Market Street.

Increases in vehicles on Mission Street and cross streets under long-term (2040) conditions due to background land use development could result in the potential for increased conflicts between vehicles and other modes. The increases in vehicles will very likely occur in areas that are already experiencing high levels of traffic congestion and corresponding low speeds; as such, conditions will not change substantially between near-term (2020) and long-term (2040) conditions, will not be considered a new hazard or substantial worsening of a traffic hazard, or result in a long-term substantial increase in traffic hazards. The effect of the Build Alternative and design option on vehicle redistribution to other streets will be similar to that under near-term (2020) conditions.

No-Build Alternative

Vehicular Traffic

Market Street volumes will be consistent between 2020 and 2040 for the No-Build Alternative due to the private vehicle restrictions. Vehicular traffic will, for the most part, follow patterns similar to existing conditions on other streets, although there will very likely be growth in vehicle volumes due to regional growth and local land use projects.

Vehicle Miles Traveled

Under the No-Build Alternative there will be no change in VMT on Market Street or alterations to the transportation network. While local planning efforts and the regional Sustainable Communities Strategy will continue to shift the public to alternatives to private vehicles, the No-Build Alternative would not result in the same benefits as the Build Alternative and design option with respect to improvements to transit operations and service and therefore will not support alternative modes of transportation to the maximum extent feasible.

Traffic Operations

Under the No-Build Alternative, the number of vehicles remaining in queue at the end of the peak hour will not change. Therefore, there will be no change in queuing conditions at Caltrans off-ramps.

Pedestrian Facilities

The City is currently proposing a number of projects to enhance walking conditions along and near the Market Street corridor that are included in the long-term No-Build Alternative. Under the no-build condition, the pedestrian network will resemble the existing pedestrian network, with the exception of planned improvements due to the opening of the Central Subway and Van Ness Bus Rapid Transit, sidewalk and landscaping changes under the Transit Center District Plan, Vision Zero improvements to Sixth Street and Jessie Street (e.g., new crosswalks and adjusted signal timing for pedestrians), and other improvements funded by anticipated land use development. These additional pedestrian improvements will further improve the pedestrian environment for individuals approaching Market Street under No-Build Alternative conditions.

The number of people walking will increase between existing long-term (2040) conditions, due to projected growth along and near Market Street. Under long-term (2040) conditions, with projected increases in the number of people walking along Market Street (i.e., about 20 percent increase over near-term (2020) conditions), the sidewalks will be more crowded. At locations with high volumes of people walking (e.g., the north side of Market Street between Montgomery and Sutter streets, or between Fifth and Fourth streets), conditions for people walking will be more constrained, with

greater friction and interaction between people. However, under the No-Build Alternative, adequate sidewalk width will be provided to accommodate pedestrians without causing crowding or undue delay or interfering with accessibility along Market Street.

Bicycle Facilities

Under the No-Build Alternative, the Market Street bikeway will be similar to the existing bikeway and operate at street level. Bicyclists will continue to ride with transit and commercial vehicles in locations without separated facilities, which are primarily east of Eighth Street. The City is currently proposing a number of bicycle projects near the Project corridor that will be included in the long-term (2040) No-Build Alternative. These bicycle projects will generally enhance cycling conditions in the transportation study area even though the existing Market Street bikeway is expected to remain comparable to existing conditions. However, the No-Build Alternative will not result in the same benefits as the Build Alternative with respect to improvements to bicycle facilities on Market Street.

Parking Facilities

Under the No-Build Alternative, there will be no change to parking supply on cross or parallel streets in the study area. However, over time, due to the land use development and increased density anticipated within the City, parking demand and competition for on- and off-street parking is likely to increase under the No-Build Alternative. While local planning efforts and the regional Sustainable Communities Strategy will continue to shift the public to alternatives to driving and parking, the No-Build Alternative will not result in the same benefits as the Build Alternative and design option with respect to improvements to transit operations and service and therefore will not support alternative modes of transportation to the maximum extent feasible.

Transit Operations

Under the No-Build Alternative, headways and transit travel times may change as a result of land use and transportation changes as well as implementation of Muni Forward, but there will be no changes to route headways or transit travel times as a result of the No-Build Alternative. While local planning efforts and the regional Sustainable Communities Strategy will continue to shift the public to alternatives to private vehicle use, the No-Build Alternative will not result in the same benefits as the Build Alternative and design option with respect to improvements to transit operations and service and therefore will not support alternative modes of transportation to the maximum extent feasible.

Hazards and Safety

Under the No-Build Alternative, existing roadway deficiencies on Market Street will remain, such as the shared commercial vehicle, transit, and bicycle facilities with weaving and pinch-point locations at boarding islands. Due to the private vehicle restrictions on Market Street, there will not be additional traffic on Market Street under the No-Build Alternative.

2.1.4.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are required.

2.1.5 Visual/Aesthetics

2.1.5.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969, as amended, establishes that the federal government use all practicable means to ensure all Americans safe, healthful, productive, and *aesthetically* (emphasis added) and culturally pleasing surroundings (42 United States Code [USC] 4331[b][2]). To further emphasize this point, the Federal Highway Administration (FHWA), in its implementation of NEPA (23 USC 109[h]), directs that final decisions on projects are to be made in the best overall public interest taking into account adverse environmental impacts, including among others, the destruction or disruption of aesthetic values.

2.1.5.2 Affected Environment

Information in this section is from the *Visual Impact Assessment* (VIA) prepared for the proposed project (December 2019). The VIA generally follows the guidance outlined in the publication *Visual Impact Assessment for Highway Projects* published by the FHWA in March 1981. Where other data sources were used, citations have been provided.

Project Setting

The project corridor is Market Street between Octavia Boulevard and The Embarcadero in the city and county of San Francisco, on the north end of the San Francisco Peninsula in the Central Coast region of Northern California. The landscape is characterized by gently sloping terrain that is mostly developed with commercial, residential, and urban land uses. Along most of the project corridor, a single row of street trees, in various states of health, is included within the sidewalks on either side of Market Street. As discussed in Chapter 1, *Proposed Project*, the street trees along the project corridor are of varying health. The key factors affecting the health and structural condition of the street trees are microclimate, disease, poor soil environment, and conflicts with infrastructure (HortScience 2016). Due to the microclimate along the project corridor (cool, foggy summers, limited sunlight, and strong winds) and the existing street trees are less vigorous and diseases are favored. Also contributing to the overall poor condition of the existing street trees is the soil along the project corridor, which is compacted, poorly aerated, low in organic matter, nutrient deficient, and limited in volume. With respect to conflicts with infrastructure, metal tree grates and other associated metal infrastructure (e.g., the grate anchors) generally represent impediments to trunk and root expansion and cause trunk damage. Overall, the result is a weak, unattractive street tree population. Thus, even when viewed as a continuous row of trees with mature canopies, the existing rows of street trees are not a substantial visual resource.

The existing brick sidewalk materials throughout the project corridor are a defining visual feature of the Market Street landscape, however the brick paving does not meet federal standards regarding traction or joints for pedestrian access routes and many sidewalk crossings on Market Street lack ADA-compliant curb ramps. Open spaces along Market Street generally consist of paved urban plazas with seating areas and landscaping.

The greater San Francisco Bay region is a complex system of mountain ranges, valleys, and waterways that, together, create a unique area that not only defines the character of the region but also contributes to the overall character of California. Some notable areas include the

distinctive urban center of San Francisco, the cliffs of the Marin Headland and Pacific Ocean coastline, and the San Francisco Bay. The region is characterized by panoramic views from the Santa Cruz Mountains and the East Bay Hills, the rolling hillsides, and the numerous waterways.

As described in *United Nations Plaza Renovation: Presentation of Findings*, Market Street, in conjunction with Fulton Street, is a part of the linkage between city hall and the Ferry Building. It serves to heighten the relationship between these two significant landmarks. The study found that the 1970s upgrades to the plaza, which were implemented to make it blend better with Market Street and enhance public use of the space, did little to improve the quality of the public's experience. Even though the summer lunchtime concert series and farmers markets intermittently improve the experience at the plaza, it is still noted for deteriorated social conditions, including an "overwhelming presence of drug dealers, drug users, and gangs…a day and nighttime environment [that] does not instill a sense of security and comfort…[where] drug paraphernalia and human waste can be found throughout the plaza, posing safety and health concerns," making it so the general public avoids using or traveling through the plaza (ROMA Design Group and San Francisco Public Works 2003). These elements contribute to giving the plaza a sense of isolation from the surrounding landscape, including Market Street. However, most of Market Street also provides a lively, active public space that is frequently used by residents, employees of nearby businesses, and tourists alike.

The City and County of San Francisco (City) General Plan identifies Market Street as a corridor that helps to define the city. It also notes Market Street's high-quality views. Within the project corridor, there are scenic focal-point views toward The Embarcadero, Embarcadero Plaza, Harry Bridges Plaza, and the Ferry Building at the northeast end and Twin Peaks at the southwest end. However, because of urban development, which confines the views, there are no scenic vistas within the project corridor.

As described in Chapter 1, *Proposed Project*, the Path of Gold light standards are ornamental light posts and a designated historic landmark. These are considered a scenic resource. The Path of Gold light standards, as viewed from street level as well as higher elevations, such as Twin Peaks and Corona Heights Park, define the visual character of Market Street. When viewed from street level, particularly at night when the lights are on, the Path of Gold light standards provide a sight line along Market Street. Although the standards are a linear visual resource, the street-level sight line is interrupted by numerous obstacles on every block, including street trees, traffic signals and sign posts, overhead wiring and poles, streetlights (other than the standards), kiosks, and other street fixtures. In addition to this historic landmark, the project corridor includes portions of ten historic districts. Their architecture and streetscape elements also contribute to the visual landscape along Market Street. The corridor also provides views of urban plazas and public art, features (e.g., fountains), and monuments.

Visual Assessment Units and Key Views

In the VIA, the project corridor was divided into a series of "outdoor rooms" or *visual assessment units* (VAUs). Each VAU, which has its own visual character and visual quality, is typically defined by the limits of a particular viewshed. For this project, three VAUs were defined by how the building heights, ranging from the lower buildings, which have more open spacing, to the higher buildings, which are spaced more closely together, contribute to the visual landscape. Although the VAUs roughly correspond to neighborhood boundaries, they were determined by the visual setting. Six key views were also chosen for their representation of the VAU where they are

located; the view locations are shown in Figure 2.1.5-1, p. 2.1.5-5. The key views are shown in Figures 2.1.5-2 through 2.1.5-4, pp. 2.1.5-7 through 2.1.5-9. For this project, the following three VAUs and associated key views have been identified:

- **Hayes Valley VAU:** The Hayes Valley VAU extends from U.S. Highway 101 (US 101)/Octavia Boulevard to South Van Ness Avenue. It is the westernmost VAU within the project corridor and generally consists of two- to six-story buildings (see Figure 2.1.5-2, Key Views 1 and 2). This VAU tends to be brighter because the buildings do not shade the project corridor as much as the taller buildings within other VAUs. However, street trees do shade the sidewalks and the edges of the roadway. Views to Twin Peaks, which can be seen to the southwest, down the project corridor, are a focal point. The overhead contact system (OCS) powers the streetcars and buses. The OCS is prominent in this VAU because views are more open, and the interlacing lines of the OCS intersect views of the tops of the adjacent buildings. The roadway corridor consists of asphalt paving and white pavement markings, delineating vehicle travel lanes, crosswalks, bike lanes, and on-street parking spaces, with words and symbols for safety and traffic flow. In addition, green paint clearly delineates the bike lanes. San Francisco Municipal Railway (Muni) rail lines are also visible along the length of the project corridor, in addition to a long line of rentable Ford GoBikes and their associated bike racks, which line the curb near Gough Street.

  The red brick sidewalks share their space with tree wells, fire hydrants, traffic light posts, advertising kiosks, bike racks, newspaper stands, and other features. In addition, ornamental light posts, associated with the Path of Gold light standards, line both sides of the street. U-shaped concrete walls along the sidewalks delineate entrances to the underground Bay Area Rapid Transit (BART) stations. Street trees of varying degrees of health line portions of the project corridor in this VAU. There are also two landscaped medians near each end of the VAU. Low-profile Muni boarding islands are also located within the roadway corridor. Views of The Embarcadero, Embarcadero Plaza, Harry Bridges Plaza, and the Ferry Building are not available from this VAU.

- **Downtown VAU:** The Downtown VAU extends from South Van Ness Avenue to Grant Avenue and contains taller multi-level buildings that create somewhat channelized views down Market Street (see Figure 2.1.5-3, Key Views 3 and 4). The tall buildings also cast more shade and create a more confined feeling along this segment of the project corridor compared to the more open Hayes Valley VAU. However, the urban form does not dominate the pedestrian environment because street trees help to scale the buildings. Channelized views to Twin Peaks are a focal point that can often be seen at the southwest end of the project corridor. In addition, the Ferry Building, at the northeast end of the project corridor where there are fewer obstructions and the roadway slopes down, can be seen from various locations within this VAU. The OCS, pavement markings, trees with varying degrees of health along both sides of the street, site furnishings and other features within the sidewalk space, and the Path of Gold light standards and rental bikes are consistent with the Hayes Valley VAU. However, the OCS did not stand out as much in this VAU compared with the Hayes Valley VAU because building heights and trees provide a darker background. The OCS blends in against this darker background and does not stand out as much in views from the sidewalks. However, views of the OCS still stand out when seen traveling along the roadway. In addition, red pavement paint, delineating transit and taxi lanes that exclude regular street traffic and identifying where associated boarding islands are located, is notably present in this VAU. Bus and transit shelters are also common in this VAU. In addition, the VAU contains several public plazas that create open spaces off of Market Street. These plazas contain landscaping, public art and (sometimes) water features, unique paving, and seating in the form of seat walls, raised planters, café tables and chairs, the ornamental bases of art installations and monuments, and wide terraced steps.

- **Financial VAU:** The Financial VAU extends from Grant Avenue to Steuart Street and is the easternmost VAU within the project corridor. This VAU comprises multi-level skyscrapers that create highly channelized views down Market Street (see Figure 2.1.5-4, Key Views 5 and 6). The tall buildings also cast more shade. When combined with the towering urban form, they create a pedestrian environment that feels much more confined than the Hayes Valley and Downtown VAUs. Views of The Embarcadero, Embarcadero Plaza, Harry Bridges Plaza, and the Ferry Building are focal points at the northeast end of the project corridor; views to Twin Peaks are focal points at the southwest end of the project corridor. The OCS, pavement markings, trees with varying degrees of health along both sides of the street, site furnishings and other features within the sidewalk space, and the Path of Gold light standards, public plazas, and rental bikes are consistent with the Hayes Valley VAU.

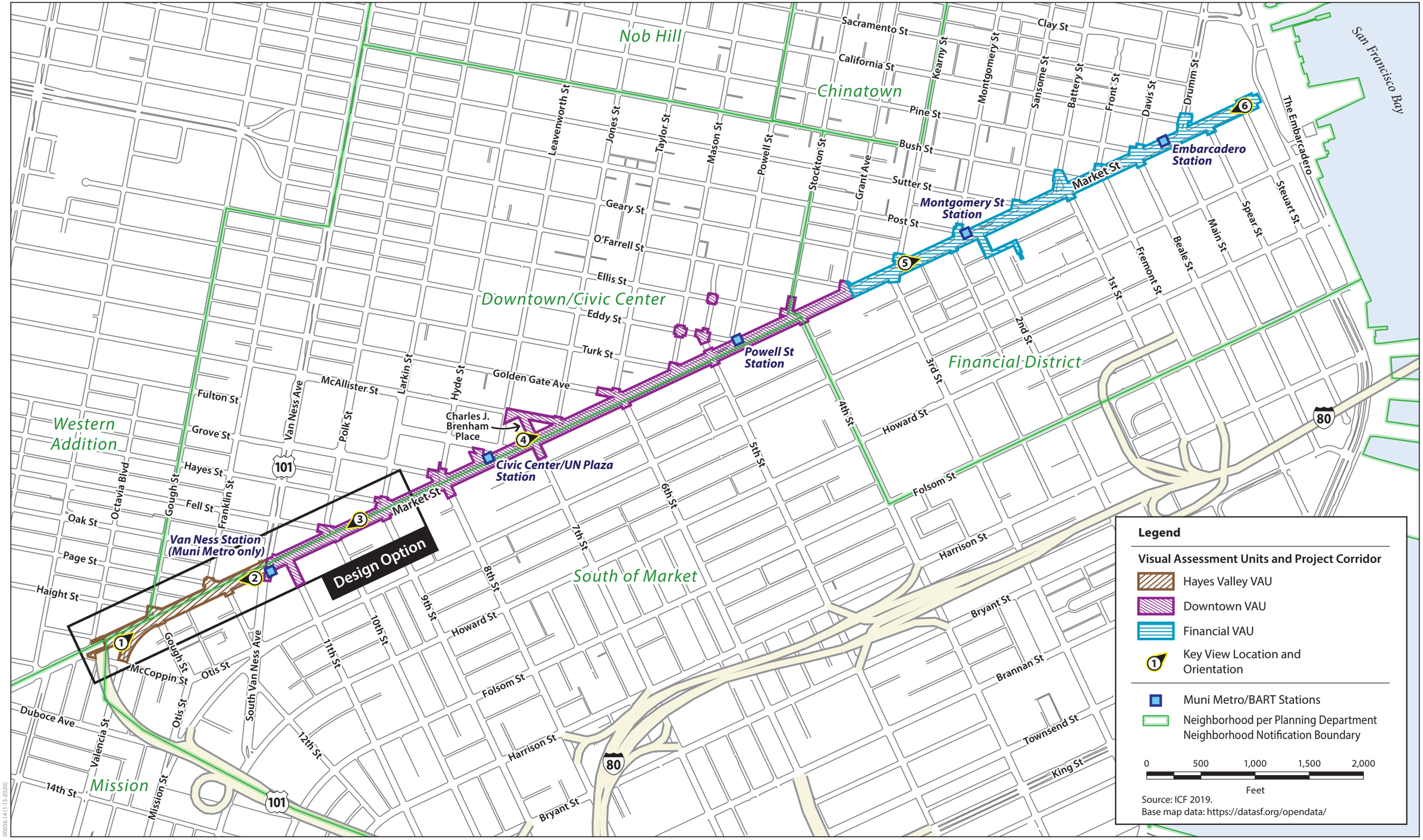
Affected Viewers

There are two major types of viewer groups for roadway projects: *corridor neighbors* and *corridor users*.

Corridor neighbors are people who have views *to* the corridor. For the purposes of the VIA, corridor neighbors consist of residents living above ground-level commercial businesses, homeless residents living nearby, workers and patrons of commercial businesses and civic uses, staff members and attendees at local schools, recreationists using urban plazas, and roadway users adjoining the project corridor.

Corridor users are people who have views *from* the corridor. They can be subdivided into different viewer groups in two different ways—by mode of travel or by reason for travel. For example, subdividing corridor users by mode of travel may yield pedestrians, bicyclists, transit riders, drivers and passengers in commercial vehicles, and truck drivers. Dividing corridor users or viewer groups by reason for travel creates categories such as tourists, commuters, and haulers. It is also possible to use both mode and reason for travel simultaneously, creating a category such as *bicycling tourists,* for example. Corridor users for this project consist of transit riders, bicyclists, pedestrians, recreational travelers, haulers, and homeless residents living along the corridor. Most views from the project corridor are of surrounding development, including The Embarcadero, Embarcadero Plaza, Harry Bridges Plaza, the Ferry Building, and Twin Peaks.

The Better Streets Plan indicates that Market Street is a "ceremonial street," in that it acts as a democratic space for accommodating public fairs, rallies, parades, and marches (City and County of San Francisco 2010). This indicates that the public is likely to have a vested interest in changes occurring along the project corridor. Public outreach was conducted in 2013, and extensive noticing was undertaken to inform the public of the meetings and surveys. The results of the public outreach meetings and online surveys show that the public (i.e., affected viewers) are largely in favor of the proposed project (Better Market Street 2013). The results of the public review of the Better Market Street Draft Environmental Impact Report in early 2019 also show overall support for the proposed project. There were 16 unique letters from individuals and organizations in support of the project and nine unique letters from individuals and organizations that opposed the project, indicating 56 percent approval. Although these findings do not account for every potential viewer, the findings from the public meetings are representative of viewers who will be affected by the proposed project and indicate that other viewers will also be likely to approve of the proposed project. Therefore, these findings have been considered in determining viewer sensitivity.



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Better Market Street Project

Figure 2.1.5-1
Visual Assessment Units

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Key View 1. Existing View—from Market Street, between Octavia Boulevard and Valencia Street, looking northeast.

Key View 2. Existing View—from Market Street, near South Van Ness Avenue, looking southwest.

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Figure 2.1.5-2
Hayes Valley VAU Key Views

Key View 3. Existing View—from Market Street, between 9th and 10th Streets, looking southwest.

Key View 4. Existing View—from Market Street, near the United Nations Plaza, looking northeast.

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Figure 2.1.5-3
Downtown VAU Key Views

Key View 5. Existing View—from Market Street, near Kearny and Geary Streets, looking northeast.

Key View 6. Existing View—from Market Street, near Steuart Street, looking southwest.

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Corridor neighbors are likely to have moderate visual sensitivity because, although construction activities are likely to be disruptive, the proposed project will result in a more cohesive roadway corridor that is inviting and visually appealing to pedestrians and patrons of businesses. These changes are likely to be viewed favorably by residents. The proposed changes to the corridor are likely to make Market Street even more of a destination location and enhance business for commercial land uses. Given the vested public interest in the project corridor, users will most likely have moderately high sensitivity to changes associated with the proposed project. However, the extensive noticing and subsequent public outreach effort documented positive public support for the proposed project, indicating that corridor users favor how the project will change corridor aesthetics and create a more organized, visually appealing transit experience. Therefore, corridor users are likely to be less sensitive to changes proposed by the project. Overall, corridor neighbors and corridor users will have moderate sensitivity to visual changes associated with the proposed project.

Environmental Consequences

Construction Impacts

Build Alternative

Construction activities will introduce a considerable amount of heavy equipment and associated vehicles, including backhoes, compactors, tractors, and trucks, into the viewshed of all viewer groups. Construction activities will have visual impacts on views of and from the project corridor during the construction period because of the presence of construction equipment and staging areas. Even though construction will occur in segments over a period of one year, major construction activities will be taking place along the corridor for at least a six-year period (and, potentially, up to 14 years), including inactive periods. This construction activity will include some night work and weekend work in areas where land uses are primarily commercial. Outdoor lighting sources such as floodlights, spot lights, and/or headlights associated with construction equipment and trucks typically accompany nighttime construction activities. Increased nighttime lighting effects will occur over the duration of construction of the Build Alternative. However, construction lighting will be focused on the particular area undergoing work.

Many viewers are transient in nature; however, many other viewers frequent the project area on a regular basis because they work, live, or shop along the corridor or use the corridor as part of their regular route to work. Therefore, disruptive construction activities and the presence of staging areas, construction signage, and lane closures may be perceived as negative visual impacts, even though the public is generally in favor of the proposed project. Even though aspects of project construction may be perceived as negative, the public supports the proposed project, and any such disruptive effects will be limited to the duration of construction.

Construction of the design option will entail the same construction approach, components, and duration as the Build Alternative; therefore, it has the same potential to result in visual impacts during construction as the Build Alternative.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within

the Market Street project corridor. These projects will be required to follow most or all of the same construction guidelines and policies that the Build Alternative will follow. Therefore, there will be minimal construction impacts on visual character, visual quality, and affected viewer groups under the No-Build Alternative.

Operational Impacts

Build Alternative

Scenic Vistas

Distant street-level scenic vistas in densely developed San Francisco are typically defined, directed, and framed along view corridors created by streets. The City's General Plan identifies the importance of protecting major views in the city, with particular attention to views of open space and water. The urban design element of the general plan includes a map titled "Street Areas Important to Urban Design and Views," which identifies particular street segments throughout the city with views of important buildings, streets that define the city form, or streets that extend the effect of public open space. The map identifies Market Street as a street with a view of an important building and one of the streets that define the city form. Proposed turn signals, stop signs, bicycle signals, bus shelters, and Americans with Disabilities Act– (ADA-) compliant accessible ramps could result in minor view obstructions. These elements of the Build Alternative will be consistent with the existing urban environment and the type and scale of the existing transportation facilities within the project corridor. All other physical improvements constructed as part of the Build Alternative will be at or below grade and will not affect views. As such, the Build Alternative will have a negligible change on street views from Market Street as well as surrounding streets.

At the state level, the California Scenic Highway Program identifies highways of outstanding natural beauty. No highways in San Francisco are designated under this program. Therefore, implementation of the Build Alternative will not affect any scenic vista during operation.

Operation of the design option will involve the same types of physical streetscape elements as the Build Alternative; therefore, it has the same potential to result in impacts on scenic vistas as the Build Alternative.

Scenic Resources that Contribute to a Scenic Public Setting

Scenic resources are the visible physical features of a landscape (e.g., land, water, vegetation, animals, structures, or other features) that contribute to a scenic public setting. All of the various Build Alternative elements will be implemented on public land, and the majority of the various Build Alternative elements will be implemented within the operational public right-of-way. The operational public right-of-way does not include scenic resources that contribute to a scenic public setting. The operational public right-of-way does include street trees and other vegetation, which is sparsely interspersed among the other features of this highly urban transportation corridor.

Although potentially all trees within the public right-of-way could be subject to removal as part of the proposed project, Public Works will consider the removal of trees on a case-by-case basis. Tree removal will be based on design elements (e.g., whether or not the tree location conflicts with a proposed streetscape improvement or roadway design element) and the health of the tree. It is anticipated that many of the healthy trees (primarily located in the eastern portion of the project

corridor closer to The Embarcadero [see Image 1]) could remain, unless they conflict with the final design, and many of the unhealthy trees (primarily located in the western portion of the project corridor closer to Octavia Boulevard [see Image 2]) will likely be removed and replaced due to their poor health. Most, but not all, street trees that are removed will be replaced with new street trees in a new alignment within the furnishing zone. The San Francisco Department of Building Inspection and San Francisco Public Works have established guidelines to ensure that the Urban Forestry Ordinance, which governs the protection of trees, is implemented. This ordinance aims to optimize the public benefits of trees on the city's streets and in public places, including enhancement of the visual environment, by recognizing that trees are an essential part of the city's aesthetic environment and that the removal of important trees should be addressed through appropriate public participation and dialog. Although the Build Alternative will result in a net decrease in the number of street trees in the project corridor, compliance with the established guidelines will ensure that the goal of optimizing the public benefits of the trees will be achieved with minimal effects.

The potential cultural resource impacts of the Build Alternative, including how alterations to historic resources might affect a scenic public setting, are discussed in Section 2.1.6, *Cultural Resources*.

Operation of the design option will involve the same types of physical streetscape elements as the Build Alternative; therefore, it has the same potential to result in impacts on scenic resources as the Build Alternative.

Existing Visual Character or Quality

The character and visual quality of the public realm in the densely developed project corridor is defined primarily by the varied land uses and the visual character and quality of the buildings that bound and visually enclose the streets. The Build Alternative will not result in the construction of buildings or structures that could have a substantial adverse effect on the existing visual character or quality of the public realm (e.g., an office tower that blocks views or is architecturally different in character from existing development). Build Alternative elements consist of both transportation and streetscape improvements. Elements of the surface transportation network (e.g., Muni buses and the proposed sidewalk-level bikeway) are not typically considered prominent visual features within the streetscape compared with a fixed feature (e.g., an architecturally significant building). In addition, in an urban setting, the surface transportation network elements are typically considered unobtrusive and utilitarian features that contribute to the visual character and quality of the public realm, which is the case in the project corridor. Although construction of the Build Alternative may affect the existing visual character or quality of areas while they are under construction, such effects will be temporary and will not substantially degrade the visual environment in any permanent or long-term sense.

The Build Alternative will not fundamentally change any of the physical components of the transportation network in a way that will substantially degrade the visual character of the associated streets and neighborhoods. Rather, typical of the existing physical features of the surface transit network, the Build Alternative elements will be visually unobtrusive and similar to transportation and streetscape features that currently exist within the project corridor. These changes will consist of familiar and accepted visual features in the project area’s dense and varied visual environment. However, two changes associated with the proposed project stand out. The existing brick paving throughout the project corridor is a defining visual feature of the Market Street landscape, and the proposed project would replace this material with monochromatic paving

materials which are expected to have a substantially different color and pattern relative to the existing brick. Thus, the removal and replacement of the existing brick paving will create a substantial visual change. As discussed above, the street trees along the project corridor are of varying health. It is anticipated that many of the healthy trees could remain and all of the unhealthy trees will be removed and replaced. Thus, much of the mature tree canopy associated with the existing healthy trees will remain in place while those street trees in poor health will be removed and replaced. Nonetheless, removing the existing street trees and planting new street trees in a new alignment will create a short-term visual change during the period between removal of the existing trees and when the replacement trees grow to maturity. Overall, replacing aging, unhealthy, and visually disjointed features and creating a corridor with uniform design elements with healthier landscaping and improved accessibility will result in the moderate resource change. Therefore, the Build Alternative will not degrade the visual quality of an existing neighborhood.

The 236 Path of Gold light standards within the project corridor will be partially restored (the tridents), reconstructed (base and poles), and realigned. The standards will be reinstalled in a consistent alignment to create a visible linear edge to the pedestrian zone. Although some individual standards may need to be located out of alignment with adjacent standards or removed to accommodate conflicts in the furnishing zone or sub-sidewalk basements, no more than 24.6 percent of the 236 standards will be removed or located out of alignment with other standards. This percentage translates to an estimated 58 of the 236 light standards in the project corridor, less than 18 percent of the total number of standards (327) within the entire article 10 landmark. This change will not be perceptible at either the street level or landscape level.

The Path of Gold light standards constitute a defining visual character of Market Street from both a street-level perspective as well as higher elevations (e.g., Twin Peaks or Corona Heights Park). As viewed from a street-level perspective, particularly at night when the lights are on, the Path of Gold light standards provide a visual sight line along Market Street. Although the standards are a linear visual resource, the sight line from any individual street-level perspective is interrupted by numerous obstacles on every block of Market Street, including street trees, traffic signals and sign posts, overhead wiring and poles, streetlights (other than the standards), kiosks, and other street fixtures. This visual landscape renders it difficult to view the standards in a straight line for more than one or two blocks, negating the visual effect of the relocation of any individual light standard. At the street level, the wider clamshell bases and taller poles will be arranged in a more consistent linear pattern compared with existing conditions. The taller poles will increase the height of each standard from about 33 feet to 38 feet. The increased height may actually facilitate street-level views of more light standards than is currently possible, offsetting to an extent the Build Alternative's removal or relocation of up to 58 of the standards. The light standards will remain prominent visual features with the Build Alternative's comprehensive program of streetscape upgrades to Market Street. Therefore, from a street-level perspective, the Build Alternative's changes to the light standards will not result in a new or worsened visual character/visual quality effect relative to what was disclosed in the VIA. Similarly, the Build Alternative's changes will not result in any new or worsened effect related to the existing character of the project vicinity. With respect to removal of the standard at Turk Street and Mason Street, there are currently intermittent gaps in the standards where major street crossings exist. Therefore, removal of this one light standard will be consistent with conditions at other major street crossings without a standard, such as the intersection of Geary Street and Kearney Street at Market Street. From a street-level perspective, the Build Alternative will not substantially degrade the visual quality of the Path of Gold light standards.

From the viewpoints of Twin Peaks (approximately 10,500 feet west of the project corridor) and Corona Heights Park (approximately 6,500 feet to the west), the Path of Gold light standards appear as a brilliant linear pathway to the east when lit at night. From Corona Heights Park, the Path of Gold light standards are slightly skewed, limiting the view to about one-third of the overall length of Market Street because of the intrusion of tall buildings. At a distance of 6,500 to 10,500 feet, the shifting of several adjacent standards north or south of their current locations or the removal of any individual light standard will not be perceptible. In addition, from a landscape perspective, the Build Alternative will result in the light standards being placed in a more consistent alignment, enhancing the "brilliant linear pathway" more effectively. Therefore, from a landscape perspective, the Build Alternative will not degrade the visual quality of the Path of Gold light standards.

The following visual changes are unique to the VAUs:

- **Hayes Valley VAU:** Visual changes within this VAU are consistent with the changes described above for all VAUs. Additional sidewalk widening will occur to provide a 14-foot-wide, two-way bikeway along Page Street between Franklin Street and Market Street. The expanded sidewalk for pedestrians along Page Street will not detract from visual resources but will allow pedestrians more space for taking in their surroundings.
- **Downtown VAU:** Visual changes within this VAU are consistent with the changes described above for all VAUs. The F-loop will introduce transit rail lines and stops along Charles J. Brenham Place and McAllister Street, which will also include mini-high ADA-compliant ramps. Currently, these roadways form a small triangular block. Although Market Street has a strong sense of space, Charles J. Brenham Place and McAllister Street seem somewhat disjointed from connecting areas. The Build Alternative will affect relatively short portions of the roadways and help incorporate the triangular block into the fabric of the Market Street corridor, giving it a better sense of place. In addition, bus stops are currently present along both of these roadways, with a bus shelter at the Charles J. Brenham Place stop. Therefore, transit uses are already present on these segments of the road. Lastly, construction of the F-loop will include a mini-high ADA-compliant ramp and an operator restroom. The mini-high ramp will be consistent with other ADA ramps currently along the project corridor or proposed. The scale of the operator restroom will be similar to that of other public restroom kiosks along the project corridor, such as near the Civic Center BART stop (between the Fifth Street Muni and Powell Street BART stops) or across from the Spear Street intersection with Market Street. Therefore, the operator restroom will be visually consistent with existing restrooms along the project corridor.
- **Financial VAU:** Visual changes within this VAU will be consistent with the changes described above for all VAUs. There are no unique elements that warrant further discussion.

Light and Glare

All Build Alternative elements will be constructed entirely within public right-of-way areas; the majority of project elements will be constructed within the operational public right-of-way. The right-of-way is lit by an existing system of street lights that is maintained by the San Francisco Public Utilities Commission. The Build Alternative will include new signals as well as signal timing and control modifications and relocations, which may create a new or relocated source of light. Traffic signals will be installed pursuant to specifications in the California Manual on Uniform Traffic Control Devices. However, the signals will be installed at roadway intersections and will not be visually obtrusive in the context of existing urban street lights. Therefore, they will not substantially interfere with daytime or nighttime views.

As discussed above, the 236 Path of Gold light standards within the project corridor will be partially restored, reconstructed, and realigned. Therefore, the Build Alternative element will not create a new source of light. In addition, street lights are a typical element of the urban streetscape. The limited relocation of the Path of Gold light standards will not increase the potential for light and glare and therefore will not degrade daytime or nighttime views. Reconstruction of the light standards will also include increasing the height of the support poles by about five feet. At present, the illuminated portions of the light standards are at the same level as several second-story windows along Market Street. The change in height may make the illuminated portions of the light standards less visible from second-story windows but somewhat more visible from third-story windows. However, none of these changes will result in any significant new source of light or glare on Market Street.

The Build Alternative will include enhancement and expansion (length and width) of transit boarding islands as well as amenities, such as bus shelters for center boarding islands. These elements will replace similar existing transportation features. Although the locations for some of these elements (e.g., bus shelters) will be slightly different relative to the existing condition, these will not be new additions to the project corridor. Therefore, the Build Alternative will not increase the potential for light and glare and will not degrade daytime or nighttime views. The Build Alternative will not have an adverse effect related to light and glare during its operation.

The differences between the design option and the Build Alternative include changes regarding roadway configuration, surface transit, and bicycle and pedestrian facilities in the western segment of the project corridor. Slight differences in circulation and slight shifts in transit stops will not result in noticeable visual differences between the Build Alternative and the design option. Therefore, the design option has the same potential to create operational visual impacts as the Build Alternative.

Context Sensitive Solutions

Existing brick sidewalk surfaces will be replaced with paving materials, consistent with federal accessibility requirements. A furnishing zone will be provided on the inward roadway side of the pedestrian sidewalk for most of the project's length. The furnishing zone will include trees and landscaping, street furniture, and public art. New trees will be planted in a new alignment in the furnishing zone. Public Works, in coordination with a tree-selection working group, composed entirely of local arboriculture experts, has prepared a provisional tree species list, made up of seven different genera, to increase diversity and help avoid disease, which has affected the current monoculture of London plane trees. These context sensitive solutions will help to generate public acceptance of the project, reflect the unique character of the community, and provide compatibility with the existing visual resources by improving accessibility as well as creating a memorable and active identity for Market Street, with gathering spaces, the ability to promenade, a healthy urban forest, and a vibrant public life.

No Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. These projects will have mostly beneficial effects on visual quality during operation. However, some elements of these projects may detract from visual quality and require avoidance or minimization measures. These projects will be required to follow most or

all of the same design guidelines and policies that the Build Alternative and design option will be required to follow. Therefore, there will be minimal operational impacts on visual character, visual quality, and affected viewer groups under the No-Build Alternative.

2.1.5.3 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.1.6 Cultural Resources

2.1.6.1 Regulatory Setting

The term "cultural resources," as used in this document, refers to the "built environment" (e.g., structures, bridges, railroads, water conveyance systems, etc.), places of traditional or cultural importance, and archaeological sites (both prehistoric and historic), regardless of significance. Under federal law, cultural resources that meet certain criteria of significance are referred to by various terms including "historic properties," "historic sites," and "traditional cultural properties." Laws and regulations dealing with cultural resources include:

The National Historic Preservation Act (NHPA) of 1966, as amended, sets forth national policy and procedures for historic properties, defined as districts, sites, buildings, structures, and objects included in or eligible for listing in the National Register of Historic Places (NRHP). Section 106 of the NHPA requires federal agencies to take into account the effects of their undertakings on historic properties and to allow the Advisory Council on Historic Preservation (ACHP) the opportunity to comment on those undertakings, following regulations issued by the ACHP (36 Code of Federal Regulations [CFR] 800). On January 1, 2014, the First Amended Section 106 Programmatic Agreement (PA) among the Federal Highway Administration (FHWA), the ACHP, the California State Historic Preservation Officer (SHPO), and Caltrans went into effect for Department projects, both state and local, with FHWA involvement. The PA implements the ACHP's regulations, 36 CFR 800, streamlining the Section 106 process and delegating certain responsibilities to Caltrans. The FHWA's responsibilities under the PA have been assigned to Caltrans as part of the Surface Transportation Project Delivery Program (23 United States Code [USC] 327).

The Archaeological Resources Protection Act (ARPA) applies when a project may involve archaeological resources located on federal or tribal land. The ARPA requires that a permit be obtained before excavation of an archaeological resource on such land can take place.

Historic properties may also be covered under Section 4(f) of the U.S. Department of Transportation Act, which regulates the "use" of land from historic properties (in Section 4(f) terminology—historic sites). See Appendix A and Appendix B for specific information about Section 4(f).

2.1.6.2 Affected Environment

Information in this section is from the *Historic Property Survey Report* (HPSR) (March 2020), *Archaeological Survey Report* (ASR) (March 2020), and *Historical Resources Evaluation Report* (February 2020) prepared for the proposed project. A Finding of Adverse Effect (FAE) is currently being prepared but has not yet been completed. Where other data sources were used, citations have been provided.

Area of Potential Effects

The study area for cultural resources is referred to as the Area of Potential Effects (APE). The APE was established to include all potential direct and indirect effects on cultural resources that may result from the project and includes built environment and archaeological resources. As shown in

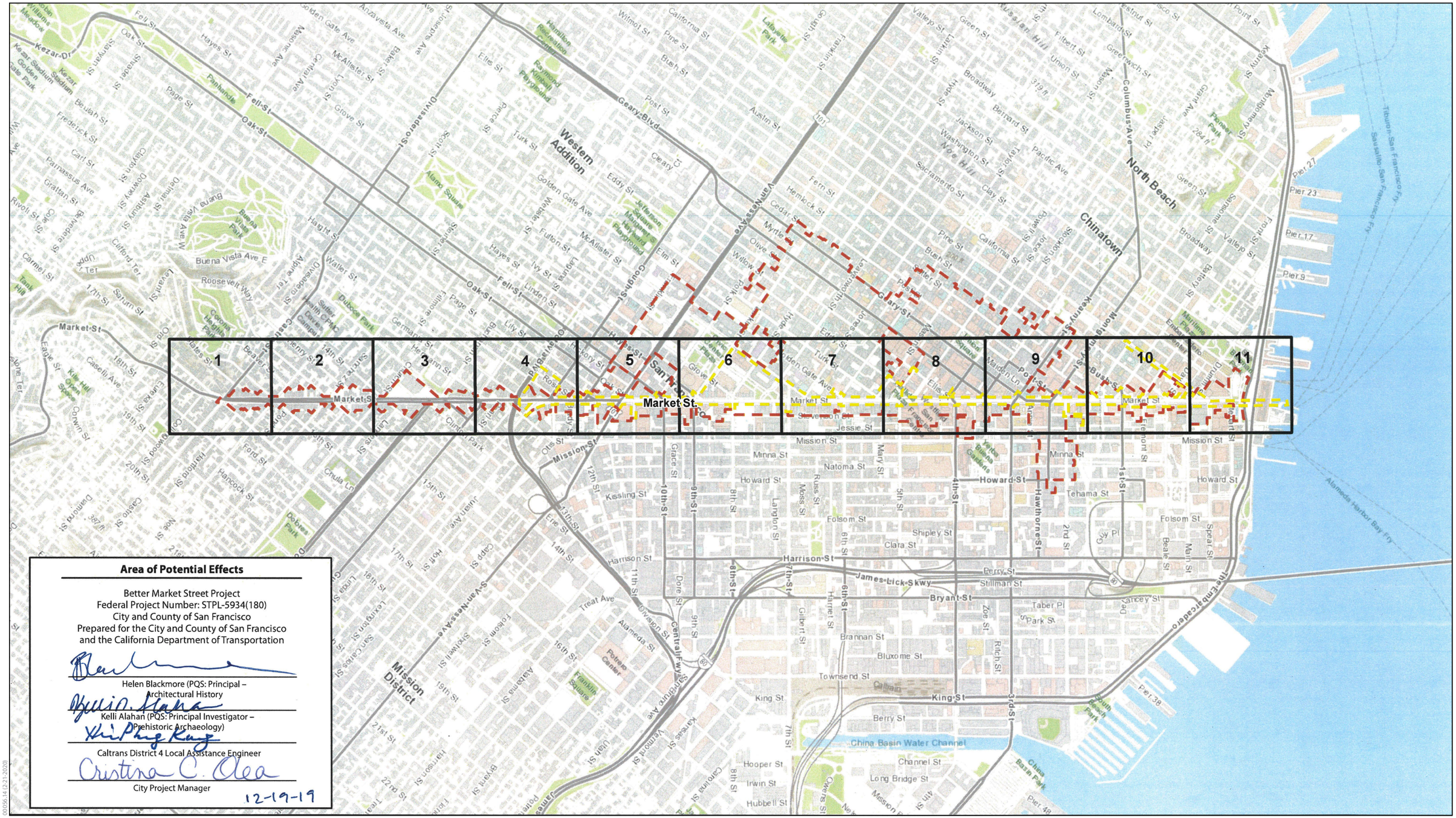
Figure 2.1.6-1, one APE was delineated for the built environment and one APE was delineated for archaeological resources.[1] The APEs were finalized on December 19, 2019, by Helen Blackmore (PQS: Architectural History), Kelli Alahan (PQS: Prehistoric Archaeology), and Hin Kung, Local Assistance Engineer.

The *built environment* APE encompasses the project footprint (including all construction activities, easements/right-of-ways, and staging areas), which is generally within the Market Street roadway and the roadway of several adjoining city streets between The Embarcadero and Octavia Boulevard. Where the project activities will occur directly adjacent to a building or structure, those parcels are included in the built environment APE. In addition, the full extent of the boundaries of known built environment resources that intersect with the project activities are included in the built environment APE. Furthermore, the built environment APE surrounds the following historic districts, which are adjacent to or across Market Street and listed in, eligible for listing in, or assumed eligible for listing in the National Register of Historic Places (NRHP): Civic Center Landmark District; Kearny-Market-Mason-Sutter Conservation District; Lesbian, Gay, Bisexual, Transgender, and Queer (LGBTQ) Tenderloin Historic District; Market Street Cultural Landscape District; Market Street Masonry Landmark District; Market Street Theatre and Loft National Register Historic District; New Montgomery-Mission-2nd Street Conservation District; and Uptown Tenderloin National Register Historic District. The built environment APE is delineated to include the maximum extent of visual and noise effects that project construction or implementation will have on built environment historic properties, including historic districts. The extent of the NRHP-listed, eligible-for-listing, or assumed-eligible historic districts is included in the built environment APE because any change at a district contributor within or adjacent to the project corridor has the potential to alter significant characteristics that qualify the entire district for inclusion in the NRHP. However, buildings within these districts that are not adjacent to the project footprint are not considered to be buildings with the potential to be affected as individual built resources.

The *archaeological* APE extends beyond the built environment APE in some areas to include the boundaries for known archaeological sites. The horizontal extent of the archaeological APE encompasses the Market Street corridor between the intersection of Market Street and the Embarcadero as well as the intersection of Octavia Boulevard and Market Street in San Francisco. It also includes all areas of new construction, easements, staging areas, all ground-disturbing project elements, and the boundaries of archaeological resources that intersect with the project. The boundaries of nine archaeological resources are included in the archaeological APE. These resources include CA-SFR-28, CA-SFR-127H, CA-SFR-156H, CA-SFR-157H, the Yerba Buena Cemetery (no trinomial), the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf.[2] The archaeological APE is approximately 76.3 acres in size. The vertical extent of the APE will vary by proposed project activity, but is anticipated to range from the ground surface to 15 feet below the ground surface. In one location, 691 Market Street, modifications to a sub-sidewalk basement will include ground disturbance to 35 feet below the ground surface.

[1] The archaeological APE contains sensitive information and is not shown in this figure.

[2] The source material (San Francisco National Maritime Historical Park 2017) depicting this resource uses the spelling “Stuart” which differs from the contemporary spelling “Steuart”.



Better Market Street Project

Source: World Topographic Map, ESRI et al. 2019
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

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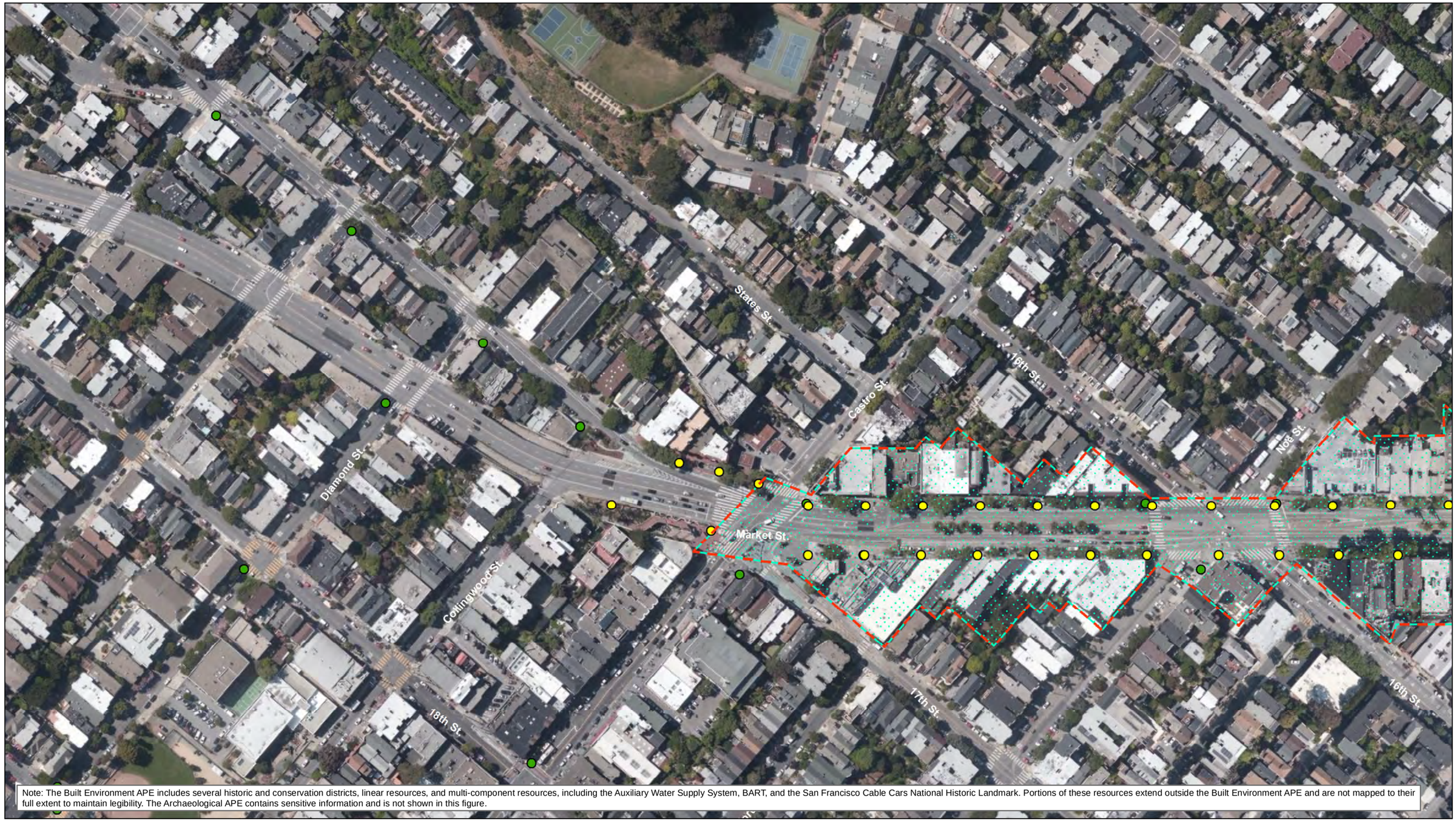
Archaeological APE
Built Environment APE
Map Book Sheet

Figure 2.1.6-1
Archaeological and Built Environment Area of Potential Effects (Overview)



Note: The Built Environment APE includes several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the Built Environment APE and are not mapped to their full extent to maintain legibility. The Archaeological APE contains sensitive information and is not shown in this figure.

Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

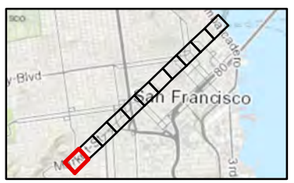
0 100 200
Feet

Built Environment APE

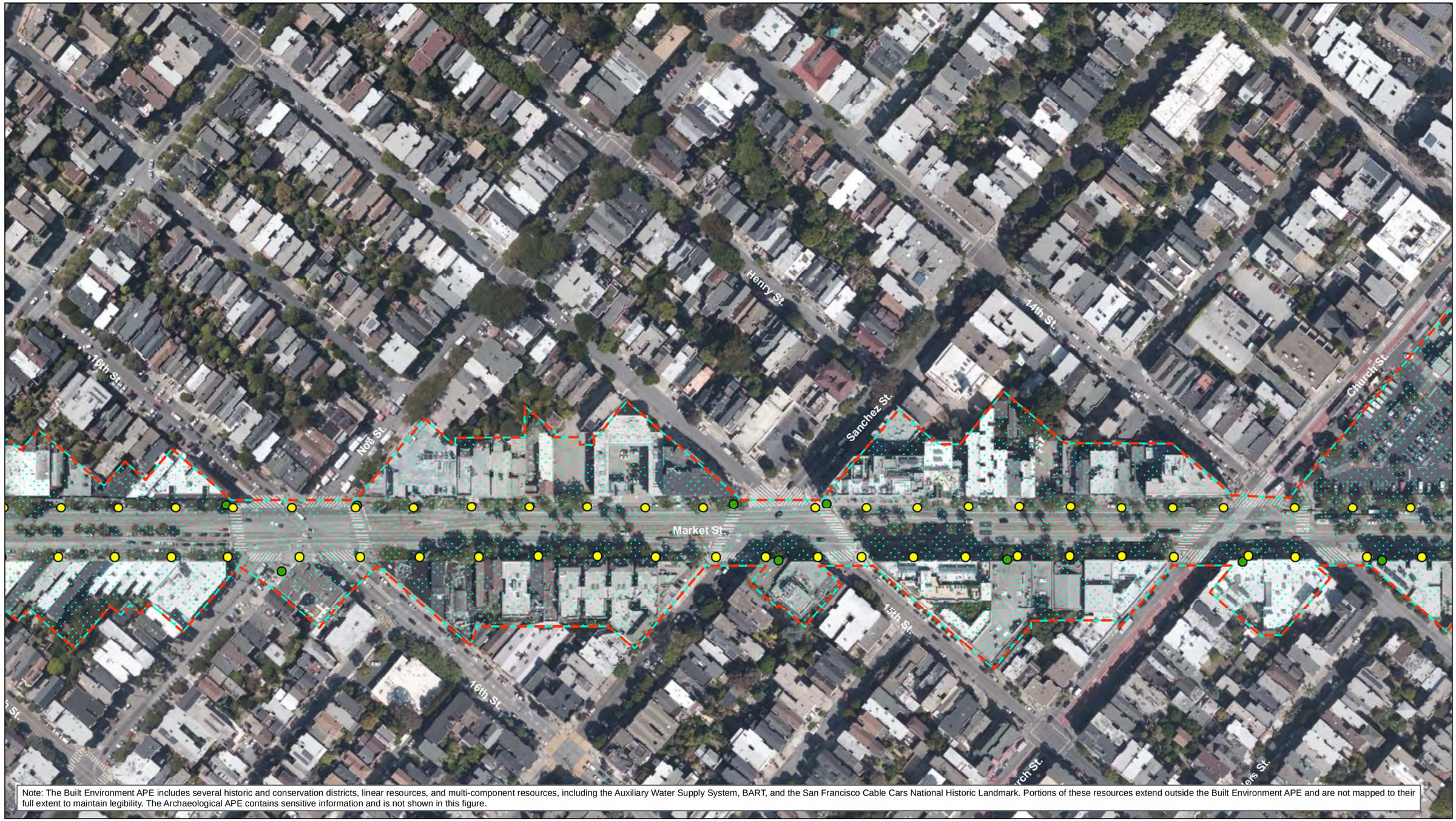
Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
- Market Street Masonry Landmark District (MR-6)
- Civic Center Landmark District (MR-11)
- Uptown Tenderloin National Register Historic District (MR-15)
- LGBTQ Tenderloin Historic District (MR-17)
- Market Street Cultural Landscape District (MR-20)
- Market Street Theatre and Loft National Register Historic District (MR-23)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 1 of 11)
Archaeological and Built Environment Areas of Potential Effects



**Labeled by Resource ID; refer to Table 2 in the HRER.*



Note: The Built Environment APE includes several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the Built Environment APE and are not mapped to their full extent to maintain legibility. The Archaeological APE contains sensitive information and is not shown in this figure.

Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

Built Environment APE

Built Environment Resources
- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
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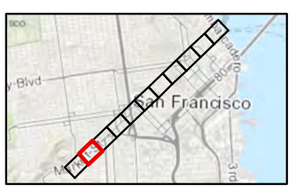
- Market Street Cultural Landscape District (MR-20)
- Market Street Theatre and Loft National Register Historic District (MR-23)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 2 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*



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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

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Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
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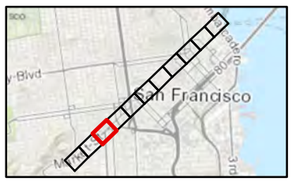
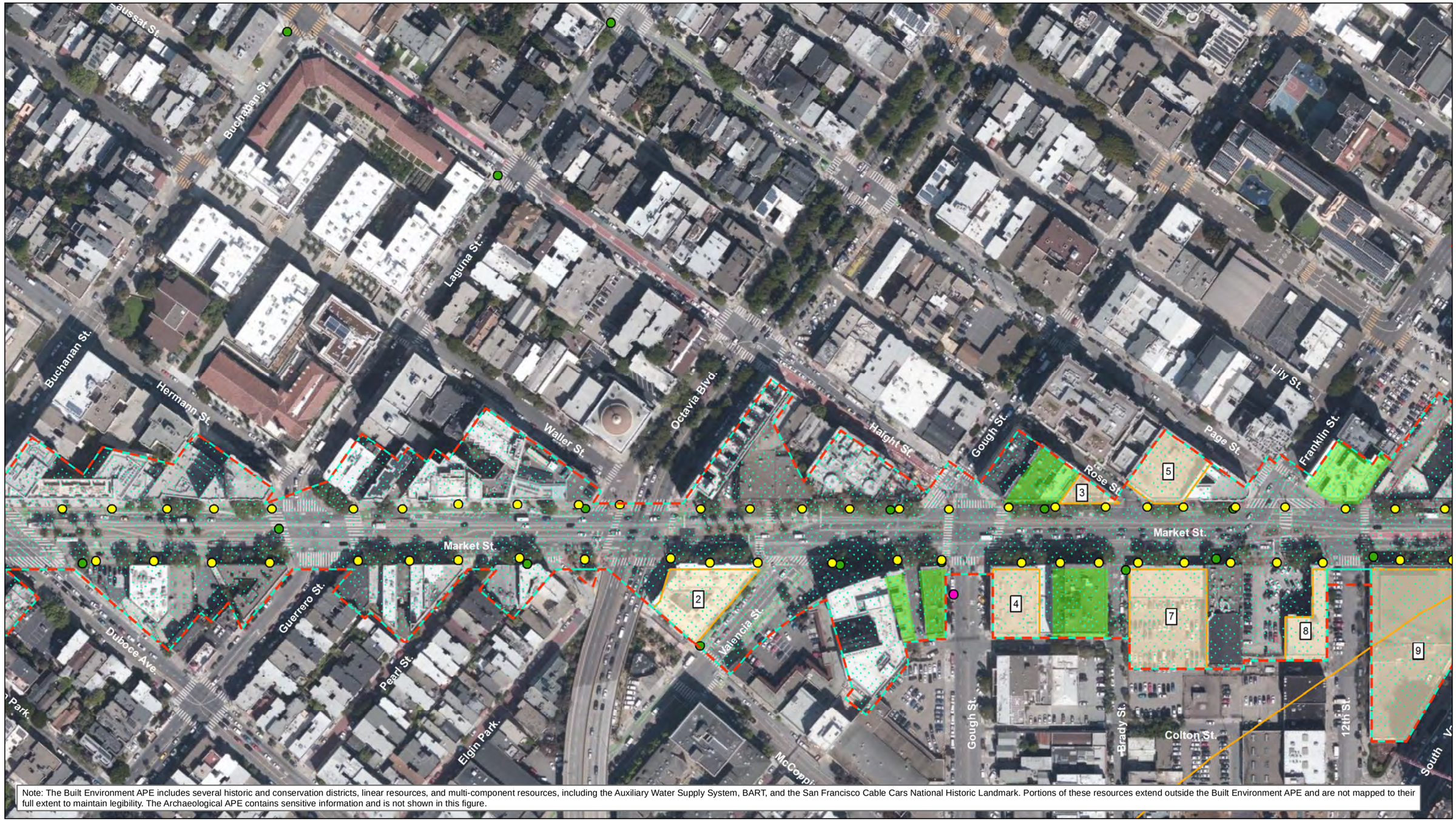
Figure 2.1.6-1 (Sheet 3 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*





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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

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Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
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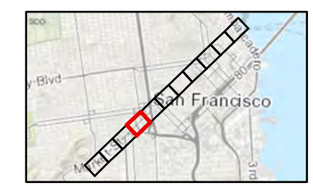
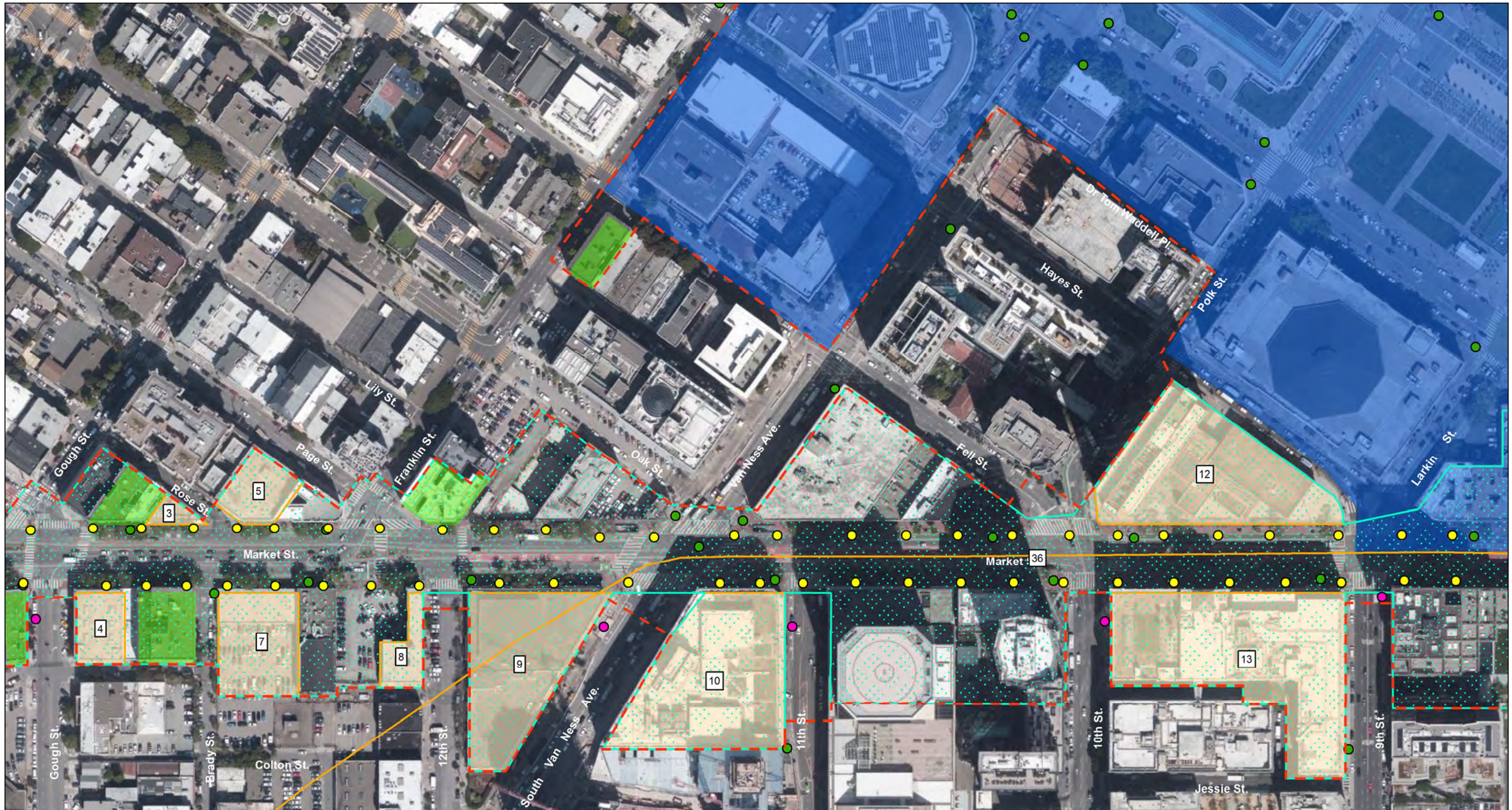
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 4 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*





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Better Market Street Project

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Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

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Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
- Market Street Masonry Landmark District (MR-6)
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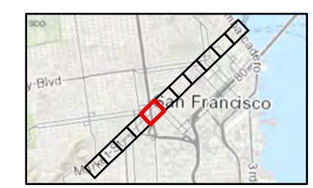
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 5 of 11)
Archaeological and Built Environment Areas of Potential Effects



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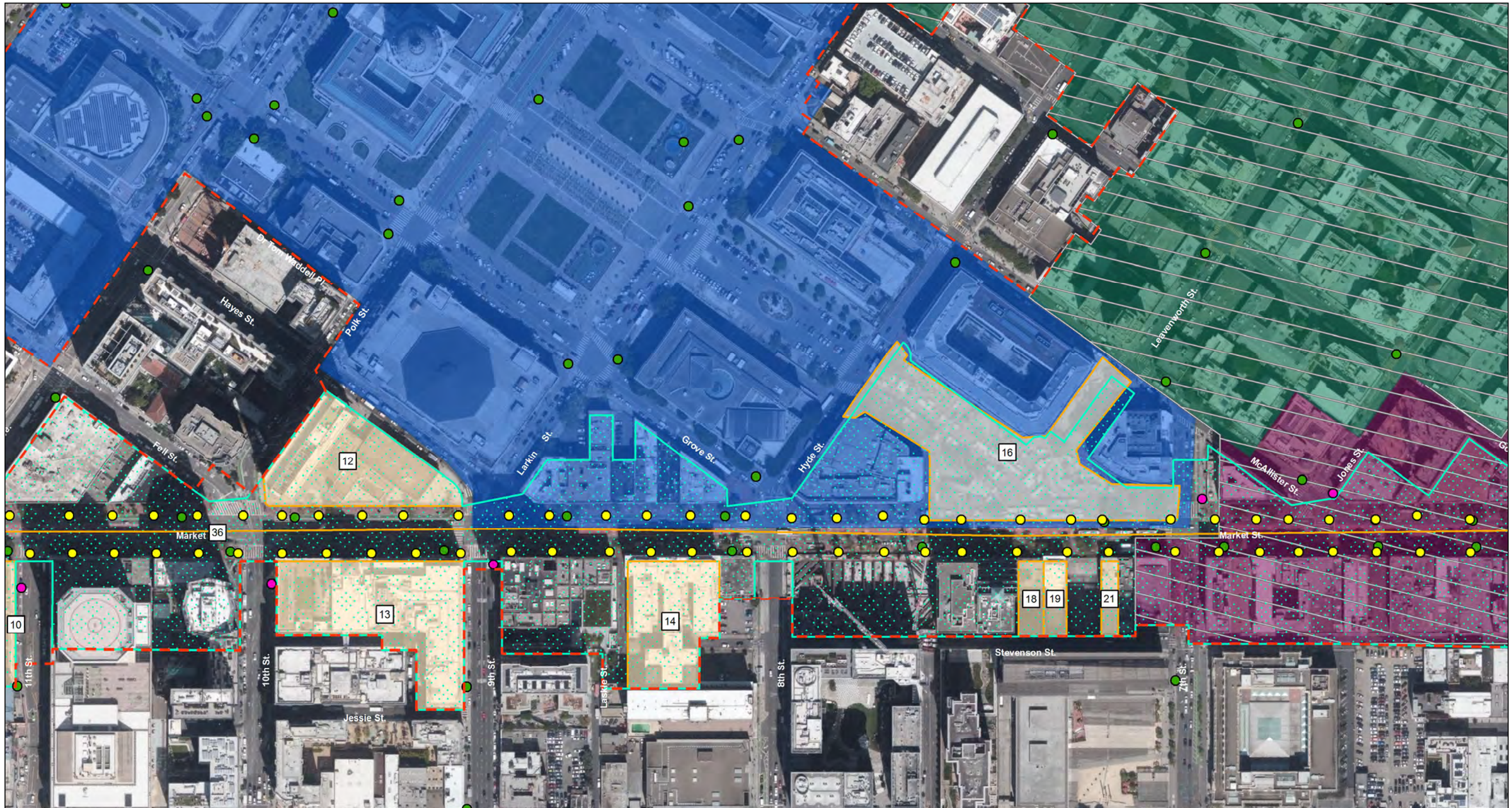

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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

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Feet

Built Environment APE

Built Environment Resources
- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
- Market Street Masonry Landmark District (MR-6)
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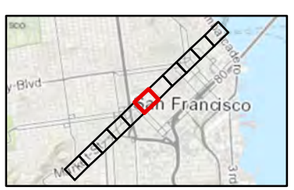
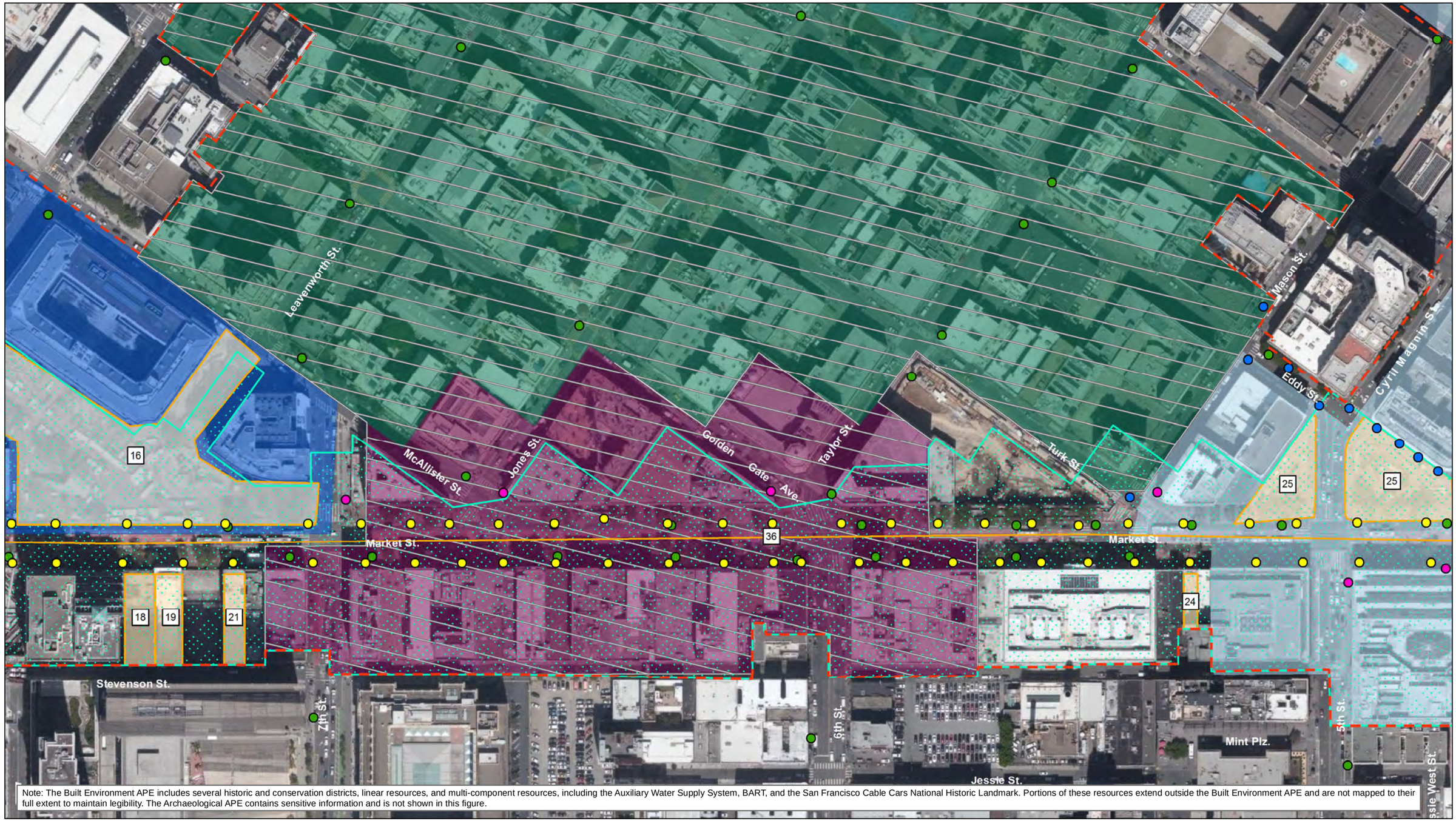
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 6 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*





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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
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- Kearny-Market-Mason-Sutter Conservation District (MR-26)
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 7 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*

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Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
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- Traffic Control Boxes (MR-54)
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- Market Street Cultural Landscape District (MR-20)
- Market Street Theatre and Loft National Register Historic District (MR-23)
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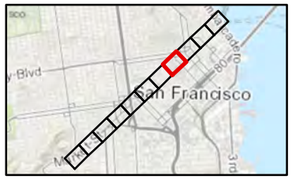
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 8 of 11)
Archaeological and Built Environment Areas of Potential Effects



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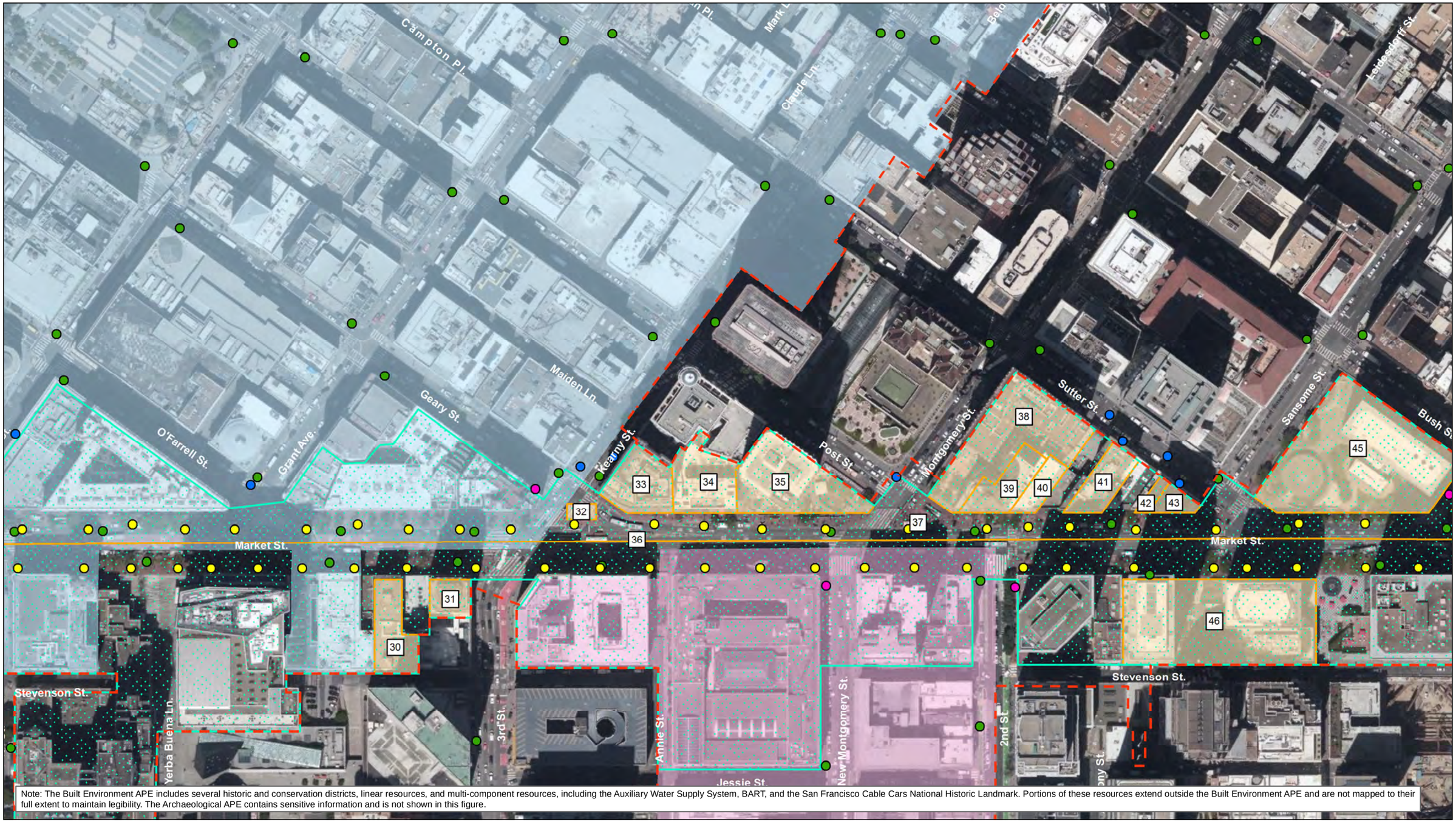

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Better Market Street Project

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Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
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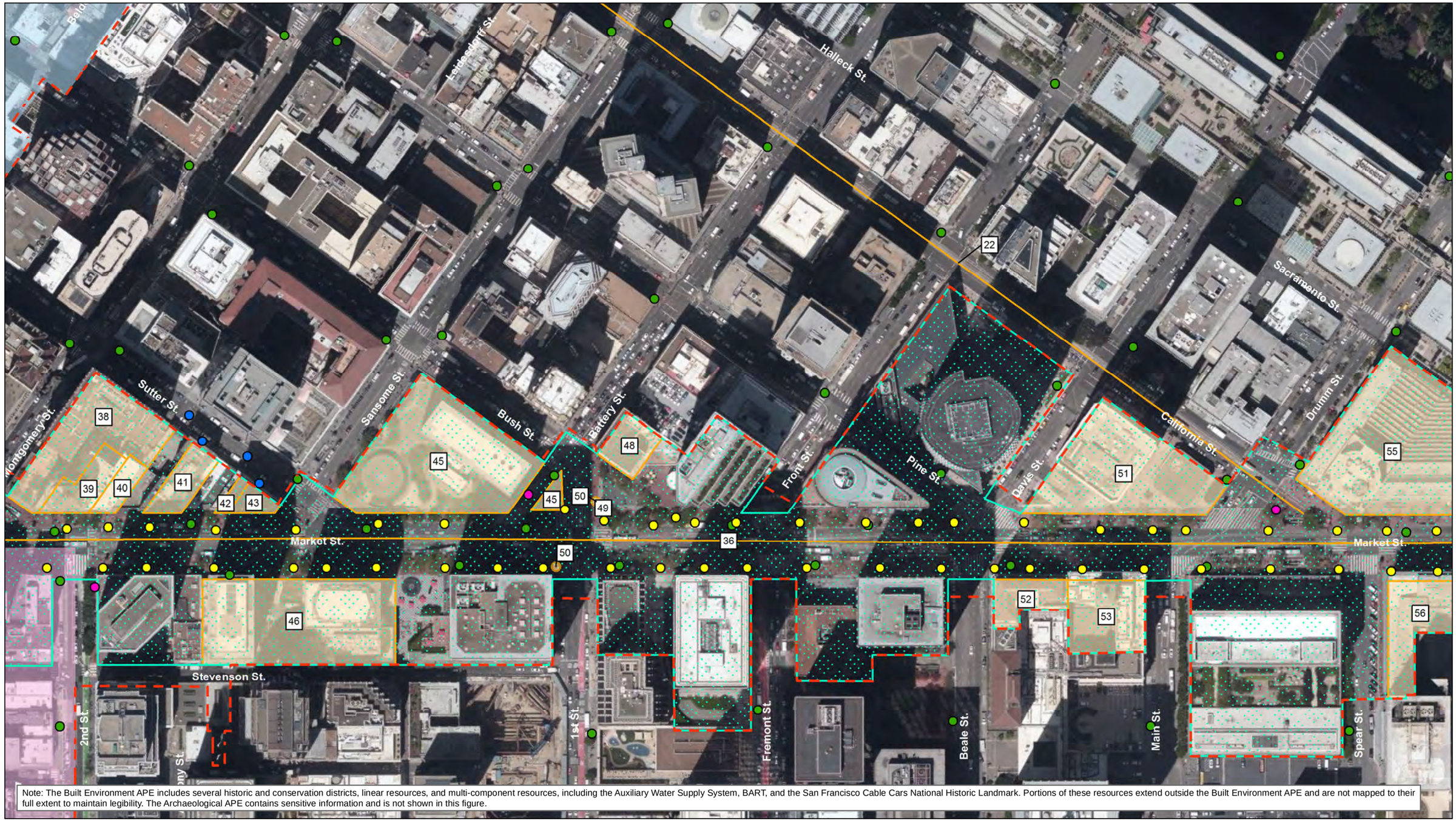
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 9 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*



Note: The Built Environment APE includes several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the Built Environment APE and are not mapped to their full extent to maintain legibility. The Archaeological APE contains sensitive information and is not shown in this figure.

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Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
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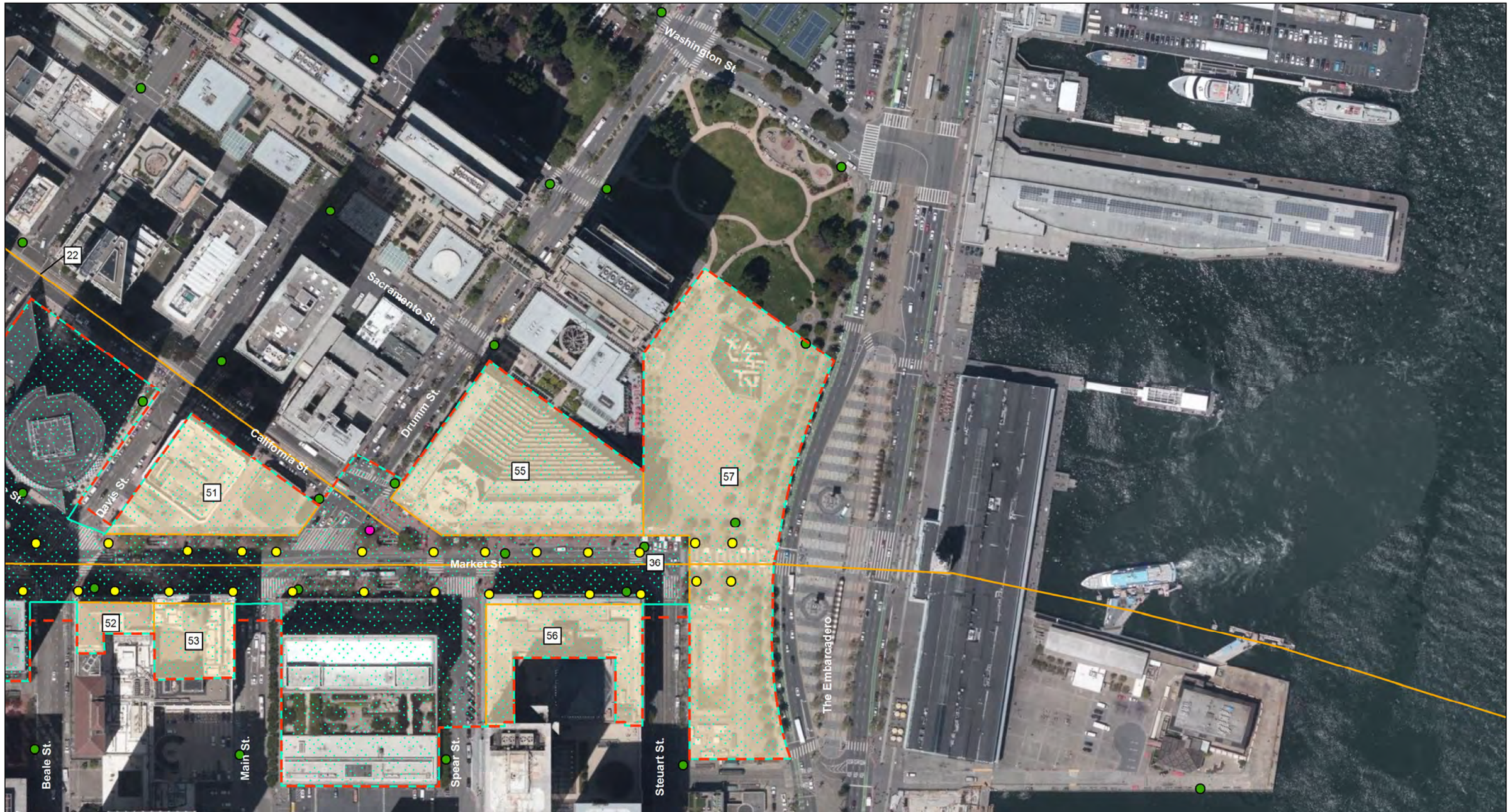
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 10 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*



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Map Elements: Various built environment and archaeological studies

Federal Project Number: STPL-5934(180)

0 100 200
Feet

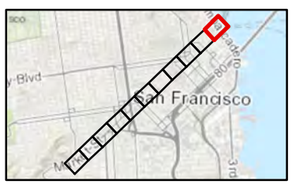
Built Environment APE

Built Environment Resources

- Individual Property*
- Path of Gold Light Standards (MR-1)
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- Traffic Control Boxes (MR-54)
- Market Street Masonry Landmark District (MR-6)
- Civic Center Landmark District (MR-11)
- Uptown Tenderloin National Register Historic District (MR-15)
- LGBTQ Tenderloin Historic District (MR-17)
- Market Street Cultural Landscape District (MR-20)
- Market Street Theatre and Loft National Register Historic District (MR-23)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 2.1.6-1 (Sheet 11 of 11)
Archaeological and Built Environment Areas of Potential Effects

**Labeled by Resource ID; refer to Table 2 in the HRER.*



2.1.6.3 Cultural Resources Identified

Research Methodology

An investigation of the cultural resources located in the project's APEs was conducted beginning in 2014. The investigation included a records search, tribal outreach, archaeological and built environment field surveys, archival research, and a desktop buried site sensitivity analysis.

Archival Research

An initial phase of research was conducted between 2014 and 2016 to achieve an understanding of the physical development and social contexts related to the Market Street corridor, including landscape features and adjacent buildings located within the built environment APE. This phase of research supported the preparation of the Cultural Landscape Evaluation, the Better Market Street EIR, and NRHP evaluations of the following four built environment resources: the Market Street Cultural Landscape District, Embarcadero Plaza, Hallidie Plaza, and United Nations Plaza. This research effort was performed using materials received from the San Francisco Planning Department, which included local landmark designation reports, historic maps and images, and original plans and drawings of City-owned properties. Surveys and historic contexts within the built environment APE that are available through the San Francisco Planning Department's website were also reviewed, including current and completed surveys, NRHP and CRHR historic district context statements, and Department of Parks and Recreation (DPR) 523 form sets for previously recorded or evaluated properties. The City also supplied as-built plans and subsequent drawings pertaining to the Market Street Reconstruction Project of 1967–1982.

In 2015 and 2016, additional research was conducted at the following repositories: the Warnecke Family Archives (Healdsburg, CA); the Environmental Design Archives at the University of California, Berkeley (Berkeley, CA); the Bancroft Library at the University of California, Berkeley (Berkeley, CA); the Oakland Museum of California (Oakland, CA); and the University of Pennsylvania Architectural Archives (Philadelphia, PA). Furthermore, research on the history of transportation along Market Street was gathered through a questionnaire and follow-up interview with Market Street Railway president Rich Laubscher on July 11, 2016. In 2018, research was conducted at the San Francisco Auxiliary Water Supply System (AWSS), a historic-aged utility system that extends into the built environment APE and is evaluated for NRHP eligibility in the HRER. Additional property-specific research was undertaken in 2019 to complete NRHP evaluations of 22 historic-age built environment properties within the built environment APE.

Records Search

On October 24, 2014, the staff of the Northwest Information Center (NWIC) at Sonoma State University, Rohnert Park, conducted a cultural resources records search for the project. The NWIC is the California Historical Resources Information System (CHRIS) repository, which houses records of previously recorded cultural resources and other historical information in both the built environment and archaeological APEs and vicinity. An updated records search at the NWIC was conducted on January 22, 2019. The 2014 and 2019 records searches identified previously recorded cultural resources within the APEs as well as within 0.125-mile of both the built environment and archaeological APEs.

Tribal Outreach

Outreach to local Tribal Groups was conducted to assist in identifying sensitive areas or sites that may be listed in the Sacred Land File (SLF) within the archaeological APE, Public Works sent outreach letters to tribal representatives on April 15, 2019. Letters were sent to the following contacts:

- Charlene Nijmeh, chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Tony Cerda, chairperson, Costanoan Rumsen Carmel Tribe
- Andrew Galvan, Ohlone Indian Tribe
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan
- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista

These representatives were identified as having interest or input regarding the proposed project during correspondence with the Native American Heritage Commission (NAHC) in 2015. The outreach letters included a description of the project and a map that provided a depiction of the APE. On April 26, 2019, the NAHC was contacted to confirm the list of representatives. On April 30, 2019, the NAHC provided a list of five representatives and indicated the SLF search did not identify any sacred lands within the APE. The same five representatives identified by the NAHC in 2019 were included in the list of representatives identified by the NAHC in 2015.

On May 2, 2019, ICF (on behalf of Public Works) performed follow-up phone calls to all five representatives. Four of the tribal representatives were not able to be reached. Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan, requested that an archaeological and Native American monitor be present during all ground disturbance. Public Works sent a letter to Ms. Sayers in January 2020 to acknowledge her request and clarify that Native American monitoring will not be required because the proposed project will not result in an adverse effect to any known prehistoric Native American resources. After further investigation, it was determined Native American monitoring will be required in areas where project-related ground disturbance has the potential to extend into dune sands considered sensitive for prehistoric resources. As of the date of this environmental document, no additional resources were identified during outreach.

Field Survey and Investigation

Qualified architectural historians conducted a pedestrian survey of the Market Street streetscape between Embarcadero Plaza and Octavia Boulevard from March 25 to March 30, 2016, to record locational data and notes about built environment resources located in the built environment APE. The 2016 built environment field survey was updated in 2018 and 2019. Additional built environment field survey was conducted between June 4 and June 11, 2018 to record existing conditions of the AWSS; surveyors used a sampling approach to collect data on a representative grouping of AWSS features in selected areas. Surveyors accessed the interiors and exteriors of larger buildings, structures, and sites that contribute to the AWSS. The survey at these properties involved the documentation of all exposed exterior façades, major interior spaces that support the function of the AWSS, and prominent site features and landscaped areas.

The entire archaeological APE has been extensively paved and developed, providing no opportunity to observe the ground surface or subsurface deposits. As a result, no pedestrian or other

archaeological field survey was performed to relocate previously documented archaeological resources or identify previously undocumented archaeological resources.

Desktop Buried Site Sensitivity Analysis

To assess the potential for encountering as-yet undocumented archaeological resources within the archaeological APE, archaeologists conducted a desktop buried archaeological site sensitivity analysis. This assessment revealed that the thickness of the anthropogenic fill in the vicinity of the archaeological APE ranged from the ground surface to 8 feet (about 2.4 meters). However, the APE has been subject to extensive modern development, including the construction of BART and Muni as well as the installation and relocation of utilities. Therefore, much of this fill material has been subject to recent disturbance. This disturbance may have displaced any historical archaeological material that was once in place in the anthropogenic fill and thus removing it from its depositional context. Resources that lack this context are unlikely to retain the integrity needed to be considered NRHP eligible. Therefore, preservation of buried historical archaeological resources is considered to be less likely. Intact archaeological deposits are more likely to be identified within thicker deposits of anthropogenic fill where later ground disturbance may not have extended to the depth of the potential buried historic-era archaeological resources. However, previous ground disturbance associated with the construction of BART, Muni and the installation and relocation of utilities that occurred to accommodate construction of BART and Muni indicate a level of disturbance ranging from 15 feet (4.5 meters) below ground surface up to 80 feet (24 meters) below ground surface.

Based on this desktop analysis, dune sands were identified in several locations within the horizontal and vertical archaeological APE. Due to the age and formation processes of dune sand, it has increased prehistoric archaeological sensitivity, and therefore any proposed excavation extending into this deposit has the potential to encounter as-yet undocumented prehistoric archaeological resources.

Consultation with Interested Parties

On April 23, 2015, ICF sent letters requesting information on potential built environment resources in the APE to the following parties: California Historical Society; California Preservation Foundation; California Heritage Council; Docomomo Noca; GLBT Historical Society; Northern California chapter of the Historic American Landscape Survey (HALS); San Francisco Architectural Heritage; San Francisco History Association; San Francisco Museum and Historical Society; and the Victorian Alliance of San Francisco. No responses to these letters have been received.

Public Works sent an updated outreach letter to interested parties on July 25, 2019. The letter described the project and asked the parties if they had information regarding the significance of cultural resources within the APE or would like to become consulting parties for the project. Each letter was appended with a map of the project location, a list of the previously identified built-environment historic properties, and the NHPA Section 106 Consultation Options Form. The updated outreach letters were sent to the 32 parties listed below.

- Costanoan Rumsen Carmel Tribe
- Amah Mutsun Tribal Band of Mission San Juan Bautista
- Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- The Ohlone Indian Tribe

- Indian Canyon Mutsun Band of Costanoan
- National Park Service, Pacific West Region
- Cable Car Museum
- California Heritage Council
- California Historical Society
- California Indian Museum and Cultural Center
- California Preservation Foundation
- Chinese Historical Society of America
- Civic Center Community Benefit District
- Civic Center Stakeholder Group
- Docomomo Noca
- GLBT Historical Society Museum
- HALS, Northern California Chapter
- Labor Archives and Research Center, San Francisco State University
- Legion of Honor
- Market Street Association
- National Trust for Historic Preservation, California Partner
- Native Daughters of the Golden West
- Native Sons of the Golden West
- San Francisco African American Historical and Cultural Society
- San Francisco Architectural Heritage
- San Francisco History Association
- San Francisco History Center, San Francisco Public Library
- San Francisco Museum and Historical Society
- Society of California Pioneers
- Tenderloin Neighborhood Development Corporation
- Victorian Alliance of San Francisco
- Wells Fargo Bank Historical Services

Four responses to the July 25, 2019, letters were received. Three parties expressed interest in Market Street's historical significance (National Park Service - Pacific West Region, Native Daughters of the Golden West, and San Francisco African American Historical and Cultural Society) and stated that they would like to be consulting parties. The Legion of Honor also responded, stating that it has no interest in the project. The response from the National Park Service, Pacific West Region, was

received from Elaine Jackson-Retondo, who was initially contacted as the representative of the HALS Northern California Chapter; no response was received from Stanley Austin, the representative of the National Park Service, Pacific West Region, who was sent the initial outreach letter. The July 25, 2019, letters sent to the following parties were returned to Public Works as undeliverable: Labor Archives and Research Center, San Francisco State University; National Trust for Historic Preservation, California Partner; Victorian Alliance of San Francisco; Civic Center Community Benefit District; Civic Center Stakeholder Group; and Docomomo Noca.

From September 6 to 27, 2019, Public Works conducted follow-up phone calls and emailed the parties that did not respond to the July 25, 2019, letter or whose letters were returned. The voicemail message detailed the purpose of the phone call to confirm whether the party had information regarding the significance of cultural resources or an interest in participating in the Section 106 process as a consulting party. Messages also included Public Works' contact information for returning the call. Follow-up emails included a brief summary of the purpose of Public Works outreach efforts; the materials sent in the July 25, 2019, letter were attached to each follow-up email. No information was located regarding the Civic Center Stakeholder Group, and the Market Street Association was found to have ended operations in 2018. Therefore, efforts to follow up with the Civic Center Stakeholder Group and Market Street Association by phone and email were not undertaken by Public Works.

As a result of the follow-up outreach efforts, Public Works received nine additional responses. Five organizations conveyed an interest in Market Street's historical significance and stated that they would like to be consulting parties (Chinese Historical Society of America, Civic Center Community Benefit District, Docomomo Noca, GLBT Historical Society Museum, and HALS Northern California Chapter). The representative for the Civic Center Community Benefit District stated that another organization in which she is involved, the Mid-Market Community Benefit District, also has interest in the project. Four additional organizations responded, stating that they have no interest in the project (National Trust for Historic Preservation, California Partner; San Francisco History Association; San Francisco History Center, at the San Francisco Public Library; and California Heritage Council.

None of the responses to the July 25, 2019, letter and the follow-up communication conducted through December 17, 2019, provided new information regarding the significance of historic properties near the project corridor.

Public Works conducted a separate round of outreach in December 2019 to the organizations that had expressed interest in serving as consulting parties through the Section 106 process. Five parties (Chinese Historical Society of America; Docomomo Noca; HALS Northern California Chapter; National Park Service, Pacific West Region; and San Francisco African American Historical and Cultural Society) requested to be included in all stages of the consultation process (i.e., identification of historic properties, assessment of effects on identified historic properties, and creation of a Memorandum of Agreement [MOA] and negotiation of mitigation measures to resolve adverse effects on historic properties, should such effects be identified). No responses to the separate round of outreach in December 2019 were received from the Civic Center Community Benefit District, GLBT Historical Society Museum, Mid-Market Community Benefit District, or Native Daughters of the Golden West.

A continuing consultation letter was sent via electronic mail and physical mail on December 24, 2019, to all nine participating consulting parties on the Better Market Street Project, stating that the

documentation of historic properties had been completed and outlining the preliminary effects findings included in this FAE document. The letter also stated that a MOA would be developed to resolve and mitigate the adverse effect; the letter invited consulting parties to participate. Two replies were received. In response, the GLBT Historical Society Museum confirmed that the organization would like to be involved in the consultation process for the MOA, and Docomomo Noca asked to be included in the discussion of mitigation measures and the resolution of adverse effects. The Chinese Historical Society of America stated that it does not have the capacity to continue being a consulting party any longer but offered future assistance if any historic properties with Chinese or Chinese-American historical associations are identified during the Section 106 process. The HALS Northern California Chapter replied stating that it held no concerns regarding the MOA and indicted that it would have no further input or involvement in the resolution of adverse effects at this time.

The final list of participating consulting parties under Section 106 includes the seven organizations listed below.

- Docomomo Noca
- National Park Service, Pacific West Region
- San Francisco African American Historical Cultural Society
- Civic Center Community Benefit District
- GLBT Historical Society Museum
- Mid-Market Community Benefit District
- Native Daughters of the Golden West

On February 28, 2019 participating consulting parties and the public were invited to a stakeholder meeting that took place via conference call on March 17, 2020. Prior to the meeting, an agenda, materials regarding the proposed project, preliminary findings of effects to historic resources, and example mitigation measures were provided to the invitees. Representatives from five consulting parties attended the meeting, including: the National Park Service, Docomomo Noca, the Civic Center Community Benefit District, the Mid-Market Community Benefit District, and the GLBT Historical Society.

At the meeting, ideas were discussed for avoiding and minimizing the undertaking's potential for adverse effects to historic resources. Following the stakeholder meeting, draft mitigation measures were developed based on the input from consulting parties. Consultation under Section 106 regarding the resolution of adverse effects will continue with participating organizations through the development of the MOA.

Archaeological Resources

Fourteen known archaeological resources were identified within or directly adjacent to the archaeological APE. These resources include CA-SFR-28 (P-38-000028), CA-SFR-127H (P-38-000126), CA-SFR-156H (P-38-004362), CA-SFR-157H (P-38-004363), the Yerba Buena Cemetery (no trinomial), the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf. Three of these resources (CA-SFR-28, CA-SFR-156H, and CA-SFR-157H) are no longer extant due to removal during

field investigations. The Rome, a feature associated with CA-SFR-127H (P-38-000126), was identified at within the horizontal extent of the archaeological APE, but outside the vertical extent of the archaeological APE. Project-related ground disturbance in the vicinity of the Rome will not extend beyond 8 inches and will not encounter the resource.

The boundary of the Yerba Buena Cemetery intersects the archaeological APE in two locations. Portions of the Yerba Buena Cemetery are believed to have been removed during the 1970s construction of the Civic Center BART station, which excavated a trench 80- to 100-feet deep by 61-feet wide along Market Street and into United Nations Plaza. However, historic documentation indicates that intact deposits associated with Yerba Buena Cemetery could be present at other locations within the archaeological APE. Artificial fill has been identified up to 8 feet below ground surface. Project-related excavation proposed within the resource boundary will extend up to 15 feet below ground surface, which could extend beyond the previous level of disturbance. Thus, ground disturbance associated with the proposed project excavation could encounter intact portions of Yerba Buena Cemetery. The Yerba Buena Cemetery is assumed eligible for the purposes of this project under Criterion D given the resource's large size and limited access, pursuant to Stipulation VIII.C.4 of the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as It Pertains to The Administration of the Federal-Aid Highway Program in California* (Section 106 PA). The CSO approved this assumption on January 28, 2020. Copies of the correspondence with Caltrans CSO is provided in Appendix E.

The San Francisco National Maritime Historical Park published a map in 2017 that depicts the possible locations of buried shipwrecks and wharves within downtown San Francisco. This map identified nine resources (the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf) within the archaeological APE. However, the locations depicted in the map have not been verified and none of the potential resources listed above have been the subject of archaeological investigations. Extensive excavation associated with the construction of BART is believed to have removed a portion or all of six of these resources (the Panama, the Byron, the Callao, the Autumn, the Galen, and the Market Street Wharf). However, these potential resources may exist within the archaeological APE at unknown depths. Additionally, three of these resources (the California Street Wharf, the Main Street Wharf and the Stuart Street Wharf) have not been subject to archaeological investigation and may still exist within the archaeological APE at unknown depths. Therefore, project-related ground disturbance has the potential to encounter these potential resources. The Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf are assumed eligible for the purposes of this project under Criterion D because evaluation is not possible due to limited potential to effect and restricted access, pursuant to Stipulation VIII.C.4 of the January 2014 *First Amended Programmatic Agreement among the Federal Highway Administration, the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as It Pertains to The Administration of the Federal-Aid Highway Program in California* (Section 106 PA). The CSO approved this assumption on February 24, 2020. Copies of the correspondence with Caltrans CSO is provided in Appendix E.

Built Environment Resources

Built environment resources include districts, sites, buildings, structures, and objects that are included in or eligible for listing in the NRHP. Qualified architectural historians conducted a series of field investigations, historical research, and analysis of potential built environment resources located within the APE that are 45 years old or older. The results were compiled in the project HRER. The HRER provides additional details about the six built environment resources located in the APE that are listed in the NRHP, and which are listed below:

NRHP Listed Historic Districts:

- Uptown Tenderloin National Register Historic District
- Market Street Theatre and Loft National Register District

NRHP Listed Individual Resources:

- Matson Building and Annex, 215 Market Street
- Pacific Gas & Electric Company General Office Building and Annex, 245 Market Street
- San Francisco Cable Cars National Historic Landmark
- Lotta's Fountain

An additional 139 built environment resources within the APE were determined eligible for listing in the NRHP or have been assumed eligible by Caltrans for the purpose of this project only. These resources include districts, sites, buildings, structures, and objects that have been evaluated by architectural historians who meet Caltrans's Professionally Qualified Staff (PQS) standards including:

NRHP Eligible and Assumed Eligible Historic Districts:

- Market Street Cultural Landscape District
- San Francisco Auxiliary Water Supply System
- Bay Area Rapid Transit District
- Market Street Masonry Landmark District [containing 8 properties that are assumed eligible individually]
- Civic Center Landmark District [containing 17 properties that are assumed eligible individually]
- Kearny-Market-Mason-Sutter Conservation District [containing 32 properties that are assumed eligible individually]
- LGBTQ Tenderloin Historic District [containing 37 properties that are assumed eligible individually]
- New Montgomery Mission-2nd Street Conservation District [containing 9 properties that are assumed eligible individually]

NRHP Eligible and Assumed Eligible Individual Resources:

- Admission Day Monument
- Crown Zellerbach Complex, 1 Bush Street
- Hyatt Regency Hotel, 22 Drumm Street
- Mechanics Monument
- Standard Oil Building/Chevron Towers, 555-575 Market Street
- United Nations Plaza
- 44 and 2-8 Montgomery Street
- 648-660 Market Street
- 925 Market Street
- Lesser Brothers Building, 1629-1637 Market Street
- Wilson Brothers Company Building, 1632 Market Street
- Bay Area Rapid Transit District
- Chancery Building, 562-566 Market Street
- Chronicle Building, 690 Market Street
- Civic Center Hotel, 1601-1605 Market Street
- Call Building, 701-703 Market Street
- Fillmore West, 10-12 South Van Ness
- Finance Building, 576-580 Market Street
- Flatiron Building, 540-548 Market Street
- Francesca Theater, 1127 Market Street
- Golden Triangle light standards
- Hobart Building, 582-590 Market Street
- Hotel Andree, 1661-1667 Market Street
- Kamm Building, 715-719 Market Street
- Postal Telegraph Building, 2-22 Battery Street
- Samuels Clock
- Southern Pacific Building, 1 Market
- Western Furniture and Merchandise Mart, 1301-1363 Market Street
- Whitcomb Hotel, 1215-1231 Market Street

The HRER was submitted to SHPO on March 9, 2020. On April 23, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations for 21 resources, and requested edits to the evaluations of

two others, including splitting one evaluation into two. On May 6, 2020, Caltrans sent edited determinations of eligibility to SHPO. On May 22, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations of three resources. Copies of the consultation correspondence are included in Appendix E.

2.1.6.4 Environmental Consequences

In accordance with Section 106 of the NHPA, the criteria of adverse effect and examples of adverse effects were applied to the built environment historic properties and archeological resources located in each APE. The application of the criteria is detailed in the forthcoming FAE document which will be subject to future consultation with SHPO. A summary of the findings included in the FAE are included in this section.

Construction Impacts

Build Alternative

Archaeological Resources and Human Remains

Fourteen archaeological resources were identified within or directly adjacent to the archaeological APE (CA-SFR-28, CA-SFR-127H, CA-SFR-156H, CA-SFR-157H, Yerba Buena Cemetery (no trinomial), the Panama, the Byron, the Callao, the Autumn, the Galen) and four wharves (the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf. Three of these resources (CA-SFR-28, CA-SFR-156H, and CA-SFR-157) are no longer extant due to removal during field investigations. A feature associated with CA-SFR-127H (P-38-000126) intersects a portion of archaeological APE. Project-related ground disturbance in the vicinity of this feature (Gold Rush-era ship Rome) will not exceed approximately eight inches and will therefore not affect the resource.

The Yerba Buena Cemetery was San Francisco's first official burial ground and was used as the official City cemetery from 1849 through the late 1860s. The resource boundary intersects the archaeological APE in two places. Intact portions of the resources within the archaeological APE were removed during the 1970s cut-and-cover excavation for the construction of BART. However, intact portions of the Yerba Buena Cemetery are believed to exist within other portions the archaeological APE at an unknown depth. While artificial fill was noted up to 8 feet below ground surface in the vicinity of this resource excavation associated with the proposed project construction will extend to a depth of up to 15 feet below ground surface, which could extend beyond the previous level of disturbance. Therefore, project-related ground disturbance has the potential to encounter intact portions of the Yerba Buena Cemetery. This resource is assumed eligible for listing in the NRHP by both Public Works and Caltrans Cultural Studies Office (CSO) for the purposes of this project.

The San Francisco National Maritime Historical Park published a map in 2017 that depicts the possible locations of buried shipwrecks and wharves within downtown San Francisco. This map identified five shipwrecks (the Panama, the Byron, the Callao, the Autumn, the Galen) and four wharves (the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf) within the archaeological APE. However, the locations depicted in the map have not been verified and none of the potential resources have been the subject of archaeological investigations.

Previous disturbance along the archaeological APE in the vicinity of six of these potential resources (the Panama, the Byron, the Callao, the Autumn, the Galen, and the Market Street Wharf) include the cut and cover excavation associated with the construction of BART. This construction included excavation up to 80 feet (24 meters) below ground surface; construction extended along Market Street and included subsurface sidewalk easements (San Francisco Bay Area Rapid Transportation District 1968a). It is likely that portions or all of these resources, if they once existed within the archaeological APE, were removed during construction of BART. However, their presence within the archaeological APE is unknown. Therefore, project-related ground disturbance has the potential to encounter these resources. Additionally, the remaining three potential resources (the California Street Wharf, the Main Street Wharf, and the Stuart Street Wharf) have not been subject to archaeological investigation and may still be present in the archaeological APE at unknown depths. Therefore, construction-related ground disturbance may encounter these archaeological resources identified within the APE.

Project-related ground disturbance has the potential to encounter both as-yet undocumented historic-era and prehistoric archaeological resources during project construction. A desktop geoarchaeological review revealed that fill deposits are widespread and are up to 8 feet (2.4 meters) thick in some areas. Much of this fill material has been disturbed. Portions of the archaeological APE contain buried deposits with high sensitivity for containing as-yet undocumented historic-era archaeological resources. As previously stated, deposits associated with multiple fill episodes, spanning several years, have the potential to contain intact historic-era archaeological resources. Areas where historic activities occurred prior to infilling, such as Yerba Buena Cove and the western portion of the APE, have increased potential for containing buried historic-era archaeological resources below or within anthropogenic fill. Anthropogenic fill was identified from the ground surface to 8 feet (2.4 meters) below the ground surface. Historic resources in the vicinity of the archaeological APE (1/8-mile) have been identified at depths varying from 2 feet (0.6 meter) below ground surface to 20 feet (6 meters) below ground surface. However, the archaeological APE has been subject to extensive modern development, including the construction of BART and Muni as well as the installation and relocation of utilities. Therefore, much of this fill material has been subject to recent disturbance. This disturbance may have displaced any historical archaeological material that was once in place in the anthropogenic fill and thus removing it from its depositional context. Resources that lack this context are unlikely to retain the integrity needed to be considered NRHP eligible. Therefore, preservation of buried historical archaeological resources is considered to be less likely. Intact historic-era archaeological deposits are more likely to be identified within thicker deposits of anthropogenic fill where later ground disturbance may not have extended to the depth of the potential buried historic-era archaeological resources. However, previous ground disturbance associated with the construction of BART, Muni and the installation and relocation of utilities that occurred to accommodate construction of BART and Muni indicate a level of disturbance ranging from 15 feet (4.5 meters) below ground surface up to 80 feet (24 meters) below ground surface.

Deeper buried deposits, such as dune sands, are considered to be sensitive for prehistoric resources. The upper interface of these dune deposits is located at depths ranging from 8 to 20 feet (2.4 to 6 meters) below the ground surface. The dunes fluctuate in depth across the archaeological APE. In some areas dune sands are located quite deep (greater than 20 feet below the ground surface), while in a few areas dune sands appear to be located just below the maximum proposed depth excavation. Project related excavation of 8 feet or greater holds the potential to encounter landforms considered sensitive for prehistoric resources in these locations.

The shore of Yerba Buena Cove originally extended up to what is current day Fremont Street. The landform in this portion of the project corridor is classified as tidal flat and marsh sands. Given periodic inundation, these landforms were not ideal for prehistoric habitation or resource preservation, therefore they are not considered sensitive for prehistoric resources.

Based on the results of this archaeological sensitivity analysis, due to the potential for project-related activities to extend into dune deposits considered sensitive for prehistoric archaeological resources, the proposed project may encounter as-yet undocumented prehistoric archaeological resources and human remains. While there is potential to also encounter as-yet undocumented prehistoric-era resources, the majority of work will occur in anthropogenic fill and due to the amount of disturbance that has occurred throughout the archaeological APE, this potential is low.

Built Environment Resources

One hundred and forty-five NRHP-listed, NRHP-eligible, or assumed eligible resources are located within the built environment APE. Six built resources located in the built environment APE are already listed in the NRHP, and eight built resources were evaluated in the current study as appearing to meet the NRHP eligibility criteria. Pursuant to Section 106 PA Stipulation VIII.C.4, Caltrans assumed 131 additional built resources as eligible for listing in the NRHP for the purposes of this project. Ten of these NRHP-listed, NRHP-eligible, and assumed eligible built resources are historic districts, and 135 are individual resources. Construction-related activities have the potential to affect the character-defining features of the built resources through project-related alterations to the streetscape (i.e., roadway or sidewalk areas). Streetscape alterations will be new but largely consistent with other physical changes in this setting of the Market Street corridor over time, which has experienced a continuum of modification throughout Market Street's history. Compatible alterations to the setting of historic resources along Market Street will include features that will be contemporary in design but consistent with the types of pedestrian, safety, and streetscape improvements that already exist within the Market Street streetscape. Overall, these modifications will not involve a change in the character of the use or the physical features that contribute to Market Street as the setting for the following historic resources.

As such, project activities in the public right-of-way will not alter, directly or indirectly, the characteristics of the individual built environment resources listed below to the extent that the resources will no longer be eligible for the NRHP.

NRHP Listed Individual Resources:

- Lotta's Fountain
- Matson Building and Annex, 215 Market Street
- Pacific Gas & Electric Company General Office Building and Annex, 245 Market Street
- San Francisco Cable Cars National Historic Landmark

NRHP Eligible and Assumed Eligible Individual Resources:

- Admission Day Monument
- Crown Zellerbach Complex, 1 Bush Street
- Hyatt Regency Hotel, 22 Drumm Street

- Market Street Cultural Landscape District
- Mechanics Monument
- Standard Oil Building/Chevron Towers, 555–575 Market Street
- United Nations Plaza
- 44 and 2–8 Montgomery Street
- 648–660 Market Street
- 925 Market Street
- Lesser Brothers Building, 1629–1637 Market Street
- Wilson Brothers Company Building, 1632 Market Street
- Bay Area Rapid Transit District
- Chancery Building, 562–566 Market Street
- Chronicle Building, 690 Market Street
- Civic Center Hotel, 1601–1605 Market Street
- Civic Center Landmark District [containing 17 properties that are assumed eligible individually]
- Call Building, 701–703 Market Street
- Fillmore West, 10–12 South Van Ness
- Finance Building, 576–580 Market Street
- Flatiron Building, 540–548 Market Street
- Francesca Theater, 1127 Market Street
- Golden Triangle light standards
- Hobart Building, 582–590 Market Street
- Hotel Andree, 1661–1667 Market Street
- Kamm Building, 715–719 Market Street
- Kearny-Market-Mason-Sutter Conservation District [containing 32 properties that are assumed eligible individually]
- LGBTQ Tenderloin Historic District [containing 37 properties that are assumed eligible individually]
- Market Street Masonry Landmark District [containing 8 properties that are assumed eligible individually]
- New Montgomery-Mission-2nd Street Conservation District [containing 9 properties that are assumed eligible individually]
- Postal Telegraph Building, 2–22 Battery Street
- Samuels Clock

- Southern Pacific Building, 1 Market
- Western Furniture and Merchandise Mart, 1301–1363 Market Street
- Whitcomb Hotel, 1215–1231 Market Street

Likewise, due to the project elements described above the character-defining features of the historic districts listed below that intersect the built environment APE will not be altered to the extent that their defining characteristics no longer convey the districts' historic significance.

NRHP Listed Historic Districts:

- Uptown Tenderloin National Register Historic District
- Market Street Theatre and Loft National Register District

NRHP Eligible Historic Districts:

- San Francisco Auxiliary Water Supply System
- Bay Area Rapid Transit District
- Market Street Masonry Landmark District
- Civic Center Landmark District (Note: a portion of this district is listed in the NRHP and as an NHL; a larger land area is eligible for the purposes of this report.)
- Kearny-Market-Mason-Sutter Conservation District
- LGBTQ Tenderloin Historic District
- New Montgomery Mission-2nd Street Conservation District

The only built environment resources that will be adversely affected by the Project is the ***NRHP Eligible Historic District*** known as the Market Street Cultural Landscape District. Analysis of project construction impacts is included below.

- Market Street Cultural Landscape District

  Per the HRER prepared for the project, the Market Street Cultural Landscape District is significant under NRHP Criterion C for its association with the Market Street Redevelopment Plan, designed by master architects John Carl Warnecke and Mario J. Ciampi and master landscape architect Lawrence Halprin. The period of significance under this criterion is 1968-1979, corresponding with the design and construction of the redevelopment plan. This significance is based on the importance of the streetscape design as an early application of an interdisciplinary approach to urban design, which helped elevate the influence of landscape architecture as a discipline that provides perspective on modern urban planning.

  Elements of the project that will affect built resources include:

  - Demolition and realignment of the sidewalks
  - Removal and replacement of the street trees
  - Relocation of the existing elevator at Civic Center Muni/BART Station,
  - Removal and replacement of street and traffic signage to be consistent with contemporary traffic safety standards

As such, the proposed project will result in the demolition or incompatible alteration of character-defining features that convey the historic significance of the Market Street Cultural Landscape District. These features include:

- Small plazas and associated street furniture located within the sidewalks
- Red brick paving in a herringbone pattern in the sidewalks
- London plane street trees (*Plantanus acerifolia*)
- Cluster arrangement of the street trees
- Bronze tree grates
- Vertical circulation features at Civic Center Muni/BART station
- Granite bollards with chain links located within the sidewalks
- Bronze Muni/BART elevators
- Square and circular pole-mounted street signs
- Semaphore-style traffic signage and signal lights

In conclusion, because of the nature of the project, which is limited to a public right-of-way, built environment historic properties that lie adjacent to but do not extend into the Market Street right-of-way will not be physically touched by the project. This represents the majority of built environment historic properties within the APE. Additional historic properties are the monuments and street furnishings within the public right-of-way, which will be protected in place. There will be no adverse effects on these properties. Several built environment historic properties within the public right-of-way or containing contributing elements that extend into the public right-of-way will experience minor modifications. These include the Civic Center Landmark District, United Nations Plaza, BART District, AWSS, and Crown Zellerbach Complex. The modifications will not diminish the integrity of the resources overall or affect their eligibility for NRHP listing. However, due to the project elements described above and the resulting demolition of character-defining features that convey the Market Street Cultural Landscape District's significance, the proposed project will result in diminished integrity of the resource and affect the district's eligibility for the NRHP. Therefore, the construction activities will not result in alterations to built environment resources that will cause adverse effects, except in the case of the Market Street Cultural Landscape District.

Construction of the design option will entail the same approach, elements, and durations as the proposed project; therefore, it will result in the same effects to cultural resources as the proposed project.

Section 4(f)

As discussed in Appendix A, *Draft Section 4(f) Evaluation* (May 2020) and Appendix B, *Draft Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations*, prepared for the proposed project (May 2020), 145 historic properties, all of which are NRHP-listed, NRHP-eligible, or assumed eligible for NRHP listing, were evaluated relative to Section 4(f) requirements. No known archaeological resources in the archaeological APE qualify for protection under Section 4(f). The project will result in impacts on one NRHP-eligible historic district, the Market Street Cultural Landscape District as a result of changes to contributing features that qualify the historic district for listing in the NRHP, which is proposed to result in a permanent

Section 4(f) use. This resource is discussed in Appendix A. See Appendix A and Appendix B for more details on Section 4(f). In addition, 144 other historic properties are located immediately adjacent to the project or intersect the project corridor. Of these, the project will also result in impacts on 9 historic properties, resulting in a *de minimis* use under Section 4(f). The project will not permanently affect the remaining 135 historic properties. These 145 properties are discussed in Appendix B.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor, including regularly scheduled or emergency repairs. Thus, the No-Build Alternative will not result in adverse effects to cultural resources during construction.

Operational Impacts

Build Alternative

Archaeological Resources and Human Remains

Additional ground disturbance is not anticipated during project operation. Therefore, project operation will not affect any known or as-yet undocumented archaeological resources or humans remains.

Built Environment Resources

The proposed project will not result in any additional alteration to the materiality of built resources during project operation than those described above. Furthermore, the operation of the project will contribute to a continuum of change that has occurred along the Market Street Corridor over time. Therefore, the operation of the project will not result in any additional adverse effects to built environment resources, beyond those described above in the construction impacts section.

Operation of the design option will entail the same approach, elements, and durations as the proposed project. The differences between the design option and the proposed project are limited to changes regarding roadway configuration, private vehicle access, surface transit, and bicycle and pedestrian facilities in the western segment of the project corridor. Therefore, operation of the design option will result in the same effects to cultural resources as operation of the proposed project.

No-Build Alternative

The No-Build (No Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. It will include limited operational changes to the project corridor, including electrification of Muni tracks and regularly scheduled maintenance. It is not anticipated that the improvements to the Market Street corridor would result in the material degradation of existing or potential historic properties or result additional ground disturbance that would hold the potential to affect archaeological resources or human remains. Thus, the No-Build Alternative will not result in adverse effects to cultural resources during operation.

Summary of Cultural Resources Impacts

The Section 106 consultation process is ongoing, and a Finding of Effects document is currently being prepared for consultation with SHPO. It is predicted that this process will conclude that the project has an adverse effect on cultural resources. Mitigation measures to resolve effects will be agreed upon in the MOA. Table 2.1.6-1 summarizes the proposed Section 106 findings on historic properties that support this conclusion.

Table 2.1.6-1. Summary of Cultural Resources Findings[3]

Property	Impact Finding
Market Street Cultural Landscape District	**Adverse Effect**
Yerba Buena Cemetery (No Trinomial)	**Adverse Effect**
The Panama (No Trinomial)	**Adverse Effect**
The Byron (No Trinomial)	**Adverse Effect**
The Callao (No Trinomial)	**Adverse Effect**
The Autumn (No Trinomial)	**Adverse Effect**
The Galen (No Trinomial)	**Adverse Effect**
The Market Street Wharf (No Trinomial)	**Adverse Effect**
The California Street Wharf (No Trinomial)	**Adverse Effect**
The Main Street Wharf (No Trinomial)	**Adverse Effect**
The Stuart Street Wharf (No Trinomial)	**Adverse Effect**
Hotel Andree, 1661–1667 Market Street	No Adverse Effect
Wilson Brothers Company Building, 1632 Market Street	No Adverse Effect
Market Street Masonry Landmark District	No Adverse Effect
Lesser Brothers Building, 1629–1637 Market Street	No Adverse Effect
Civic Center Hotel, 1601–1605 Market Street	No Adverse Effect
Fillmore West, 10–12 South Van Ness Avenue	No Adverse Effect
Civic Center Landmark District	No Adverse Effect
Western Furniture and Merchandise Mart, 1301–1363 Market Street	No Adverse Effect
Whitcomb Hotel, 1215–1231 Market Street	No Adverse Effect
Uptown Tenderloin National Register Historic District	No Adverse Effect
United Nations Plaza	No Adverse Effect
LGBTQ Tenderloin Historic District	No Adverse Effect
Francesca Theater, 1127 Market Street	No Adverse Effect
San Francisco Cable Cars National Historic Landmark	No Adverse Effect
Market Street Theatre and Loft National Register District	No Adverse Effect
925 Market Street	No Adverse Effect
Kearny-Market-Mason-Sutter Conservation District	No Adverse Effect
Samuels Clock	No Adverse Effect

[3] This table does not list the individual assumed eligible properties located within the districts that intersect with the APE. They will not experience adverse effects as a result of the proposed project.

Property	Impact Finding
Golden Triangle Light Standards	No Adverse Effect
San Francisco Auxiliary Water Supply System	No Adverse Effect
Kamm Building, 715–719 Market Street	No Adverse Effect
Call Building, 701–703 Market Street	No Adverse Effect
Lotta's Fountain	No Adverse Effect
Chronicle Building, 690 Market Street	No Adverse Effect
648–660 Market Street	No Adverse Effect
Bay Area Rapid Transit District	No Adverse Effect
Admission Day Monument	No Adverse Effect
44 and 2–8 Montgomery Street	No Adverse Effect
Hobart Building, 582–590 Market Street	No Adverse Effect
Finance Building, 576–580 Market Street	No Adverse Effect
Chancery Building, 562–566 Market Street	No Adverse Effect
Flatiron Building, 540–548 Market Street	No Adverse Effect
New Montgomery-Mission-2nd Street Conservation District	No Adverse Effect
Crown Zellerbach Complex, 1 Bush Street	No Adverse Effect
555–575 Market Street	No Adverse Effect
Postal Telegraph Building, 2–22 Battery Street	No Adverse Effect
Mechanics Monument	No Adverse Effect
Pacific Gas & Electric Company, General Office Building and Annex, 245 Market Street	No Adverse Effect
Matson Building and Annex, 215 Market Street	No Adverse Effect
Hyatt Regency Hotel, 22 Drumm Street	No Adverse Effect
Southern Pacific Building, 1 Market Street	No Adverse Effect

Based on the information and analysis presented in the ASR, and summarized in this document, project-related ground disturbance has the potential to encounter as-yet undocumented archaeological resources and human remains during construction of the Build Alternative and design option. Fourteen archaeological resources were identified within or adjacent to the archaeological APE. Three of these resources are no longer extant, and one resource is located outside the vertical archaeological APE and will not be affected by project construction. One known archaeological site, nine archaeological resources with locations that have not been field verified, and five locations where archaeologically sensitive deposits are within the vertical archaeological APE have the potential to be affected by proposed project excavation. However, proposed project excavation is similar in scale to excavation associated with other projects occurring throughout San Francisco. These projects had the potential to encounter the same resource types as those identified above. Additionally, as described in the sections above, while the maximum depth of excavation is 15 feet below ground surface, the majority of this excavation will occur within previously disturbed context which has a low probability of containing as-yet undocumented archaeological resources considered eligible for listing in the NRHP. Proposed measures to minimize effects on archaeological resources are described in the section titled *Avoidance, Minimization, and/or Mitigation Measures* section, below. These will be the subject of further consultation through the Section 106 process, the results of which will be included in the Final Environmental Assessment.

There are 145 built resources identified in the built environment APE. Of those it is anticipated 138 would not be physically altered by the project, and that six properties would be altered by the project and the effects would not be adverse. It is also anticipated that one property, the Market Street Cultural Landscape has the potential be adversely affected by the project. Construction-related activities would affect the character-defining features of the Market Street Cultural Landscape District through alterations to the streetscape (i.e., roadway, sidewalk areas, and street furnishings). The streetscape alterations will be new but largely consistent with other physical changes in this setting of the Market Street corridor over time, which has experienced a continuum of modification throughout Market Street's history. As such, the Market Street Cultural Landscape District will continue to be eligible for the NRHP under Criterion A for its association as San Francisco's main transportation venue and as a venue for civic engagement.

The construction-related activities would affect the district's ability to convey its significance for the NRHP under criterion C for its association with the Market Street Redevelopment Plan from 1968-1979, and the plan's design team of master architects John Carl Warnecke and Mario J. Ciampi and master landscape architect Lawrence Halprin. The avoidance and minimization measures described in the section titled *Avoidance, Minimization, and/or Mitigation Measures* section, are being developed through consultation with stakeholders, the public, and Section 106 consulting and concurring parties that were consulted throughout the processes of resource identification, effects, and resolution of effects. An MOA will be completed in consultation with the SHPO to resolve the adverse effect under Section 106 as it pertains to the administration of the Federal-Aid Highway Program in California.

2.1.6.5 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to cultural resources are minimized under the proposed project:

- AMM-CUL-1: Data Recovery Plan

  The project has the potential to adversely affect one known archaeological resource (the Yerba Buena Cemetery) and nine resources whose presence have not been field-verified (the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf). In addition, there are five areas that are considered sensitive for containing archaeological deposits.

  Public Works will ensure that adverse effects of the project on these resources are resolved by implementing the *Data Recovery Plan for the Better Market Street Project* (DRP). The DRP will identify archaeologically sensitive areas; present a research design and describes data requirements for archaeological sites; describe monitoring and data recovery methods, procedures, and protocols; describe procedures for unanticipated discoveries; describe procedures and protocols for data recovery; and describe reporting requirements.

  Archaeological monitoring will occur in the vicinity of Yerba Buena Cemetery, the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf, as well as in the five locations determined to have increased sensitivity to contain archaeological deposits.

- AMM-CUL-2: Unanticipated Archaeological Discoveries Procedures

In the event of an unanticipated archaeological discovery all ground disturbance and equipment will cease within a 60-foot radius of the discovery, and if possible, be redirected to another portion of the project corridor. The area surrounding the discovery will be secured and the resource will be protected while appropriate assessment occurs. In the event of a potential discovery, the resident engineer and the Caltrans Archaeologist will be notified immediately. As appropriate, the Caltrans Archaeologist will notify the Caltrans Cultural Studies Office (CSO), who in turn will notify SHPO. Evaluation and treatment options will be determined in direct communication with stakeholders, as applicable.

If human remains are encountered, then the procedures outlined by the Native American Heritage Commission (NAHC), in accordance with Section 7050.5 of the California Health and Safety Code (HSC) and Section 5097.98 of the Public Resources Code, will be followed. If the discovery is determined to include human remains:

1. All ground-disturbing work within the immediate vicinity (60 feet) of the find will halt.
2. The San Francisco County Coroner will be notified:
   San Francisco County Medical Examiner
   1 Newhall Street
   San Francisco, CA 94124
   Phone: (415) 641-3600
   Web: https://sf.gov/departments/city-administrator/office-chief-medical-examiner
3. NAHC will be notified:
   Native American Heritage Commission
   915 Capitol Mall, Room 364
   Sacramento, California 95814
   Phone: (916) 653-4082
   Email: nahc@nahc.ca.gov
4. The coroner will have 2 working days to examine the remains after being notified in accordance with HSC Section 7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify NAHC of the discovery.
5. NAHC will immediately designate and notify the Native American Most Likely Descendant (MLD), who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for treatment of them.

All Native American coordination will be done in direct communication with the Caltrans Archaeologist assigned to the project.

- AMM-CUL-3: Prepare and Submit a Historic Preservation Treatment Plan

  Public Works shall retain a professional who meets the Secretary of the Interior's Professional Qualifications Standards to prepare a Historic Preservation Treatment Plan (HPTP) for the following contributing elements of the Market Street Cultural Landscape District: Embarcadero Plaza, Hallidie Plaza, and United Nations Plaza. Public Works shall coordinate with the San Francisco Department of Recreation and Parks on the timeline, cost share, and overall implementation of this measure.

The HPTP shall incorporate rehabilitation recommendations for maintaining and protecting the paving materials at the three plazas and shall include the following elements:

- The HPTP shall be prepared and implemented to aid in protecting the physical elements of the plazas that contribute to the character of the Market Street Cultural Landscape District, as identified and described in the State of California Department of Parks and Recreation (DPR) district record appended to the Historic Resource Evaluation Report that was completed as part of the Section 106 review and technical documentation for this project. The HPTP shall focus on the district's association with the Market Street Redevelopment Plan design led by architects John Carl Warnecke and Mario Ciampi and landscape architect Lawrence Halprin with specific guidance on the treatment of historic materials, including the red brick herringbone paving present in all three locations.
- The HPTP shall provide a baseline conditions assessment of the contributing elements in each of three plazas, including documentation of areas that illustrate typical conditions and degradation that will be addressed through rehabilitation recommendations.
- The HPTP will also include best practices guidelines and rehabilitation recommendations to guide future projects associated with ongoing maintenance and repair of the red brick and other contributing elements of the plazas to ensure that replacement materials are compatible with the character of historic materials.
- If deemed necessary upon assessment of the resources' condition, the plan shall include guidance for preliminary stabilization measures to be carried out before construction to prevent damage to the three plazas as a result of construction activities. Specifically, the protection measures shall incorporate construction specifications to be implemented by the construction contractor(s) to ensure all feasible means of avoiding damage to the resources.

Public Works will not authorize the execution of any Undertaking that may affect historic properties until the HPTP has been completed and approved by Caltrans.

- AMM-CUL-4: Develop and Implement Community-led Programs

  Public Works will administer the selection of a minimum of three community-led public programs to celebrate and commemorate the history of Market Street. Proposals will be solicited through an RFP submission process and will be proposed, managed and implemented by California-based non-profit organizations with an interest in the history and/or cultural properties of the Market Street Cultural Landscape District. The selection process may be coordinated with the San Francisco Planning Department to fulfill the interpretive and commemorative mitigation measures that were developed to meet the requirements of the California Environmental Quality Act (see the *Better Market Street Environmental Impact Report*, which was certified by the San Francisco Planning Commission on October 10, 2019), or they can be completed as independent programming.

  With funding support from Public Works, a minimum of three community-led programs will be awarded. Interpretive or commemorative programs may include temporary events such as dances, lectures, or walking tours, or they may take the form of permanent installations such as interpretive signage or an on-site exhibition. Organizations with a demonstrated interested in the history of Market Street may apply through the RFP process. Preference will be given to organizations located within the project APE. Program selection will be made by a committee that will include a minimum of five persons, and include at least three members with

professional experience in arts and cultural programming. The committee may include professionals from the following fields and organizations: a representative of Public Works; a representative of Caltrans; professionals from the fields of history, historic preservation, performing arts, visual arts, or design. Organizations with representation on the committee will not be eligible to apply for award consideration.

Where responses to the RFP include proposals for temporary programming, a plan for documentation or recordation of the program will be included. The documentation or recordation materials will be appended to the annual reporting detailed in Stipulation G of the MOA and will also be hosted by the organizations so that the information included in the programs are made available to the public as part of the permanent historical record on the history of Market Street. Additionally, the programs, both temporary and permanent, must be accessible to the public through in-person or digital participation.

Public Works will not authorize the execution of any Undertaking activity that may affect historic properties in the APE until awards are made for three community-led programs, and draft work plans have been submitted by the awardees and approved by the selection committee.

2.2 PHYSICAL ENVIRONMENT

2.2.1 Water Quality and Stormwater Runoff

2.2.1.1 Regulatory Setting

Federal Requirements: Clean Water Act

In 1972, Congress amended the Federal Water Pollution Control Act, making the addition of pollutants to the waters of the United States (U.S.) from any point source[1] unlawful unless the discharge is in compliance with a National Pollutant Discharge Elimination System (NPDES) permit. This act and its amendments are known today as the Clean Water Act (CWA). Congress has amended the act several times. In the 1987 amendments, Congress directed dischargers of storm water from municipal and industrial/construction point sources to comply with the NPDES permit scheme. The following are important CWA sections:

- Sections 303 and 304 require states to issue water quality standards, criteria, and guidelines.
- Section 401 requires an applicant for a federal license or permit to conduct any activity that may result in a discharge to waters of the U.S. to obtain certification from the state that the discharge will comply with other provisions of the act. This is most frequently required in tandem with a Section 404 permit request (see below).
- Section 402 establishes the NPDES, a permitting system for the discharges (except for dredge or fill material) of any pollutant into waters of the U.S. Regional Water Quality Control Boards (RWQCBs) administer this permitting program in California. Section 402(p) requires permits for discharges of storm water from industrial/construction and municipal separate storm sewer systems (MS4s).
- Section 404 establishes a permit program for the discharge of dredge or fill material into waters of the U.S. This permit program is administered by the U.S. Army Corps of Engineers (USACE).

The goal of the CWA is "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters."

The USACE issues two types of 404 permits: General and Individual. There are two types of General permits: Regional and Nationwide. Regional permits are issued for a general category of activities when they are similar in nature and cause minimal environmental effect. Nationwide permits are issued to allow a variety of minor project activities with no more than minimal effects.

Ordinarily, projects that do not meet the criteria for a Regional or Nationwide Permit may be permitted under one of the USACE's Individual permits. There are two types of Individual permits: Standard permits and Letters of Permission. For Individual permits, the USACE decision to approve is based on compliance with U.S. Environmental Protection Agency's (U.S. EPA) Section 404 (b)(1) Guidelines (40 Code of Federal Regulations [CFR] Part 230), and whether the permit approval is in the public interest. The Section 404(b)(1) Guidelines (Guidelines) were developed by the U.S. EPA

[1] A point source is any discrete conveyance such as a pipe or a man-made ditch.

in conjunction with the USACE, and allow the discharge of dredged or fill material into the aquatic system (waters of the U.S.) only if there is no practicable alternative which would have less adverse effects. The Guidelines state that the USACE may not issue a permit if there is a least environmentally damaging practicable alternative (LEDPA) to the proposed discharge that would have lesser effects on waters of the U.S. and not have any other significant adverse environmental consequences. According to the Guidelines, documentation is needed that a sequence of avoidance, minimization, and compensation measures has been followed, in that order. The Guidelines also restrict permitting activities that violate water quality or toxic effluent[2] standards, jeopardize the continued existence of listed species, violate marine sanctuary protections, or cause "significant degradation" to waters of the U.S. In addition, every permit from the USACE, even if not subject to the Section 404(b)(1) Guidelines, must meet general requirements. See 33 CFR 320.4.

State Requirements: Porter-Cologne Water Quality Control Act

California's Porter-Cologne Act, enacted in 1969, provides the legal basis for water quality regulation within California. This act requires a "Report of Waste Discharge" for any discharge of waste (liquid, solid, or gaseous) to land or surface waters that may impair beneficial uses for surface and/or groundwater of the state. It predates the CWA and regulates discharges to waters of the state. Waters of the state include more than just waters of the U.S., like groundwater and surface waters not considered waters of the U.S. Additionally, it prohibits discharges of "waste" as defined, and this definition is broader than the CWA definition of "pollutant." Discharges under the Porter-Cologne Act are permitted by Waste Discharge Requirements (WDRs) and may be required even when the discharge is already permitted or exempt under the CWA.

The State Water Resources Control Board (SWRCB) and RWQCBs are responsible for establishing the water quality standards (objectives and beneficial uses) required by the CWA and regulating discharges to ensure compliance with the water quality standards. Details about water quality standards in a project area are included in the applicable RWQCB Basin Plan. In California, RWQCBs designate beneficial uses for all water body segments in their jurisdictions and then set criteria necessary to protect those uses. As a result, the water quality standards developed for particular water segments are based on the designated use and vary depending on that use. In addition, the SWRCB identifies waters failing to meet standards for specific pollutants. These waters are then state-listed in accordance with CWA Section 303(d). If a state determines that waters are impaired for one or more constituents and the standards cannot be met through point source or non-point source controls (NPDES permits or WDRs), the CWA requires the establishment of Total Maximum Daily Loads (TMDLs). TMDLs specify allowable pollutant loads from all sources (point, non-point, and natural) for a given watershed.

State Water Resources Control Board and Regional Water Quality Control Boards

The SWRCB administers water rights, sets water pollution control policy, and issues water board orders on matters of statewide application, and oversees water quality functions throughout the state by approving Basin Plans, TMDLs, and NPDES permits. RWCQBs are responsible for protecting beneficial uses of water resources within their regional jurisdiction using planning, permitting, and enforcement authorities to meet this responsibility.

[2] The U.S. EPA defines "effluent" as "wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall."

- **National Pollutant Discharge Elimination System (NPDES) Program**

  The City has the following NPDES permit: *Waste Discharge Requirements (WDRs) For: City and County of San Francisco Southeast Water Pollution Control Plant, North Point Wet Weather Facility, and Bayside Wet Weather Facilities San Francisco, San Francisco County* (Order No. R2-2002-0073, NPDES Permit No. CA0037664). The permit was issued by the San Francisco Bay Regional Water Quality Control Board (RWQCB) and includes effluent limitations and provisions for pollutants entering the combined sewer system. The proposed project and design option will reduce the amount of pollutants within stormwater runoff to help maintain the combined sewer system. The City does not have a Municipal Separate Storm Sewer System (MS4) Permit for the areas within the combined sewer system.

- **Stormwater Management Plan**

  In 2016, the City, SFPUC, and Port of San Francisco created the *San Francisco Stormwater Management Requirements and Design Guidelines* (2016). The manual contains thresholds for low-impact development (LID) and stormwater treatment requirements for projects within the combined and separate sewer systems.

Construction General Permit

Construction General Permit, Order No. 2009-0009-DWQ (adopted on September 2, 2009 and effective on July 1, 2010), as amended by Order No. 2010-0014-DWQ (effective February 14, 2011) and Order No. 2012-0006-DWQ (effective on July 17, 2012). The permit regulates storm water discharges from construction sites that result in a Disturbed Soil Area (DSA) of one acre or greater, and/or are smaller sites that are part of a larger common plan of development. By law, all storm water discharges associated with construction activity where clearing, grading, and excavation result in soil disturbance of at least one acre must comply with the provisions of the General Construction Permit. Construction activity that results in soil disturbances of less than one acre is subject to this Construction General Permit if there is potential for significant water quality impairment resulting from the activity as determined by the RWQCB. Operators of regulated construction sites are required to develop Storm Water Pollution Prevention Plans (SWPPPs); to implement sediment, erosion, and pollution prevention control measures; and to obtain coverage under the Construction General Permit.

The Construction General Permit separates projects into Risk Levels 1, 2, or 3. Risk levels are determined during the planning and design phases, and are based on potential erosion and transport to receiving waters. Requirements apply according to the Risk Level determined. For example, a Risk Level 3 (highest risk) project would require compulsory storm water runoff pH and turbidity monitoring, and before construction and after construction aquatic biological assessments during specified seasonal windows. For all projects subject to the permit, applicants are required to develop and implement an effective SWPPP. A Water Pollution Control Program (WPCP) is necessary for projects with DSA less than one acre. Stormwater runoff from the project corridor discharges into the City's combined sewer system. Therefore, requirements of the Construction General Permit and the risk level assessment and the water quality monitoring requirements of the Construction General Permit are not applicable to the proposed project.

Section 401 Permitting

Under Section 401 of the CWA, any project requiring a federal license or permit that may result in a discharge to a water of the U.S. must obtain a 401 Certification, which certifies that the project will be in compliance with state water quality standards. The most common federal permits triggering 401 Certification are CWA Section 404 permits issued by the USACE. The 401 permit certifications are obtained from the appropriate RWQCB, dependent on the project location, and are required before the USACE issues a 404 permit.

In some cases, the RWQCB may have specific concerns with discharges associated with a project. As a result, the RWQCB may issue a set of requirements known as WDRs under the State Water Code (Porter-Cologne Act) that define activities, such as the inclusion of specific features, effluent limitations, monitoring, and plan submittals that are to be implemented for protecting or benefiting water quality. WDRs can be issued to address both permanent and temporary discharges of a project.

2.2.1.2 Affected Environment

Information in this section is from the *Water Quality Technical Memorandum* prepared for the project (October 2019). Where other data sources were used, citations have been provided.

Water quality in San Francisco is under the jurisdiction of the San Francisco Bay Regional Water Quality Control Board (San Francisco Bay RWQCB). The San Francisco Bay RWQCB's San Francisco Bay Basin (Region 2) Water Quality Control Plan (Basin Plan) identifies beneficial uses for surface water bodies in the San Francisco estuarine system that are critical to the management of water quality in California.

Watersheds and Surface Waters

According to the San Francisco Public Utilities Commission's (SFPUC's) *Discover Your Watershed Today!* application, the project corridor is mostly within the Channel watershed (San Francisco Public Utilities Commission 2018a). The portion of the project corridor at Market and Montgomery streets, northwest of Market and Front streets and northwest of Market Street until the Market Street/Steuart Street intersection, is within the Northshore watershed. There are no rivers in the city. The original creeks in the watershed have all been filled or otherwise engineered to run underground in culverts. Stormwater within the project corridor is collected in the City's combined sanitary sewer and stormwater sewer system.

Topography, Soils, and Erosion

The project corridor is relatively flat, ranging from approximately 9 feet above sea level at the northeast corner to 66 feet above sea level at the southwest corner (AEW Engineering 2019). Elevations increase from the Market Street/Steuart Street intersection to the southwest end of the corridor at Octavia Boulevard (U.S. Geological Survey 2015). The project corridor is underlain primarily by unconsolidated artificial fill and dune sand in a highly developed urban area. The majority of the project corridor is covered by impervious surfaces.

Groundwater

The project corridor is within the Downtown Groundwater Basin. The Downtown Groundwater Basin covers 7,600 acres (12 square miles) of the city. Groundwater recharge sources consist of rainfall infiltration, landscape irrigation, and leakage from water and sewer pipes (California Department of Water Resources 2003).

Groundwater flows in a general east-to-southeast direction along the project corridor, from the high points of Alamo Heights and Nob Hill to the low points of The Embarcadero and China Basin. Groundwater depths range from approximately 32 feet below the ground surface at the Market Street/Steuart Street intersection to approximately 6 feet below the ground surface at the Market Street/Octavia Boulevard intersection.

Surface Water Quality

Stormwater runoff within the combined sewer system is treated at the Southeast Treatment Plant before discharging to San Francisco Bay. Water quality impairments in central San Francisco Bay, the area the Southeast Treatment Plant discharges to, include chlordane, dichlorodiphenyltrichloroethane, dieldrin, dioxin compounds (including 2,3,7,8-TCCD), furan compounds, invasive species, mercury, polychlorinated biphenyls (including dioxin-like), selenium, and trash (State Water Resources Control Board 2018).

Groundwater Quality

The general water quality objectives established for groundwater in the Basin Plan pertain to bacteria, organic and inorganic chemical constituents, radioactivity, and tastes and odors (San Francisco Bay Regional Water Quality Control Board 2017). Existing beneficial uses of the Downtown Groundwater Basin include municipal and domestic water supply as well as agricultural water supply, with potential uses that include industrial process water supply and industrial service water supply (San Francisco Bay Regional Water Quality Control Board 2017).

2.2.1.3 Environmental Consequences

Construction Impacts

Build Alternative

Grading and excavation activities associated with the proposed project have the potential to increase erosion and result in temporary water quality effects. Sediment-laden flow can result from runoff over DSAs; such flows may enter storm drainage facilities. Additional sources of sediment that could increase turbidity include uncovered or improperly covered active and non-active stockpiles, unstabilized slopes and construction staging areas, and construction equipment that is not properly maintained or cleaned. Earthmoving and other construction activities could result in minor erosion and runoff, with topsoil entering the drainage systems along the project corridor. This could temporarily affect water quality. However, based on the extent of the preliminary calculated area and the highly developed urban nature of the project corridor, the Build Alternative and design option will have minimal potential water quality impacts related to erosion during construction.

Fueling or vehicle maintenance will occur within the project corridor during construction; therefore, a risk of accidental spill or release involving fuels, oils, or other potentially toxic materials exists. An accidental release of such materials could pose a threat to water quality if the contaminants were to enter local storm drains. The magnitude of the impact from an accidental release would depend on the amount and type of material spilled.

Because the proposed project will disturb more than 5,000 square feet of soil, San Francisco Public Works will submit an erosion and sediment control plan and a construction runoff permit application to the SFPUC to obtain a construction site stormwater runoff permit, per *San Francisco's Water, Sewer, and Stormwater Requirements Manual* (San Francisco Public Utilities Commission 2018b). Further evaluation of the BMPs necessary for the Build Alternative or design option will be performed during the design stage.

Groundwater is not anticipated to be used during construction of the Build Alternative or design option. However, groundwater may be encountered during excavation because of the shallow groundwater table. In the event that groundwater is encountered during construction, dewatering will be conducted on a one-time temporary basis and will not deplete groundwater supplies. Should dewatering be required, the water will be retained on-site for dust control, irrigation and other on-site purposes to the greatest extent possible, consistent with the requirements of SFPUC's *Construction Best Management Practices Handbook* (2013). Dewatering operations will also adhere to Caltrans' *Field Guide to Construction Site Dewatering* (2014), and CASQA's *Stormwater Best Management Practice Handbook Portal: Construction* (2011). If needed, a separate dewatering permit would be obtained prior to the start of construction. The project corridor will discharge into the City's combined sewer system. According to the SFPUC *Construction Best Management Practices Handbook* (2013), if non-stormwater, such as groundwater, is extracted from temporary dewatering operations, the water should be retained onsite for dust control, irrigation, and other onsite purposes to the greatest extent possible. If the groundwater has to be discharged into the sewer system, San Francisco Public Works will obtain a batch wastewater discharge permit from the SFPUC. The permit contains conditions for wastewater and non-stormwater discharges into the sewer system. The need for this permit will be determined during the design stage.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Some of these changes could result in impacts similar to those described for the project. As those changes occur, environmental review, as well as adherence to existing regulations, are anticipated to minimize potential water quality impacts.

Operational Impacts

Build Alternative

All proposed project elements will be constructed entirely within public rights-of-way; the majority of project elements will be constructed within the operational public right-of-way. The proposed improvements will not increase the amount of impervious surfaces. Furthermore, the Build Alternative and design option are not anticipated to increase the amount or rate of stormwater runoff.

The Build Alternative and design option will not result in a substantial change in surface permeability, nor will it alter topography in the area, therefore it would not increase runoff, erosion, siltation, and would not result in associated water quality conditions/impairments. Furthermore, no change in groundwater recharge would occur during project operations because the project corridor is covered predominately by impervious surfaces. Groundwater would not be used during project operations.

Currents, Circulation, or Drainage Patterns

Existing drainage systems will be modified to receive downstream flows from impervious surface improvements. However, overall drainage patterns will be maintained. The project area is predominantly developed, and any potential project-related increase in impervious surfaces will not affect the infiltration potential of runoff through open space.

Suspended Particulates (Turbidity)

Potential increases in sediment-laden flows are not anticipated because an increase in the amount of impervious surface is not expected. Furthermore, site design measures are not required for the Build Alternative or design option because the project corridor is located within an area served by the combined sewer system.

Oil, Grease, and Chemical Pollutants

Heavy metals associated with tire and brake wear, oil and grease, and exhaust emissions are the primary pollutants associated with transportation corridors. Generally, roadway stormwater runoff contains the following pollutants: total suspended solids, nitrate nitrogen, total Kjeldahl nitrogen, phosphorus, ortho-phosphate, copper, lead, and zinc. The pollutants are dispersed from fossil fuel combustion, tire and brake wear, and tree leaves that have been exposed to aerial deposition of pollutants. Because the proposed project is expected to ease congestion, the deposition of particulates from exhaust and heavy metals from braking is expected to decrease.

Source control measures are BMPs that reduce pollutants in stormwater runoff before discharge into the sewer system. San Francisco's *Stormwater Management Requirements and Design Guidelines* (City and County of San Francisco et al. 2016) and the "Source Control Checklist" in the *Stormwater Control Plan – Technical Report Templates* (San Francisco Public Utilities Commission 2016) list two forms of source control measures: structural and operational. Structural source control measures involve design features, such as proper storage for hazardous materials; operational source control measures involve ongoing practices, such as routine pavement sweeping.

Because the Build Alternative and design option will replace more than 5,000 square feet of impervious area, the proposed project and design option will be required to implement low-impact development (LID) BMPs. The LID BMPs considered for the proposed project and design option include unlined bioretention areas, such as rain gardens, and lined bioretention areas, such as flow-through planters.

Although more than 50 percent of the project corridor will be impervious surfaces, the runoff rate and volume of stormwater entering the combined sewer system will be reduced 25 percent relative to pre-development conditions for the two-year, 24-hour design storm, per the

Stormwater Management Requirements and Design Guidelines (City and County of San Francisco et al., 2016). Development of the BMPs will be completed during the design stage.

Aquifer Recharge/Groundwater

There are no aquifer or groundwater recharge facilities within the project corridor or adjacent to the project corridor. Therefore, the Build Alternative and design option will not affect recharge facilities during operation. The project area is predominantly developed, and an increase in impervious surfaces is not anticipated, which will not affect the infiltration potential of runoff through open space.

Anticipated Changes to the Biological Characteristics of the Aquatic Environment

There are no aquatic environments within the project corridor. Therefore, the Build Alternative and design option will not affect the biological characteristics of aquatic environments.

Anticipated Changes to the Human Use Characteristics of the Aquatic Environment

Because no aquatic environments will be affected during construction activities, the Build Alternative and design option will not result in changes to the human use characteristics of aquatic environments.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Under the No-Build Alternative, heavy metals associated with vehicle tire and brake wear, oil and grease, and exhaust emissions are the primary pollutants associated with transportation projects and would generate oil, grease, and chemical pollutants. However, the existing regulatory requirements will ensure there will be minimal impacts water quality and stormwater runoff.

2.2.1.4 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that project effects related to water quality and stormwater runoff will be minimized:

- AMM-WQ-1: The project will implement the temporary BMPs included in Table 2.2.1-1.
- AMM-WQ-2: The project will implement the operational source control BMPs included in Table 2.2.1-2.

Table 2.2.1-1. Suggested Minimum Temporary Control BMPs

Temporary BMPs	Purpose
Scheduling	Provide a plan that details the sequence of construction activities and implementation of BMPs, based on local climate, to reduce the amount and duration of exposed soil.
Preservation of Existing Vegetation	Preserve existing vegetation to protect soil from erosion.
Geotextiles and Mats	Cover soil surfaces to reduce erosion from rainfall impact, hold soil in place, and absorb and hold moisture near soil surfaces.
Inlet and Catch Basin Protection	Use runoff detainment devices at storm drain inlets that allow ponding to remove sediment in stormwater.
Street Cleaning	Remove tracked sediment or other debris on public streets to prevent it from entering a storm drain.
Dust Control	Reduce dust generated by surface activities with an application of water/commercial stabilizers.
Temporary Concrete Washout Facilities	Specify vehicle wash areas to contain concrete waste materials.
Job Site Management	Develop procedures and criteria to train employees and subcontractors regarding the proper selection, deployment, inspection, maintenance, and repair of temporary BMPs.
Non-stormwater and Waste/Material Management	Develop procedures and criteria pertaining to water conservation, concrete management, paving and grinding operations, material delivery and storage, stockpile management, sanitary waste, hazardous waste, solid waste, liquid waste, spill prevention and control, contaminated soil, paint and stucco, illicit connections/ discharges, and dewatering operations.

Sources: SFPUC, 2013; CASQA, 2011.

Table 2.2.1-2. Summary of Pollutant Source Areas and Associated Structural and Operational Source Control Measures

Pollutant Source Area	Structural Source Control Measure	Operational Source Control Measure
Accidental Spills or Leaks	• Provide post-emergency hotline telephone numbers in appropriate locations in case of accidental spills • Ensure double containment of hazardous chemicals	• Keep appropriate spill control kits and cleanup equipment readily available • Have procedures in place to direct employees regarding proper handling and disposal for all chemicals • Immediately notify the appropriate agency of any unauthorized discharge or threat of discharge
Parking/Storage Areas and Maintenance (short term)	• None applicable	• Inspect and maintain drains to prevent blockages and overflow
Landscape/Outdoor Pesticide Use	• Design landscaping to minimize water use, runoff, and the use of fertilizers and pesticides • Design for surface infiltration where appropriate • Design grading and drainage systems (drain inlets) that can be located outside lawn areas, if possible, or include non-turf buffers around inlets • To the maximum extent possible, retain existing native trees, shrubs, and ground cover and incorporate in the landscape plan • Select pest-resistant plant species, if practicable • Select plant species that meet site characteristics to ensure successful establishment	• Use pesticides only after monitoring indicates a need • Include proper maintenance of landscaping, with minimal pesticide use • Distribute educational materials regarding proper pest management to the maintenance staff and future site residents or tenants • Do not dispose of plant waste in combined or separate sewer

Source: SFPUC, 2016.

2.2.2 Geology/Soils/Seismic/Topography

2.2.2.1 Regulatory Setting

For geologic and topographic features, the key federal law is the Historic Sites Act of 1935, which establishes a national registry of natural landmarks and protects "outstanding examples of major geological features."

This section also discusses geology, soils, and seismic concerns as they relate to public safety and project design. Earthquakes are prime considerations in the design and retrofit of structures. Structures are designed using the Caltrans's Seismic Design Criteria (SDC). The SDC provides the minimum seismic requirements for highway bridges designed in California. A bridge's category and classification will determine its seismic performance level and which methods are used for estimating the seismic demands and structural capabilities. For more information, please see the Caltrans Division of Engineering Services, Office of Earthquake Engineering, Seismic Design Criteria.

Local Requirements

The City and County of San Francisco (City) General Plan, Community Safety Element (October 2012), addresses seismic and geologic hazards, as discussed below.

- Objective 1: Reduce structural and nonstructural hazards to life safety and minimize property damage resulting from future disasters.
  - Policy 1.3: Assure that new construction meets current structural and life safety standards.
  - Policy 1.6: Consider site soils conditions when reviewing projects in areas subject to liquefaction or slope instability.
  - Policy 1.7: Consider information about geologic hazards whenever City decisions are made that will influence land use, building density, building configurations, or infrastructure are made.
  - Policy 1.18: Identify and replace vulnerable infrastructure and critical service lifelines in high-risk areas.

2.2.2.2 Affected Environment

Regional Geology

The project corridor is in the Coast Ranges geomorphic province, which is characterized by northwest-trending mountain ranges and valleys (California Geological Survey 2006). The ridges and valleys in the Coast Ranges are controlled by folds and faults that resulted from the collision of the Pacific and North American plates and subsequent strike-slip faulting along the San Andreas fault, Hayward fault, and Calaveras fault. The San Andreas fault includes individual fault strands in the fault zone. Some of the individual strands ruptured to the surface in the 1906 earthquake.

Site Geology

The project corridor is underlain primarily by unconsolidated artificial fill and dune sand, with groundwater levels ranging from 6 to 32 feet below the ground surface.

Surficial deposits throughout the project corridor consist primarily of artificial fill (Qaf), dune sand (Qd), undifferentiated surficial deposits (Qu), Franciscan mélange (fsr), and serpentinite (sp). The area is underlain by Quaternary sediments that were deposited in the last 1.8 million years (Black et al. 2000). Bedrock beneath San Francisco consists of sedimentary and volcanic rocks of Jurassic and Cretaceous age (approximately 65 to 213 million years old).

There are no geological land forms within the project corridor.

Primary Seismic Hazards

The State of California considers two aspects of earthquake events to be primary seismic hazards: surface fault rupture (disruption at the ground surface as a result of fault activity) and seismic ground shaking. These hazards are addressed briefly below.

Surface Fault Rupture

San Francisco is in a seismically active region near the boundary between two major tectonic plates, the Pacific Plate to the southwest and the North American Plate to the northeast. The fault nearest the project corridor is the northern segment of the San Andreas fault, located approximately 7 miles west of the project corridor.

Strong Ground Shaking

Given the project corridor's proximity to the northern segment of the San Andreas fault, the potential exists for strong seismic ground shaking along the project corridor during an earthquake event. The Community Safety Element of the City General Plan also projects very strong seismic ground shaking along the project corridor from an earthquake on the Hayward fault, located approximately 9.5 miles northeast of the project corridor. However, strong ground shaking along the project corridor could result from an earthquake on any of the numerous active regional faults in the vicinity. The U.S. Geological Survey (USGS) Working Group on California Earthquake Probabilities concluded that there is a 62 percent probability of a strong earthquake (i.e., magnitude ≥ 6.7) occurring in the San Francisco Bay Area in the 30-year period from 2003 to 2032.

Secondary Seismic Hazards

The term *secondary seismic hazards* refers to seismically induced landslides, liquefaction, and related types of ground failure. These hazards are addressed briefly below.

Liquefaction

Liquefaction is a process in which soils and sediments lose shear strength and fail during seismic ground shaking. The susceptibility of an area to liquefaction is determined largely by the depth to groundwater and the properties (e.g., texture and density) of the soil and sediment within and above the groundwater. According to the Seismic Hazard Zones Map for San Francisco, which illustrates areas that are subject to liquefaction, a large portion of the project corridor is within an area that has been mapped as a liquefaction hazard zone (California Geological Survey 2000). In addition, USGS has identified the project corridor as having a liquefaction susceptibility rating of moderate to very high (U.S. Geological Survey 2000).

Erosion

The project corridor is underlain primarily by unconsolidated artificial fill and dune sand within a highly developed urban area.

Expansive Soil

The soil materials underlying the project corridor consist primarily of artificial fill of varying composition and dune sand. The dune sand is primarily fine-grained sand, which is not expansive. Because much of the fill in the project area was derived from dune deposits that were leveled to facilitate development in the area during the mid- to late 1800s, artificial fill in the vicinity of the project corridor is expected to contain significant amounts of dune sand. However, because of the variable nature of artificial fill materials, localized areas of expansive soil may be present.

2.2.2.3 Environmental Consequences

Construction Impacts

Build Alternative

Seismic Hazards

The risk of strong seismic ground shaking in the project area is high. Although workers and the public could be exposed to seismic hazards during construction of underground and aboveground utilities and other infrastructure, the Occupational Safety and Health Act requires employers to comply with hazard-specific safety and health standards to protect workers and the general public.

Liquefaction

Liquefaction within artificial fill and dune sands at shallow depths adjacent to or beneath the project corridor could cause settlement along sidewalks, roadways, and utility corridors. Historically, liquefaction has occurred in the vicinity of the project corridor (e.g., near The Embarcadero and at the east end of Market Street). Excavations to approximately three to 15 feet will be necessary for underground utility rehabilitation/replacement. However, excavation within Public Works' operational right-of-way will be subject to the agency's permitting requirements, including applicable health and safety requirements found in Public Works Code Article 2.4, Excavation in the Public Right-of-Way. These requirements will be effective in minimizing effects of settlement from excavation during construction of the Build Alternative and design option.

Erosion

The entire roadway and roadway base throughout the project corridor will be removed. The sub-base will be compacted, and a new concrete street base will be constructed and topped with an asphalt surface. Site preparation and grading associated with project construction could expose bare soil to erosive forces. If proper construction management and soil erosion control measures are not implemented during construction, erosion of the disturbed soils may result. Because construction of the Build Alternative and design option will disturb greater than 5 acres of land, preparation and implementation of a stormwater pollution prevention plan (SWPPP), in accordance with the National Pollutant Discharge Elimination System, will be required. The SWPPP will list the best management practices that will be implemented to minimize stormwater runoff, control erosion,

and monitor effectiveness. Furthermore, as part of Caltrans standard practice, the project will incorporate best management practices related to soil stabilization (e.g., mulching, hydroseeding, applying soil binders). Temporary sediment and wind-erosion control measures will also be incorporated. The applicable erosion-related requirements are described in the Caltrans' *Construction Site Best Management Practices Manual* and *SWPPP and Water Pollution Control Program Preparation Manual*. The project will also adhere to the City Stormwater Control Plan, in accordance with Article 4, Section 2.147, of the Public Works Code.

Expansive Soil

Areas of expansive soil, as defined in Table 18-1 of the Uniform Building Code (1994), do not appear to be extensive in the project area; however, expansive soil could occur locally. Construction of the Build Alternative and design option will be required to meet the requirements of the San Francisco Building Code and the California Building Code. Furthermore, all construction, including engineered fills, will comply with Caltrans' Standard Specifications.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor. In addition, the planned projects will be required to comply with applicable regulations to reduce risks related to strong ground motion, liquefaction, slope instability, or seismic settlement during construction. Therefore, there will be minimal construction impacts related to geology, soils, and seismic concerns under the No-Build Alternative during construction.

Operational Impacts

Build Alternative

Seismic Hazards

The risk of strong seismic ground shaking in the project area is high. Although the potential for seismic ground shaking and ground failure within San Francisco is unavoidable, improvements to, and the redesign of, existing transportation, streetscape, and utility infrastructure will not create new seismic hazards for people or structures. During operation, seismic events may damage underground and aboveground utilities and other infrastructure. Compliance with seismic design standards, as part of the Public Works permitting process, and design specifications, as followed by the SFMTA, will ensure that project features will minimize damage from seismic activity. In addition, the project will comply with Caltrans' Seismic Design Criteria to ensure that earthquake design and construction measures are implemented.

Liquefaction

Liquefaction within artificial fill and dune sands at shallow depths adjacent to or beneath the project corridor could cause settlement along sidewalks, roadways, and utility corridors. Historically, liquefaction has occurred in the vicinity of the project corridor (e.g., near The Embarcadero and at the east end of Market Street). SFMTA engineers take into account geologic and seismic hazards when designing projects that require any type of foundation, such as poles for overhead wiring or

variable message signs. SFMTA generally uses traffic signal poles/mast arms designed by Caltrans. These types of features are conservatively designed and constructed in accordance with applicable foundation standards, taking into account such geotechnical parameters as soil type, height, and grade. All construction, including engineered fills, will comply with Caltrans' Standard Specifications and effects related to liquefaction will be minimized.

Erosion

The project corridor will be primarily paved, as in the existing condition, and there will be no effects related to erosion during operation.

Expansive Soil

Areas of expansive soil, as defined in Table 18-1 of the Uniform Building Code (1994), do not appear to be extensive in the project area; however, expansive soil could occur locally. Construction of the project will be required to meet the requirements of the San Francisco Building Code and the California Building Code. Furthermore, all construction, including engineered fills, will comply with Caltrans' Standard Specifications. Therefore, expansive soils will not affect operation of the Build Alternative and design option.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor. In addition, like the proposed project, the planned projects will be required to comply with applicable regulations to reduce risks related to strong ground motion, liquefaction, slope instability, or seismic settlement during construction. There are no known seismic issues related to the existing transportation, streetscape, and utility infrastructure. Therefore, there will be minimal impacts related to geology, soils, and seismic concerns under the No-Build Alternative during operation.

2.2.2.4 Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

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2.2.3 Hazardous Waste/Materials

2.2.3.1 Regulatory Setting

Hazardous materials, including hazardous substances and wastes, are regulated by many federal laws. Statutes govern the generation, treatment, storage, and disposal of hazardous materials, substances, and waste, and also the investigation and mitigation of waste releases, air and water quality, human health, and land use.

The primary federal laws regulating hazardous wastes/materials are the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) of 1980 and the Resource Conservation and Recovery Act (RCRA) of 1976. The purpose of CERCLA, often referred to as "Superfund," is to identify and cleanup abandoned contaminated sites so that public health and welfare are not compromised. The RCRA provides for "cradle to grave" regulation of hazardous waste generated by operating entities. Other federal laws include:

- Community Environmental Response Facilitation Act (CERFA) of 1992
- Clean Water Act
- Clean Air Act
- Safe Drinking Water Act
- Occupational Safety and Health Act (OSHA)
- Atomic Energy Act
- Toxic Substances Control Act (TSCA)
- Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

Section 121(d) of CERCLA requires that remedial action plans include consideration of more stringent state environmental "Applicable or Relevant and Appropriate Requirements" (ARARs). The 1990 National Oil and Hazardous Substances Pollution Contingency Plan (NCP) also requires compliance with ARARs during remedial actions and during removal actions to the extent practicable. As a result state laws pertaining to hazardous waste management and cleanup of contamination are also pertinent.

In addition to the acts listed above, Executive Order (EO) 12088, *Federal Compliance with Pollution Control Standards*, mandates that necessary actions be taken to prevent and control environmental pollution when federal activities or federal facilities are involved.

Worker and public health and safety are key issues when addressing hazardous materials that may affect human health and the environment. Proper management and disposal of hazardous material is vital if it is found, disturbed, or generated during project construction.

2.2.3.2 Affected Environment

Information in this section is from the *Hazardous Material Initial Site Assessment Better Market Street Project San Francisco, California* (ISA) prepared for the project (October 2019). Data sources used in the ISA to identify previous and current land uses include:

- Historic Sanborn fire insurance maps
- Historic aerial photographs and topographic maps
- Site reconnaissance of the project area
- Interview with Site Owner Representative
- Regulatory agency database information

Where other data sources were used, citations have been provided.

Site Reconnaissance

AEW Engineering, Inc. conducted a site reconnaissance of the project corridor on July 23, 2018. No visual signs of soil discoloration or surface contamination were observed. There were no signs of underground storage tanks (USTs), aboveground storage tanks (ASTs), oil/water separators (OWSs), staining, unmarked transformers, compressed air storage, or waste drums other than those identified in the regulatory agency database review and supplemental database searches. Nothing at the ground surface was observed that would indicate issues belowground.

Aerially Deposited Lead

Aerially deposited lead (ADL) from the historical use of leaded gasoline, exists along roadways throughout California. There is the likely presence of soils with elevated concentrations of lead as a result of ADL on the state highway system right of way within the limits of the project alternatives. ADL can be found in the surface and near-surface soils along nearly all roadways because of the historical use of tetraethyl lead in motor vehicle fuels. Areas of primary concern are soils along routes that have had high vehicle emissions from large traffic volumes or congestion during the period when leaded gasoline was in use (generally prior to 1986). Typically, ADL is found in shoulder areas and has high solubility when subjected to the low pH conditions of waste characterization tests. Shoulder soils along urban and heavily travelled rural highways are commonly above the soluble threshold limit concentration criteria.

ADL could be present within the project corridor. Leaded fuel has not been in use since 1996, and Market Street has been resurfaced since that time. However, it is possible that despite resurfacing activities since 1996 ADL is present as residual concentrations in subsurface soils.

Traffic Striping

Caltrans studies have determined that yellow and white thermoplastic striping and painted markings may contain elevated concentrations of lead and chromium, depending on the age of the striping and painted markings. Disturbing either yellow or white pavement markings by grinding or sandblasting can expose workers to lead and/or chromium. Yellow and white traffic striping and markings are located along streets within the project corridor. It is possible that despite resurfacing activities old striping paint debris remains as residual concentrations in subsurface soils.

Naturally Occurring Asbestos

As discussed in Section 2.2.4, *Air Quality*, the project corridor does not have any reported historic asbestos mines, historic asbestos prospects, asbestos-bearing talc deposits, fibrous amphiboles, or ultramafic rock outcrops (U.S. Geological Survey and California Geological Survey 2011).

Sites Listed in Regulatory Agency Databases

In June 2018, Environmental Data Resources, Inc. (EDR) conducted a search of federal, state, and local regulatory agency databases containing potential hazardous materials sites within an area extending up to 0.5 mile from the project corridor (AEW Engineering, Inc. 2019). The EDR report was reviewed by AEW to identify sites with documented hazardous materials releases that may have potential environmental impacts on subsurface soil and groundwater along the project corridor.

AEW Engineering conducted a review of the databases searched by EDR, which identified a total of 538 mapped sites or addresses along the project corridor and 8,394 mapped sites or addresses up to approximately 0.25 mile from the project alignment. The purpose of the AEW review was to evaluate whether the listed sites in the EDR Report may have potential impacts on the subsurface environment (i.e., soil and groundwater) along the project corridor. Because of the nature of the listings in these databases, (e.g., distance from project, non-releases/spill incidents, remediation completed) most listed sites are not likely to pose adverse environmental impacts to the environment along the project corridor. Detailed information on these sites is presented in the EDR report, which is included in the ISA prepared for the project. In addition to the EDR database search, Local regulatory agencies were contacted to identify potential sites on or near the project corridor which could have a potential impact on subsurface conditions. An interview was conducted with San Francisco Public Works, and environmental databases maintained by San Francisco Public Health and the California Department of Toxic Substances Control were reviewed to gather information regarding potential contaminated sites within the project corridor.

As a result of the database review, six sites were identified as having potential or historical recognized environmental conditions. These sites are discussed below.

Known Potential Recognized Environmental Conditions

Three sites were identified in the EDR database search. Because of the sites' location upgradient from the project corridor, their open nature, and the lack of available information on the extent and severity of contamination, all three sites listed below are considered potential recognized environmental conditions (PRECs).

- **395 Grant Street**. A report of hydrocarbon fumes resulting from construction and excavation in a subbasement was made to the Emergency Response Notification System on September 22, 2008. No further records regarding this site were available for review.
- **101 Polk Street**. This property may contain up to two USTs and is still classified as "Open-Site Assessment." A Site Mitigation Plan published in 2013 indicated that groundwater below the site contained levels of petroleum hydrocarbons exceeding established San Francisco Bay Regional Water Quality Board Environmental Screening Limits. The site is upgradient from the project corridor and may contribute to shallow groundwater quality impacts at the project corridor.

- **Nelson Autobody, 150 Turk Street**. A release was discovered during removal of an underground storage tank on May 31, 2016. A notice of responsibility was transmitted to the responsible party in August 2016. No documentation of remediation or cleanup has been filed.

Known Historical Recognized Environmental Conditions

Three additional sites were identified in the EDR database search as historical recognized environmental conditions (HRECs). All but one (Secondary Metal Department) are within the project corridor. All three sites were historically used for the production of lead. No additional information was available. Because of the nature of these businesses, these sites may be potential sources of lead contamination in the soil and/or groundwater within the project corridor.

- Northwest Lead Co., 444 Market Street
- Bunker Hill Co., 660 Market Street
- Secondary Metal Department., 405 Montgomery Street

2.2.3.3 Environmental Consequences

Construction Impacts

Build Alternative

Soil and Groundwater Contamination

The risk of recognized environmental conditions (RECs) for six locations within the project corridor is considered high to moderate. Of the six RECs, two are within the project corridor and four are upgradient from the project corridor. Humans and the environment could be exposed to soil and/or groundwater contamination as a result of construction activities. Testing for contaminants should be conducted prior to construction of the proposed project to determine the extent and nature of possible contamination and identify and implement appropriate avoidance and containment measures. During project construction, the potential for human exposure (i.e., construction workers) to existing contaminated soil and/or groundwater would occur mainly during ground-disturbing and dewatering activities. If excavation is anticipated to extend below the groundwater table at any part of the project corridor, groundwater should be sampled in the vicinity prior to obtaining dewatering and discharge permits.

During project implementation, the risk of human exposure to groundwater and soil contaminants is low. The majority of the existing project corridor consists of paved surfaces (sidewalks and roadway) which would be repaved upon completion of construction, thereby limiting human exposure to contaminants. It is anticipated that any planters or similar exposed soil areas will be filled with clean import soil.

Previously Unknown Hazardous Materials

The potential exists for exposure of construction workers or nearby sensitive land uses to previously unknown hazardous materials during construction activities. Due to the long history of varied land uses, the project corridor generally has a moderate risk of having previously unreported hazardous materials that may be discovered during construction of the proposed project.

Known Hazardous Materials

The project corridor generally has the potential for hazardous materials in the form of lead or chromium in yellow and white traffic striping and markings and ADL along Market Street. The entire roadway and roadway base throughout the project corridor will be removed. The sub-base will be compacted, and a new concrete street base will be placed and topped with an asphalt surface. Therefore, the project may result in exposure of people to residual concentrations of lead or chromium in subsurface soils. Construction workers may be exposed to hazardous materials during ground-disturbing activities such as grading and roadbed resurfacing at any of the areas known to contain hazardous substances. The majority of the existing project corridor consists of paved surfaces (sidewalks and roadway) which would be repaved upon completion of construction, thereby limiting human exposure to contaminants. Furthermore, it is anticipated that any planters or similar exposed soil areas will be filled with clean import soil.

Hazardous Conditions

Humans and the environment may be exposed to hazardous conditions from the accidental release of hazardous materials during construction activities. Construction of the Build Alternative and design option will involve the use of heavy equipment involving small quantities of hazardous materials (e.g., petroleum and other chemicals used to operate and maintain construction equipment) that may result in hazardous conditions in the project corridor. The potential for accidental release of hazardous materials as a result of construction of the Build Alternative or design option is expected to be minor due to the small quantities involved.

Soil and Groundwater Management Costs

The aerially-deposited lead investigation is estimated to take three to eight weeks and cost between $9,000 and $15,000. The traffic striping testing is anticipated to take three to eight weeks and cost between $6,000 and $10,000 (Musselman 2019).

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited physical changes to the Market Street project corridor. Some of these changes could result in similar impacts as described for the project. As those changes occur, environmental review would be required, as well as adherence to existing regulations, are anticipated to minimize potential exposure to or disturbance of hazardous materials.

Operational Impacts

Build Alternative

During operation of the Build Alternative and design option, the potential for encountering hazardous materials and waste will be low. Operation of the project might involve the use, storage, or transport of hazardous materials such as fuel, oils, and batteries. Accidental releases of small quantities of these substances could contaminate soils and degrade the quality of surface water and groundwater, or be released into the air, resulting in a potential public safety hazard. However, consistent with applicable laws and regulations, the transportation, handling, and disposal of these materials will be compliant

with regulations enforced by San Francisco Municipal Transportation Agency and California Division of Occupational Safety and Health which will avoid or minimize impacts.

No-Build Alternative

Under the No-Build Alternative, hazardous materials may be used during regular maintenance activities and releases of these substances could result in a potential public safety hazard. However, the existing regulatory requirements will ensure that the potential for hazardous materials releases will be minimized or avoided.

2.2.3.4 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to hazardous wastes and materials are minimized under the proposed project:

- AMM-HAZ-1: If excavation or earth-disturbing activity is planned along the project corridor as well as within areas near the PRECs and HRECs, additional soil and groundwater investigation will be conducted (based on depths of proposed excavation after the completion of the project's engineering conceptual design) to evaluate the following:
    - Potential human and environmental risks from PRECs and HRECs.
    - Potential waste classification for soil that will be excavated for disposal during the construction of the project. Waste disposal characterization analyses should include CAM17 metals, pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs).
    - Potential for aerially deposited lead (ADL) and lead striping paint. Shallow soils anticipated to be excavated during the project will be sampled and analyzed for lead. Caltrans standard special provisions for removal of yellow paint will also be followed.
    - If excavation is anticipated to extend below the groundwater table at any part of the project corridor, groundwater will be sampled in the vicinity prior to obtaining dewatering and discharge permits to San Francisco Public Utilities Commission's combined storm and sewer system.
- AMM-HAZ-2: Public Works will develop and implement the necessary plans and measures required by federal and state regulations, including a health and safety plan, best management practices, and/or an injury and illness prevention plan. The plans will be prepared and implemented to address worker safety when working with potentially hazardous materials, including potential asbestos-containing materials, lead-containing paint lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity.
- AMM-HAZ-3: Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting, and reusing of soil will also be conducted following Caltrans' standard special provisions.

- AMM-HAZ-4: As required by Caltrans' standard special provisions, the construction contractor will sample and test yellow and white traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. The stripes will be disposed of at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the project proponent and the construction contractor. Implementing this measure will minimize potential effects from these hazardous materials.

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2.2.4 Air Quality

2.2.4.1 Regulatory Setting

The Federal Clean Air Act (FCAA), as amended, is the primary federal law that governs air quality while the California Clean Air Act (CCAA) is its companion state law. These laws, and related regulations by the United States Environmental Protection Agency (U.S. EPA) and the California Air Resources Board (ARB), set standards for the concentration of pollutants in the air. At the federal level, these standards are called National Ambient Air Quality Standards (NAAQS). NAAQS and state ambient air quality standards have been established for six transportation-related criteria pollutants that have been linked to potential health concerns: carbon monoxide (CO), nitrogen dioxide (NO_2), ozone (O_3), particulate matter (PM) — which is broken down for regulatory purposes into particles of 10 micrometers or smaller (PM_{10}) and particles of 2.5 micrometers and smaller ($PM_{2.5}$) — and sulfur dioxide (SO_2). In addition, national and state standards exist for lead (Pb), and state standards exist for visibility reducing particles, sulfates, hydrogen sulfide (H2S), and vinyl chloride. The NAAQS and state standards are set at levels that protect public health with a margin of safety, and are subject to periodic review and revision. Both state and federal regulatory schemes also cover toxic air contaminants (air toxics); some criteria pollutants are also air toxics or may include certain air toxics in their general definition.

Federal air quality standards and regulations provide the basic scheme for project-level air quality analysis under the National Environmental Policy Act (NEPA). In addition to this environmental analysis, a parallel "Conformity" requirement under the FCAA also applies.

Conformity

The conformity requirement is based on FCAA Section 176(c), which prohibits the U.S. Department of Transportation (USDOT) and other federal agencies from funding, authorizing, or approving plans, programs, or projects that do not conform to the State Implementation Plan (SIP) for attaining the NAAQS. "Transportation conformity" applies to highway and transit projects and takes place on two levels: the regional (or planning and programming) level and the project level. The proposed project must conform at both levels to be approved.

Conformity requirements apply only in nonattainment and maintenance areas (i.e., former nonattainment areas) for the NAAQS and only for the specific NAAQS that were violated. EPA regulations at 40 Code of Federal Regulations (CFR) 93 govern the conformity process. Conformity requirements do not apply in unclassifiable/attainment areas for the NAAQS and do not apply at all for state standards, regardless of the status of the area.

Regional conformity is concerned with how well the regional transportation system supports plans for attaining the NAAQS for carbon monoxide (CO), nitrogen dioxide (NO2), ozone (O3), particulate matter (PM10 and PM2.5), and in some areas (although not in California), sulfur dioxide (SO2). California has nonattainment or maintenance areas for all of these transportation-related "criteria pollutants" except SO2, and also has a nonattainment area for lead (Pb); however, lead is not currently required by the FCAA to be covered in transportation conformity analysis. Regional conformity is based on emission analysis of Regional Transportation Plans (RTPs) and Federal Transportation Improvement Programs (FTIPs) that include all transportation projects planned for a region over a period of at least 20 years (for the RTP) and 4 years (for the FTIP). RTP and FTIP

conformity uses travel demand and emission models to determine whether or not the implementation of those projects would conform to emission budgets or other tests at various analysis years showing that requirements of the FCAA and the SIP are met. If the conformity analysis is successful, the Metropolitan Planning Organization (MPO), Federal Highway Administration (FHWA), and Federal Transit Administration (FTA) make the determinations that the RTP and FTIP are in conformity with the SIP for achieving the goals of the FCAA. Otherwise, the projects in the RTP and/or FTIP must be modified until conformity is attained. If the design concept and scope and the "open-to-traffic" schedule of a proposed transportation project are the same as described in the RTP and FTIP, then the proposed project meets regional conformity requirements for purposes of project-level analysis.

Project-level conformity is achieved by demonstrating that the project comes from a conforming RTP and TIP; the project has a design concept and scope[1] that has not changed significantly from those in the RTP and TIP; project analyses have used the latest planning assumptions and EPA-approved emissions models; and in PM areas, the project complies with any control measures in the SIP. Furthermore, additional analyses (known as hot-spot analyses) may be required for projects located in CO and PM nonattainment or maintenance areas to examine localized air quality impacts.

2.2.4.2 Affected Environment

Information in this section is from the *Air Quality Report: Better Market Street Project* (December 2019) and *Air Quality Conformity Analysis: Better Market Street Project* (December 2019). Where other data sources were used, citations have been provided.

Location, Climate, and Meteorology

The project corridor is in the Peninsula subregion of the San Francisco Bay Area Air Basin. The Peninsula subregion extends from northwest of San José to the Golden Gate Bridge. The Santa Cruz Mountains run along the center of the peninsula, with elevations above 2,000 feet at the southern end but decreasing to 500 feet near South San Francisco. Coastal towns experience a high incidence of cool, foggy weather in the summer. San Francisco lies at the northern end of the peninsula. Because most of San Francisco's topography is below 200 feet, marine air is able to flow easily across most of the city, making its climate cool and windy. Cities in the southeastern peninsula experience warmer temperatures and fewer foggy days because the marine layer is blocked by the ridgeline to the west.

The regional climate within the air basin is considered semi-arid and characterized by warm, dry summers (average high temperature of 64 degrees Fahrenheit in July); mild winters (average high temperature of 51 degrees Fahrenheit in January); moderate onshore breezes in the daytime; moderate humidity; and infrequent seasonal rainfall. Annual average rainfall is 20 inches at the San Francisco International Airport climatological station, with most of that falling during the winter months. A wide range of meteorological and emissions-related sources, such as dense population centers, heavy vehicular traffic, and industrial activity, influence air quality in the air basin.

[1] "Design concept" means the type of facility that is proposed, such as a freeway or arterial highway. "Design scope" refers to those aspects of the project that would clearly affect capacity and thus any regional emissions analysis, such as the number of lanes and the length of the project.

Existing Air Quality Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, the standards are based on other values (e.g., protection of crops, protection of materials, avoidance of nuisance conditions). Table 2.2.4-1 shows federal and state ambient air quality standards as well as the attainment status of the project area, which is in San Francisco County. The table also summarizes the principal health and atmospheric effects for each pollutant and the typical emission sources. Table 2.2.4-2 shows the status of the EPA-approved SIPs that are relevant to the proposed project. In most cases, SIPs are not applicable.

Table 2.2.4-1. Federal and State Criteria Air Pollutant Standards, Effects, Sources, and Attainment Status for the Project Area

Pollutant	Average Time	Standard		Principal Health and Atmospheric Effects	Typical Sources	Attainment Status	
		California	National			California	Federal
Ozone (O_3)	1 hour	0.09 ppm	NA	High concentrations irritate lungs. Long-term exposure may cause lung tissue damage and cancer. Long-term exposure damages plant materials and reduces crop productivity. Precursor organic compounds include many known toxic air contaminants. Biogenic volatile organic compounds (VOCs) may also contribute.	Low-altitude ozone is almost entirely formed from reactive organic gases (ROGs)/VOCs as well as nitrogen oxides (NO_X) in the presence of sunlight and heat. Common precursor emitters include motor vehicles and other sources with internal combustion engines, solvent evaporation, boilers, furnaces, and industrial processes.	Nonattainment	NA
	8 hours	0.070 ppm	0.070 ppm			Nonattainment	Nonattainment
Carbon monoxide (CO)	8 hours	9.0 ppm	9 ppm	CO interferes with the transfer of oxygen to the blood and deprives sensitive tissues of oxygen. CO also is a minor precursor for photochemical ozone. Colorless, odorless.	Combustion sources, especially gasoline-powered engines. CO is the traditional signature pollutant for on-road mobile sources at the local and neighborhood scale.	Attainment	Attainment
	1 hour	20 ppm	35 ppm				
(Lake Tahoe only)	8 hours	6 ppm	NA				
Nitrogen dioxide (N_2O)	Annual	0.030 ppm	0.053 ppm	Irritating to eyes and respiratory tract. Colors atmosphere reddish brown. Contributes to acid rain and nitrate contamination in stormwater. Part of the NO_X group of ozone precursors.	Motor vehicles; other mobile or portable engines, especially diesel engines; refineries; industrial operations.	Attainment	Attainment
	1 hour	0.18 ppm	0.100 ppm				
Sulfur dioxide (SO_2)	Annual	NA	0.030 ppm	Irritates respiratory tract; injures lung tissue. Can yellow plant leaves. Destructive to marble, iron, steel. Contributes to acid rain. Limits visibility.	Fuel combustion (especially coal and high-sulfur oil), chemical plants, sulfur recovery plants, and metal processing. Some natural sources (e.g., active volcanoes). Limited contribution possible from heavy-duty diesel vehicles if ultra-low-sulfur fuel not used.	Attainment	Attainment
	24 hours	0.04 ppm	0.14 ppm				
	1 hour	0.25 ppm	75 ppm				

Pollutant	Average Time	Standard		Principal Health and Atmospheric Effects	Typical Sources	Attainment Status	
		California	National			California	Federal
Hydrogen sulfide (H_2S)	1 hour	0.03 ppm	NA	Colorless, flammable, poisonous. Respiratory irritant. Neurological damage and premature death. Headache, nausea. Strong odor.	Industrial processes, such as those related to refineries and oil fields, asphalt plants, livestock operations, sewage treatment plants, and mines. Some natural sources (e.g., volcanic areas) and hot springs.	Unclassified	NA
Vinyl chloride	24 hours	0.01 ppm	NA	Neurological effects, liver damage, cancer. Also considered a toxic air contaminant.	Industrial processes.	NA	NA
Respirable particulate matter (PM10)	Annual	20 µg/m³	NA	Irritates eyes and respiratory tract. Decreases lung capacity. Associated with increased cancer and mortality. Contributes to haze and reduced visibility. Includes some toxic air contaminants. Many toxic and other aerosol and solid compounds are part of PM10.	Dust- and fume-producing industrial and agricultural operations; combustion smoke and vehicle exhaust; atmospheric chemical reactions; construction and other dust-producing activities; unpaved road dust and re-entrained paved road dust; and natural sources.	Nonattainment	Attainment
	24 hours	50 µg/m³	150 µg/m³				
Fine particulate matter (PM2.5)	Annual	12 µg/m³	12.0 µg/m³	Increases respiratory disease, lung damage, cancer, and premature death. Reduces visibility and produces surface soiling. Most diesel exhaust particulate matter—a toxic air contaminant—is in the PM2.5 size range. Many toxic and other aerosol and solid compounds are part of PM2.5.	Combustion, including that related to motor vehicles, other mobile sources, and industrial activities. Residential and agricultural burning. Also formed through atmospheric chemical and photochemical reactions involving other pollutants, including NO_X, sulfur oxides (SO_X), ammonia, and ROGs.	Nonattainment	Nonattainment
	24 hours	NA	35 µg/m³				
Sulfates	24 hours	25 µg/m³	NA	Premature mortality and respiratory effects. Contributes to acid rain. Some toxic air contaminants attach to sulfate aerosol particles.	Industrial processes, refineries and oil fields, mines, natural sources (e.g., volcanic areas), salt-covered dry lakes, and large sulfide rock areas.	Attainment	NA

Pollutant	Average Time	Standard		Principal Health and Atmospheric Effects	Typical Sources	Attainment Status	
		California	National			California	Federal
Visibility-reducing particles (VRPs)	8 hours	Visibility of 10 miles or more	NA	Reduces visibility. Produces haze.	See particulate matter, above. May be related more to aerosols than to solid particles.	Unclassified	NA
Lead (Pb)	Calendar quarter	NA	1.5 μg/m³	Disturbs gastrointestinal system. Causes anemia, kidney disease, and neuromuscular and neurological dysfunction. Also a toxic air contaminant and water pollutant.	Lead-based industrial processes (e.g., battery production, smelters). Lead paint, leaded gasoline. Aerially deposited lead from older gasoline may exist in soils along major roads.	Attainment	Attainment
	30-day average	1.5 μg/m³	NA				
	Rolling 3-month average	NA	0.15 μg/m³				

Source: California Air Resources Board 2017 and 2018; U.S. Environmental Protection Agency 2019a.
Notes: All standards are based on measurements at 25°C and pressure of 1 atmosphere; the national standards shown are the primary standards (health effects).
ppm = parts per million; μg/m³ = micrograms per cubic meter; NA = not applicable

Table 2.2.4-2. Status of SIPs Relevant to the Project Area

Name/Description	Status
Ozone	Adopted October 24, 2001
PM10	N/A*
PM2.5	N/A*
CO	N/A
NO_2	N/A
SO_2	N/A
Lead	N/A

* The San Francisco Bay Area attains the national 24-hour PM10 standard and the national annual PM2.5 standard. On January 9, 2013, EPA issued a final rule, confirming that monitoring data show that the San Francisco Bay Area currently meets the 24-hour PM2.5 national standard. This EPA action suspends key SIP requirements as long as monitoring data continue to show that the air district meets the standard. However, despite this EPA action, the air district will continue to be formally designated as a nonattainment area for the national 24-hour PM2.5 standard until the air district submits and EPA approves a redesignation request, including a maintenance plan.

The nearest air quality monitoring station to the project corridor that reported pollutant concentrations between 2015 and 2017 is the Arkansas Street monitoring station (ARB ID 90306/ EPA AQS 060750005). Located approximately 1.5 miles south of the project corridor, the Arkansas Street monitoring station is representative of the project corridor because of its similar climate, topography, and urban setting. Figure 2.2.4-1 shows the location of the monitoring station relative to the project corridor.

As shown in Table 2.2.4-3, several violations of the PM10 and PM2.5 standards were recorded at the Arkansas Street monitoring station in 2017. No other violations occurred during the three-year monitoring period.

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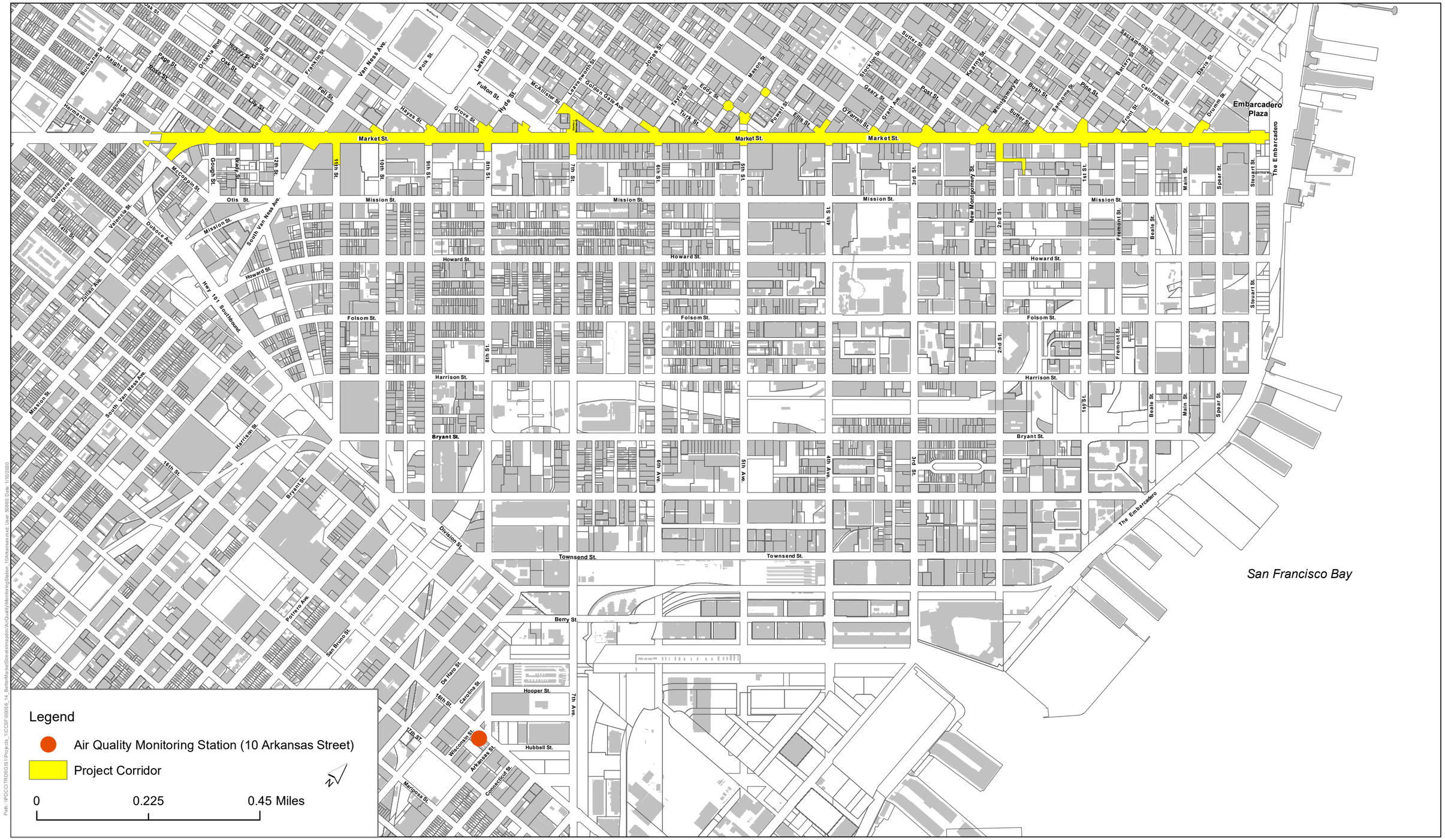

Better Market Street Project

Figure 2.2.4-1
Nearest Air Quality Monitoring Station to the Project Corridor

Source: Parcels, City and County of San Francisco 2014;
Streets, City and County of San Francisco 2014;
Building Footprints, City and County of San Francisco 2011
Land Use,SF Planning Department, 2018

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Table 2.2.4-3. Ambient Air Quality Monitoring Data Measured at the Arkansas Street Monitoring Station

Pollutant	Standard	2015	2016	2017
Ozone				
Maximum 1-hour concentration (ppm)		0.085	0.070	0.087
Number of days exceeded: State	0.09 ppm	0	0	0
Maximum 8-hour concentration (ppm)		0.067	0.057	0.054
Number of days exceeded: State	0.070 ppm	00	00	00
Federal	0.070 ppm			
Carbon Monoxide				
Maximum 1-hour concentration (ppm)		1.8	1.7	2.5
Number of days exceeded: State	20 ppm	0	0	0
Federal	35 ppm	0	0	0
Maximum 8-hour concentration (ppm)		1.3	1.1	1.4
Number of days exceeded: State	9.0 ppm	0	0	0
Federal	9 ppm	0	0	0
PM10				
Maximum 24-hour concentration (μg/m^3)		47.0	35.7	75.9
Number of days exceeded: State	50 μg/m^3	0	0	25
Federal	150 μg/m^3	0	0	0
Maximum annual concentration (μg/m^3)		17	17	22
Exceeded: State	20 μg/m^3	No	No	No
PM2.5				
Maximum 24-hour concentration (μg/m^3)		35.4	19.6	49.9
Number of days exceeded: Federal	35 μg/m^3	0	0	7
Maximum annual concentration (μg/m^3)		7.5	7.5	9.7
Exceeded: State	12 μg/m^3	No	No	No
Federal	12.0 μg/m^3	No	No	No
Nitrogen Dioxide				
Maximum 1-hour concentration (ppb)		70	58	73
Number of days exceeded: State	0.18 ppm	0	0	0
Federal	100 ppb	0	0	0
Maximum annual concentration (ppb)		12	10	11
Exceeded: State	0.030 ppm	No	No	No
Federal	53 ppb	No	No	No

Sources: California Air Resources Board 2019; U.S. Environmental Protection Agency 2019b.
Notes: ppm = parts per million; ppb = parts per billion; μg/m^3 = micrograms per cubic meter; NA = not available due to insufficient data

Sensitive Receptors

The Bay Area Air Quality Management District (BAAQMD) defines *sensitive receptors* as facilities or land uses that include members of the population that are particularly sensitive to the effects of air pollutants, such as children, the elderly, and people with illnesses. Examples of sensitive receptors include residences, recreational facilities, schools (including day care facilities), hospitals, and religious facilities. Sensitive receptors within 1,000 feet of the project area[2] are identified in Table 2.2.4-4 and shown in Figure 2.2.4-2.

Table 2.2.4-4. Sensitive Receptors within 1,000 Feet of the Project Corridor (Market Street and Mission Street)

Receptor	Description	Distance Between Receptor and Project
Residences	Various (condominiums, multi-family residences, apartments, single-room occupancies)	Various. Closest residences are immediately adjacent to Market Street and Mission Street (within 10 feet)
Recreational Facilities	Various (parks, plazas)	Various. Closest recreational facilities are immediately adjacent to Market Street and Mission Street (within 10 feet)
Day Care Facilities	Various	Various. Closest day care facility is immediately adjacent to Market Street (within 10 feet)
Schools	Various (e.g., elementary school; high school; music, ballet, and vocational schools)	Various. Closest school is immediately adjacent to Mission Street (within 10 feet)
Religious Facilities	Various	Various. Closest religious facility is immediately adjacent to Market Street (within 125 feet)

[2] Although the project corridor has changed since the *Air Quality Report: Better Market Street Project* (December 2019) was finalized, conclusions identified in the report remain the same, and no new receptors have been identified. The changes to the project corridor included an extension of the project limits to accommodate demolition and replacement of the existing sidewalk at two locations: an extension from the east side of the Octavia Boulevard and Market Street intersection to the west side of the Octavia Boulevard and Market Street intersection, and an extension from the Steuart and Market street intersection to The Embarcadero.

2.2.4.3 Environmental Consequences

Build Alternative

Regional Conformity

The proposed project is listed in the Plan Bay Area 2040 financially constrained RTP/Sustainable Communities Strategy (SCS) and found to conform by the Metropolitan Transportation Commission (MTC) on July 26, 2017; FHWA and FTA made a regional conformity determination finding on August 23, 2017. The project is also included in MTC's financially constrained 2019 TIP, which was determined to conform by FHWA and FTA on December 17, 2018. The latest amendment, Amendment 25, was determined to conform by FHWA and FTA on June 27, 2019. The design concept and scope of the proposed project is consistent with the project description in the 2040 RTP/SCS, 2019 FTIP, and the "open-to-traffic" assumptions of the MTC's regional emissions analysis.[3]

[3] This environmental analysis assumes that the opening year for the proposed project could occur as early as 2020 because this is the year when the first of the construction segments is anticipated to be completed. However, the project will not finish construction and be fully "open-to-traffic" until at least 2026. An opening year of 2026 is consistent with MTC's regional conformity analysis for the 2019 TIP (the Better Market Street Project is included in the 2030 conformity analysis because it was assumed to open between 2020 and 2030).

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Better Market Street Project

Source: Parcels, City and County of San Francisco 2014;
Streets, City and County of San Francisco 2014;
Building Footprints, City and County of San Francisco 2011
Land Use,SF Planning Department, 2018

Figure 2.2.4-2
Existing Air Quality Sensitive Receptors in the Vicinity of the Project Corridor

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Project-Level Conformity

Carbon Monoxide

As shown in Table 2.2.4-1, the project corridor is in an attainment area for CO. Therefore, no project-level conformity analysis is necessary for CO.

Particulate Matter

As shown in Table 2.2.4-1, the project corridor is in a nonattainment area for PM2.5. However, the project is not considered a project of air quality concern (POAQC) for PM2.5 because it does not meet the definition of a POAQC, as found in EPA's Transportation Conformity Guidance. A discussion of the Build Alternative and design option in comparison to a POAQC, as defined by 40 *Federal Register* 93.123(b)(1), is provided below. Based on this, particulate matter hot-spot analysis is not required.

1. **New or expanded highway projects with a significant number of diesel vehicles or a significant increase in the number of diesel vehicles.**

   The Build Alternative and design option does not involve a new or expanded highway. The project will not change surrounding land uses such that a significant increase in the number of diesel vehicles will result.

2. **Projects affecting intersections that are at level of service (LOS) D, E, or F with a significant number of diesel vehicles or those that will change to LOS D, E, or F because of increased traffic volumes from a significant number of diesel vehicles related to the project.**

   All intersections within the area of the conformity analysis are known, or assumed, to operate at LOS E or F during peak periods. Trucks represent a small percentage (approximately 2.1 percent) of annual average daily traffic along Market Street. The proposed project will not substantially change these conditions. Proposed commercial-vehicle restrictions associated with the design option will result in a minor shift of trucks from Market Street between Gough Street and Hayes Street to other adjacent streets. Given that trucks are a small percentage of annual average daily traffic, redistributed traffic is not expected to result in a significant increase in the number of diesel vehicles. Instead, the proposed project may reduce vehicular traffic through a mode shift to biking, walking, or transit.

3. **New bus and rail terminals and transfer points that have a significant number of diesel vehicles congregating at a single location.**

   The Build Alternative and design option has no bus or rail terminal component. It will not affect bus terminals or transfer points.

4. **Expanded bus and rail terminals and transfer points that significantly increase the number of diesel vehicles congregating at a single location.**

   The Build Alternative and design option will not expand any bus terminal, rail terminal, or related transfer point such that the number of diesel vehicles congregating at any single location will increase.

5. **Projects in or affecting locations, areas, or categories of sites that are identified in the PM2.5- or PM10-applicable implementation plan or implementation plan submission, as appropriate, as sites of violation or possible violation.**

   The project corridor is not within the locations, areas, or categories of sites that are identified in a PM10 or PM2.5 implementation plan and does not affect such sites. The immediate project area is not considered to be a site of violation or possible violation.

On September 27, 2018, the Build Alternative was presented to the members of the MTC Conformity Task Force at an in-person meeting. The members of the group determined that the project is not a POAQC. The documentation for the interagency consultation process is included in Appendix E.

Additional Environmental Analysis[4]

Operational Emissions

Operation of the Build Alternative and design option will result in changes in travel patterns and vehicle distribution on streets north and south of Market Street. Although changes to the transportation network will occur, the proposed project is not a capacity-increasing project and will not result in a significant number of new trips or vehicle miles traveled (VMT) relative to the No-Build Alternative. Therefore, an operational emissions analysis was not conducted for the Build Alternative and design option.

The Build Alternative and design option is expected to increase transit and taxi speeds and, potentially, slightly decrease private vehicle speeds on some cross streets. Criteria pollutant emissions generated by vehicles vary as a function of speed, with greater emissions emitted at lower and higher vehicle speeds (i.e., 5 to 20 mph, above 55 mph). Although average vehicle speeds may change as a result of the Build Alternative and design option, the impact on overall criteria pollutant emissions in the project area is expected to be minor given that implementation of the project will not significantly change the vehicle mix or affect VMT. Furthermore, operation of the Build Alternative will overall encourage pedestrian, bicycle, and transit use through improvements to transit operations and bicycle and pedestrian facilities.

Carbon Monoxide

The California Department of Transportation's (Caltrans's) *Transportation Project-Level Carbon Monoxide Protocol* (CO Protocol) provides qualitative screening procedures for determining whether new roadway projects have the potential to contribute to new or worsen existing CO violations with respect to ambient air quality standards. The Build Alternative and design option was qualitatively screened using the CO Protocol. Through this screening process, it was determined that the Build Alternative and design option is not expected to result in a new exceedance of either the federal or state ambient air quality standard for CO (refer to the *Air Quality Report for the Better Market Street Project* for the detailed screening analysis).

[4] As previously noted, this environmental analysis assumes that the opening year for the proposed project could occur as early as 2020. Although vehicle volumes may increase between 2020 and 2026, emissions factors decline as a function of time because of improvements in engine technologies and increasingly stringent vehicle regulations. Accordingly, emissions generated at full project opening in 2026 are likely to be lower than emissions generated under 2020 conditions.

Particulate Matter

As described above, the Build Alternative and design option does not meet the definition of a POAQC. Accordingly, the Build Alternative and design option is not expected to result in a new or more severe exceedance of either the federal or state ambient air quality standard for PM10 or PM2.5.

Nitrogen Dioxide

Operation of the Build Alternative could result in changes in travel patterns and vehicle distribution on streets north and south of Market Street. Although changes to the transportation network will occur, the Build Alternative and design option is not a capacity-increasing project and will not result in new trips, changes in vehicle mix, or VMT relative to the No-Build Alternative. Therefore, an NO_2 analysis was not conducted for the Build Alternative.

Mobile-Source Air Toxics

The purpose of this project is to provide various transportation and streetscape improvements (e.g., roadway reconfiguration, sidewalk-level bikeway, enhanced pedestrian facilities) along the project corridor to enhance mobility and reduce conflicts and friction between various travel modes. It has been determined that this project will result in minimal air quality impacts with respect to CAA criteria pollutants. The Build Alternative and design option will not result in substantial changes in traffic volumes or vehicle mix that cause a meaningful increase in regional mobile-source air toxic (MSAT) impacts related to the project compared with the No-Build Alternative. However, the Build Alternative and design option will redistribute vehicle travel and could have localized effects.

The redistribution of traffic on some cross streets as part of the Build Alternative and design option will have the effect of moving some traffic closer to nearby homes, schools, and businesses; therefore, under the Build Alternative and design option there may be localized areas where ambient concentrations of MSAT could be higher compared with the No-Build Alternative. The localized increases in MSAT concentrations will most likely be most pronounced on surrounding streets, such as Mission Street. However, the magnitude and duration of these potential increases, compared with the No-Build Alternative, cannot be reliably quantified because of incomplete or unavailable information for forecasting project-specific MSAT health impacts.

Local levels of MSAT emissions under the Build Alternative and design option could be higher relative to the No-Build Alternative. However, this increase could be offset with increased speeds and reduced congestion, which lower MSAT emissions. Also, MSAT emissions will be lower in other locations when traffic shifts away. However, on a regional basis, EPA's vehicle and fuel regulations, coupled with fleet turnover, will, over time, cause substantial reductions that, in almost all cases, will cause region-wide MSAT levels to be significantly lower than they are today.

Construction Impacts

Construction Equipment Emissions and Fugitive Dust

During construction, short-term degradation of air quality may occur due to the release of particulate emissions (e.g., airborne dust) generated by excavation, grading, hauling, and various other construction-related activities. Exhaust emissions from construction equipment are also expected. These emissions include CO, NO_X, VOCs, directly emitted particulate matter (PM10 and

PM2.5), and toxic air contaminants such as diesel particulate matter. Ozone is not directly emitted from construction activities; ozone is a regional pollutant that is formed from NO_X and VOCs in the presence of sunlight and heat.

Construction emissions were estimated using the latest Sacramento Metropolitan Air Quality Management District Road Construction Model (version 8.1.0). Although the model was developed for Sacramento conditions with respect to fleet emissions, silt loading, and other model assumptions, the BAAQMD (in its air quality analysis guidance) considers it adequate for estimating linear road construction emissions. Therefore, it is used for that purpose in this project analysis.

Construction emissions were estimated for the Build Alternative and design option using detailed equipment inventories and project construction scheduling information provided by Public Works and SFMTA. Because emissions decline as a function of time, construction emissions presented for the first year of construction represent the worst-case scenario. Emissions generated during subsequent years of construction will most likely be lower. Data concerning construction-related emissions under the Build Alternative and design option are presented in Tables 2.2.4-5 and 2.2.4-6. The data presented are based on the best information available at the time of calculation. The figures represent average daily construction emissions generated by the Build Alternative and design option per year during each construction year.

Table 2.2.4-5. Construction-Period Emissions Estimates (No Control Measures Implemented)

Source	VOC (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Construction	8	134	192	2	2

Emissions estimated with the Sacramento Metropolitan Air Quality Management District Road Construction Model, version 8.1.0, using project-specific data provided by design staff.

Table 2.2.4-6. Construction-Period Emissions Estimates (With Engine Control Measures)

Source	VOC (lbs/day)	CO (lbs/day)	NO_X (lbs/day)	PM10 (lbs/day)	PM2.5 (lbs/day)
Construction	7	140	51	2	1

Emissions estimated with the Sacramento Metropolitan Air Quality Management District Road Construction Model, version 8.1.0, using project-specific data provided by design staff.

Public Works and SFMTA will implement the following control measure to reduce NO_X and diesel particulate matter emissions:

- All off-road equipment with large engines (greater than or equal to 95 horsepower) shall meet EPA or ARB Tier 4 final off-road emissions standards, while equipment with smaller engines (less than 95 horsepower) shall meet or exceed Tier 3 off-road emissions standards and be equipped with diesel particular filters.

Construction activities will not last for more than 5 years at any individual site, so construction-related emissions do not need to be included in regional and project-level conformity analysis (40 CFR 93.123(c)(5)).

Asbestos

According to maps prepared by the U.S. Geological Survey and California Geological Survey, the project corridor does not have any reported historic asbestos mines, historic asbestos prospects, asbestos-bearing talc deposits, fibrous amphiboles, or ultramafic rock outcrops (U.S. Geological Survey and California Geological Survey 2011). The Build Alternative and design option do not involve demolition or modification of structures or buildings that will release asbestos during construction or operation. In addition, compliance with BAAQMD Regulation 11, Rule 2 (Hazardous Pollutants), will limit emissions of asbestos during demolition, renovation, milling, and manufacturing and establish appropriate waste disposal procedures.

Lead

Lead is normally not an air quality issue for transportation projects, unless a project disturbs soil with high levels of aerially deposited lead or involves painting or modifying structures with lead-based coatings. The project corridor is not adjacent to any major highways or freeways. Therefore, the potential for aerially deposited lead in the project corridor is low. Lead-free thermoplastic paint has been used for traffic striping and pavement marking in San Francisco since 2004. However, lead-based paint was likely used previously for striping along Market Street. If encountered, lead-based paint will be treated according to EPA and air district rules, pursuant to Caltrans Standard Specification Section 14-9.02.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The improvements to transit, bicycle, and walking facilities on Market Street proposed as part of the Build Alternative and design option will not occur, most likely resulting in more vehicle trips and congestion in the project area and, ultimately, worsened air quality.

2.2.4.4 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to air quality are minimized under the proposed project:

- AMM-AQ-1: Implement Caltrans Standard Specification Section 14. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust.

- AMM-AQ-2: Implement Additional Control Measures for Construction Emissions of Fugitive Dust. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of a National Pollutant Discharge Elimination System permit, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project.

  The following measures are taken from BAAQMD's 2017 *California Environmental Quality Act Air Quality Guidelines*:

  - Reduce the amount of disturbed area where possible.
  - Use water trucks or sprinkler systems to apply sufficient quantities of water and prevent airborne dust from leaving the site. An adequate water source must be identified. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible.
  - All dirt stockpile areas should be sprayed daily, as needed, then covered, or a district-approved alternative method should be used.
  - Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil-disturbing activities.
  - Exposed ground areas that will be reworked more than 1 month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established.
  - All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the district.
  - All roadways, driveways, sidewalks, etc., to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading, unless seeding or soil binders are used.
  - Speeds for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site.
  - All trucks hauling dirt, sand, soil, or other loose materials should be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer), in accordance with San Francisco County regulations.
  - Wheel washers should be installed where vehicles exit from unpaved roads onto streets or trucks and equipment leaving the site should be washed.
  - Streets should be swept at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible.
  - A sign should be posted in a prominent location that is visible to the public and include the telephone numbers of the contractor and San Francisco Public Works for questions or concerns about dust from the project.

2.2.4.5 Climate Change

Neither EPA nor FHWA has issued explicit guidance or methods for conducting project-level greenhouse gas analysis. However, FHWA emphasizes concepts related to resilience and sustainability in project development and highway planning, design, operations, and maintenance. The transit analysis conducted for the Build Alternative and design option assumes that there is not a noticeable mode shift from private vehicles to transit, however the Build Alternative and design option would result in slightly improved transit travel times along the project corridor which could encourage the use of public transit over the use of private vehicles, which in turn would support local and Statewide efforts at reducing emissions of greenhouse gases.

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2.2.5 Noise and Vibration

2.2.5.1 Regulatory Setting

The National Environmental Policy Act (NEPA) of 1969 provides the broad basis for analyzing and abating highway traffic noise effects. The intent of this law is to promote the general welfare and to foster a healthy environment. The requirements for noise analysis and consideration of noise abatement under NEPA are described below.

National Environmental Policy Act and 23 FR 772

For highway transportation projects with Federal Highway Administration (FHWA) involvement (and Caltrans, as assigned), the Federal-Aid Highway Act of 1970 and its implementing regulations (23 Code of Federal Regulations [CFR] 772) govern the analysis and abatement of traffic noise impacts. The regulations require that potential noise impacts in areas of frequent human use be identified during the planning and design of a highway project.

Figure 2.2.5-1 lists the noise levels of common activities to enable readers to compare the actual and predicted highway noise levels discussed in this section with common activities.

According to Caltrans' *Traffic Noise Analysis Protocol* for New Highway Construction and Reconstruction Projects, May 2011, a noise impact occurs when the predicted future noise level with the project substantially exceeds the existing noise level (defined as a 12 dBA or more increase).

If it is determined that the project will have noise impacts, then potential abatement measures must be considered. Noise abatement measures that are determined to be reasonable and feasible at the time of final design are incorporated into the project plans and specifications. This document discusses noise abatement measures that would likely be incorporated in the project.

Caltrans' *Traffic Noise Analysis Protocol* sets forth the criteria for determining when an abatement measure is reasonable and feasible. Feasibility of noise abatement is basically an engineering concern. A minimum 5 dBA reduction for all impacted receptors in the future noise levels must be achieved for an abatement to be considered feasible. Other considerations include topography, access requirements, other noise sources, and safety considerations. Additionally, a noise reduction of at least 7 dBA must be achieved at one or more benefited receptors for an abatement measure to be considered reasonable. The reasonableness determination is basically a cost-benefit analysis. Factors used in determining whether a proposed noise abatement measure is reasonable include: residents' acceptance and the cost per benefited residence.

Procedures for preparing operational and construction noise studies and evaluating noise abatement considered for federal and federal-aid highway projects are provided in 23 CFR 772. Under 23 CFR 772.7, projects are categorized as Type I, Type II, or Type III projects.

- FHWA defines a Type I project as a proposed federal or federal-aid highway project for the construction of a highway on a new location or the physical alteration of an existing highway which significantly changes either the horizontal or vertical alignment of the highway.
- A Type II project is a noise barrier retrofit project that involves no changes to highway capacity or alignment.
- A Type III project is a project that does not meet the classifications of a Type I or Type II project. Type III projects do not require a noise study report.

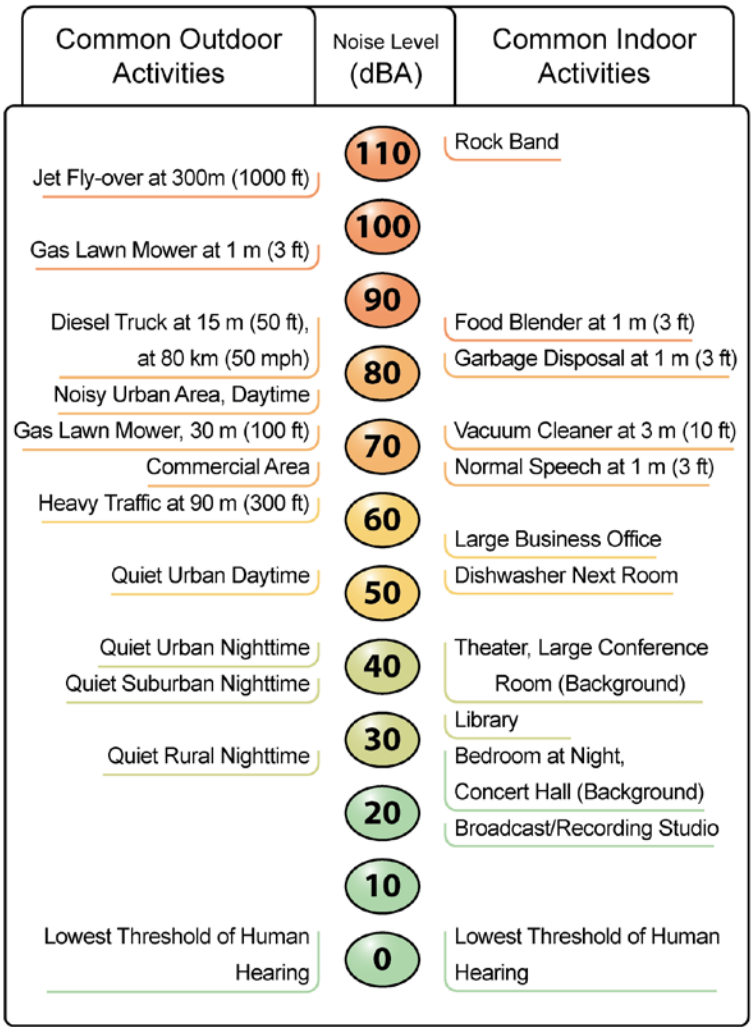


Figure 2.2.5-1. Noise Levels of Common Activities

The proposed project will not result in the alteration of an existing highway that would significantly change the horizontal or vertical alignment. The roadways in the project corridor are fundamentally different than highways, which typically have higher volumes and speeds than local urban roadways. Additionally, the project will not change the vertical alignments of any roadways at all, and horizontal alignment changes to local roadways will be minimal, for example to accommodate minor shifts due to boarding islands and curb alignments. The horizontal alignment changes will, in some cases, move travel lanes further away from existing land uses on Market Street. However, other changes will reduce the distance between the existing land uses and the nearest travel lane. These changes in distance will be minor, however, and the distance to receptors will not be reduced by half in any circumstance, therefore the project is not a Type I project. The project is not a Type II project, because it does not involve noise barrier retrofits. Therefore, the project is considered a Type III project.

Overview of Noise

Sound, Noise, and Acoustics

Sound can be described as the mechanical energy of a vibrating object transmitted by pressure waves through a liquid or gaseous medium (e.g., air) to a hearing organ, such as a human ear. Noise is defined as loud, unexpected, or annoying sound.

In the science of acoustics, the fundamental model consists of a sound (or noise) source, a receptor, and the propagation path between the two. The loudness of the noise source and obstructions or atmospheric factors affecting the propagation path to the receptor determine the sound level and characteristics of the noise perceived by the receptor. The field of acoustics deals primarily with the propagation and control of sound.

Frequency

Continuous sound can be described by frequency (pitch) and amplitude (loudness). A low-frequency sound is perceived as low in pitch. Frequency is expressed in terms of cycles per second, or Hertz (Hz) (e.g., a frequency of 250 cycles per second is referred to as 250 Hz). High frequencies are sometimes more conveniently expressed in kilohertz (kHz), or thousands of Hertz. The audible frequency range for humans is generally between 20 Hz and 20,000 Hz.

Sound Pressure Levels and Decibels

The amplitude of pressure waves generated by a sound source determines the loudness of that source. Sound pressure amplitude is measured in micropascals (mPa). One mPa is approximately one hundred billionth (0.00000000001) of normal atmospheric pressure. Sound pressure amplitudes for different kinds of noise environments can range from less than 100 to 100,000,000 mPa. Because of this huge range of values, sound is rarely expressed in terms of mPa. Instead, a logarithmic scale is used to describe sound pressure level (SPL) in terms of decibels (dB). The threshold of hearing for young people is about 0 dB, which corresponds to 20 mPa.

Addition of Decibels

Because decibels are logarithmic units, SPL cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3 dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces an SPL of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB—rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together produce a sound level 5 dB louder than one source.

A-Weighted Decibels

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the SPL in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies. Then, an "A-weighted" sound level (expressed in units of dBA) can be computed based on this information.

The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. Noise levels for traffic noise reports are typically reported in terms of A-weighted decibels or dBA.

Human Response to Changes in Noise Levels

Doubling sound energy results in a 3 dB increase in sound. However, given a sound level change measured with precise instrumentation, the subjective human perception of a doubling of loudness will usually be different than what is measured. In typical noisy environments, changes in noise of 1 to 2 dB are generally not perceptible. However, it is widely accepted that people are able to begin to detect sound level increases of 3 dB in typical noisy environments. Further, a 5 dB increase is generally perceived as a distinctly noticeable increase, and a 10 dB increase is generally perceived as a doubling of loudness. Therefore, a doubling of sound energy (e.g., doubling the volume of traffic on a highway) that would result in a 3 dB increase in sound, would generally be perceived as barely detectable.

Noise Descriptors

Noise in our daily environment fluctuates over time. Some fluctuations are minor, but some are substantial. Some noise levels occur in regular patterns, but others are random. Some noise levels fluctuate rapidly, but others slowly. Some noise levels vary widely, but others are relatively constant. Various noise descriptors have been developed to describe time-varying noise levels. The following are the noise descriptors most commonly used in traffic noise analysis.

- **Equivalent Sound Level (L_{eq}):** L_{eq} represents an average of the sound energy occurring over a specified period. In effect, L_{eq} is the steady-state sound level containing the same acoustical energy as the time-varying sound that actually occurs during the same period. The one-hour A-weighted equivalent sound level (L_{eq}[h]) is the energy average of A-weighted sound levels occurring during a one-hour period, and is the basis for noise abatement criteria (NAC) used by Caltrans and FHWA.
- **Percentile-Exceeded Sound Level (L_{xx}):** L_{xx} represents the sound level exceeded for a given percentage of a specified period (e.g., L_{10} is the sound level exceeded 10 percent of the time, and L_{90} is the sound level exceeded 90 percent of the time).
- **Maximum Sound Level (L_{max}):** L_{max} is the highest instantaneous sound level measured during a specified period.
- **Day-Night Level (L_{dn}):** L_{dn} is the energy average of A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during nighttime hours between 10 p.m. and 7 a.m.
- **Community Noise Equivalent Level (CNEL):** Similar to L_{dn}, CNEL is the energy average of the A-weighted sound levels occurring over a 24-hour period, with a 10 dB penalty applied to A-weighted sound levels occurring during the nighttime hours between 10 p.m. and 7 a.m., and a 5 dB penalty applied to the A-weighted sound levels occurring during evening hours between 7 p.m. and 10 p.m.

Overview of Ground-Borne Vibration

The operation of heavy construction equipment, particularly pile-driving equipment and other impact devices (e.g., pavement breakers), creates seismic waves that radiate along the surface of the ground and downward. These surface waves can be felt as ground vibration. Vibration from the operation of this type of equipment can result in effects that range from annoyance for people to damage for structures.

Perceptible ground-borne vibration is generally limited to areas within a few hundred feet of construction activities. As seismic waves travel outward from a vibration source, they cause rock and soil particles to oscillate. The actual distance that these particles move is usually only a few ten-thousandths to a few thousandths of an inch. The velocity (in inches per second) at which these particles move is referred to as peak particle velocity (PPV), the commonly accepted descriptor of vibration amplitude.

Vibration amplitude attenuates (or decreases) over distance. This attenuation is a complex function of how energy is imparted into the ground as well as the soil or rock conditions through which the vibration is traveling (variations in geology can result in different vibration levels).

The following equation is used to estimate the vibration level at a given distance with typical soil conditions, with PPV_{ref} being the reference PPV at 25 feet (Federal Transit Administration 2018):

$$PPV = PPV_{ref} \times (25/distance)^{1.1}$$

Table 2.2.5-1 summarizes typical vibration levels generated by construction equipment at a reference distance of 25 feet and other distances, as determined using the attenuation equation above.

Table 2.2.5-1. Vibration Source Levels for Construction Equipment

Equipment	PPV at 25 Feet	PPV at 50 Feet	PPV at 75 Feet	PPV at 100 Feet	PPV at 175 Feet
Pile driver (vibratory)	0.650	0.3032	0.1941	0.1415	0.0764
Large bulldozer	0.089	0.0415	0.0266	0.0194	0.0105
Loaded trucks	0.076	0.0355	0.0227	0.0165	0.0089
Jackhammer	0.035	0.0163	0.0105	0.0076	0.0041
Small bulldozer	0.003	0.0014	0.0009	0.0007	0.0004

Source: California Department of Transportation 2013.
PPV = peak particle velocity

Tables 2.2.5-2 and 2.2.5-3 summarize the guidelines developed by Caltrans to assess damage and annoyance from the transient and continuous vibration that is usually associated with construction activity. Impact pile drivers, “pogo stick” compactors (small hand-held soil compactors), crack-and-seat equipment (equipment that breaks and re-seats pavement), excavation equipment, static compaction equipment, tracked vehicles, vehicles on highways, vibratory pile drivers, pile-extraction equipment, and vibratory compaction equipment are typically associated with continuous vibration. The activities that are typically associated with single-impact (transient) or low-rate, repeated impact vibration include blasting and the use of drop balls or dropped metal plates (California Department of Transportation 2013).

Table 2.2.5-2. Vibration Damage Potential, Threshold Criteria Guidelines

Structure and Condition	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Extremely fragile historic buildings, ruins, ancient monuments	0.12	0.08
Fragile buildings	0.2	0.1
Historic and some old buildings	0.5	0.25
Older residential structures	0.5	0.3
New residential structures	1.0	0.5
Modern industrial/commercial buildings	2.0	0.5

Source: California Department of Transportation 2013.
Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity; in/sec = inch per second

Table 2.2.5-3. Vibration Annoyance Potential, Criteria Guidelines

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Barely perceptible	0.04	0.01
Distinctly perceptible	0.25	0.04
Strongly perceptible	0.9	0.10
Severe	2.0	0.4

Source: California Department of Transportation 2013.
Note: Transient sources create a single, isolated vibration event (e.g., blasting or drop balls). Continuous/frequent intermittent sources include impact pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers, and vibratory compaction equipment.
PPV = peak particle velocity; in/sec = inch per second

The Federal Transit Administration (FTA) also provides guidelines to assess human response to different levels of ground-borne vibration and ground-borne noise (e.g., vibration that causes a structure to vibrate and re-radiate noise into a room). Ground-borne noise analysis is typically only for projects that have below-grade operations or possibly special buildings, such as recording studios.

Vibration annoyance impact standards depend on several factors, including the types of land uses affected by a project. For a new vibration source, the standards shown in Table 2.2.5-5 are used, which are applied only to occupied spaces in potentially affected buildings (i.e., receptors). For a project that modifies an existing transportation source, such as the proposed project, the FTA considers additional factors, such as a change in schedule or vibration. These factors relate to the relative change in amplitude or frequency of the source. For instance, if a project would generate vibration levels that would be 5 vibration decibels (VdB) or more above the existing condition, the standards shown in Table 2.2.5-6 would be used to determine the impact. However, if the future vibration would not increase vibration by 5 VdB, then on a "heavily used" corridor, such as the project corridor,[1] current

[1] The term "heavily used" is defined as more than 12 trains per day (Federal Transit Administration 2018).

vibration would be assessed to determine the existing impact. This information would then be used to establish the impact criteria for annoyance at vibration-sensitive receptors. The vibration standards applied to this analysis are listed below.

- If there is no existing source (e.g., in the vicinity of the proposed F Market & Wharves Historic Streetcar [F-line] loop [F-loop] on McAllister Street), then the FTA criteria in Table 2.2.5-5 are used;
- If there is an existing source (e.g., streetcars on Market Street) and a project would raise the vibration level by 5 VdB or more, then the FTA criteria identified in Table 2.2.5-5 or Table 2.2.5-6 are used.
- If there is an existing source that already exceeds the guideline levels in Table 2.2.5-4 or Table 2.2.5-5, but the future vibration would not cause a 5 VdB increase, a project would have an impact if either of the following occurs:
  - The number of vibration events would increase by a factor of approximately 2.
  - Future vibration would increase by 3 VdB or more.
  - If neither of these conditions would occur, a project would not have a vibration impact, even if vibration levels would exceed those outlined in Table 2.2.5-4 or Table 2.2.5-5.

Table 2.2.5-4. Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for General Assessment

	GBV Impact Levels (VdB re: 1 µin/sec)			GBN Impact Levels (dB re: 20 µPa)		
Land Use Category	**Frequent Events[a]**	**Occasional Events[b]**	**Infrequent Events[c]**	**Frequent Events[a]**	**Occasional Events[b]**	**Infrequent Events[c]**
Category 1: Buildings where vibration would interfere with interior operations.	65 VdB[d]	65 VdB[d]	65 VdB[d]	N/A[e]	N/A[e]	N/A[e]
Category 2: Residences and buildings where people normally sleep.	72 VdB	75 VdB	80 VdB	35 dBA	38 dBA	43 dBA
Category 3: Institutional land uses with primarily daytime use.	75 VdB	78 VdB	83 VdB	40 dBA	43 dBA	48 dBA

Source: Federal Transit Administration 2018.

Notes:

a. The term *frequent events* is defined as more than 70 vibration events of the same kind per day.

b. The term *occasional events* is defined as between 30 and 70 vibration events of the same kind per day.

c. The term *infrequent events* is defined as fewer than 30 vibration events of the same kind per day.

d. This criterion limit is based on levels that are acceptable for most moderately sensitive equipment, such as optical microscopes. Vibration-sensitive manufacturing or research will require detailed evaluation to define the acceptable vibration levels. Ensuring lower vibration levels in a building often requires a special design for the heating, ventilation, and air-conditioning systems and stiffened floors.

e. Vibration-sensitive equipment is not sensitive to ground-borne noise.

GBV = ground-borne vibration
GBN = ground-borne noise
VdB = vibration decibel
µin/sec = microinch per second
dB = decibel
µPa = micropascal
dBA = A-weighted decibel
N/A = not applicable

Table 2.2.5-5. Ground-Borne Vibration and Ground-Borne Noise Impact Criteria for Special Buildings

	Ground-Borne Vibration Impact Levels (VdB re: 1 µin/sec)		Ground-Borne Noise Impact Levels (dB re: 20 µPA)	
Type of Building or Room[a]	Frequent Events[b]	Occasional or Infrequent Events[c]	Frequent Events[b]	Occasional or Infrequent Events[c]
Concert halls	65 VdB	65 VdB	25 dBA	25 dBA
TV studios	65 VdB	65 VdB	25 dBA	25 dBA
Recording studios	65 VdB	65 VdB	25 dBA	25 dBA
Auditoriums	72 VdB	80 VdB	30 dBA	38 dBA
Theaters	72 VdB	80 VdB	35 dBA	43 dBA

Source: Federal Transit Administration 2018.

Notes:

a. If the building will rarely be occupied when trains are operating, there is no need to consider the impact. For example, consider a commuter rail line next to a concert hall. If commuter trains do not operate after 7 p.m., trains should rarely interfere with use of the hall.

b. The term *frequent events* is defined as more than 70 vibration events of the same source per day.

c. The term *occasional or infrequent events* is defined as fewer than 70 vibration events of the same source per day.

VdB = vibration decibel
dB = decibel
µPa = micropascal
dBA = A-weighted decibel

To avoid temporary annoyances for building occupants or interference with vibration-sensitive equipment inside special-use[2] buildings during construction, the FTA recommends using the vibration criteria from the guidance manual for a long-term general assessment of operations.

Table 2.2.5-5 shows the FTA ground-borne vibration and noise impact criteria for special-use buildings. These limits were used to identify areas that should be considered during project design.

2.2.5.2 Affected Environment

Information in this section is from the *Noise Technical Memorandum* prepared for the proposed project (February 2020). Where other data sources were used, the sources are cited.

Land Uses and Sensitive Receptors

The project corridor is in a densely developed urban area, consisting almost entirely of mid- to high-rise structures. The existing noise environment is largely dominated by surface transportation noise from bus, automobile, and truck traffic as well as fixed-guideway electric streetcar operations.

Noise- and vibration-sensitive receptors in the project corridor are buildings or land uses where occupants could be affected or annoyed by noise and/or vibration. Typically, this includes places where people sleep (e.g., residences, transient lodging, hospitals) and non-sleeping uses where a quiet environment is important (concert halls, schools, libraries, museums, places of worship). In addition, laboratories and research facilities can have equipment that is sensitive to vibration. Because the project would induce changes in vibration levels from an existing mass transit system

[2] Special-use buildings are those that are particularly sensitive to vibration, such as some research or laboratory buildings. In some cases, performing arts facilities are also sensitive to vibration.

and the FHWA's primary area of concern is highway noise, guidance from the FTA would be the most appropriate to evaluate the project's impact. Further, even with respect to roadway vibration, the FHWA notes that there are no federal requirements directed specifically to highway traffic-induced vibration (Federal Highway Administration 2017). Specific FTA-defined categories are discussed below.

Figure 2.2.5-2 shows the 57 noise-sensitive receptors in the vicinity of the project corridor. In addition, Table 2.2.5-6 lists 58 vibration-sensitive receptors in the project corridor; 57 of them are also noise-sensitive receptors.[3]

Table 2.2.5-6. Existing Noise- and Vibration-Sensitive Receptors[a]

No.	Location	Land Use[a]	No.	Location	Land Use[a]
1	5 Embarcadero Center	Transient Lodging	30	1554 Market	Mixed-Use Residential
2	388 Market Street	Mixed-Use Residential	31	1580 Market Street	Mixed-Use Residential
3	690 Market Street	Mixed-Use Residential	32	1601 Market Street	Residential
4	2 New Montgomery Street	Transient Lodging	33	1651 Market Street	Residential
5	757 Market Street	Residential	34	1657 Market Street	Residential
6	765 Market Street	Transient Lodging	35	1668 Market Street	Transient Lodging
7	12 Fourth Street	Transient Lodging	36	1676 Market Street	Mixed-Use Residential
8	10 Cyril Magnin Street	Mixed-Use Residential	37	1698 Market Street	Mixed-Use Residential
9	942 Market Street	Residential	38	1693 Market Street	Residential
10	16 Turk Street	Transient Lodging	39	11 Haight Street	Mixed-Use Residential
11	34 Turk Street	Mixed-Use Residential	40	33 Haight Street	Mixed-Use Residential
12	972 Market Street	Residential	41	60 Haight Street	Place of Worship
13	973 Market Street	Residential	42	1751 Market Street	Residential
14	1023 Market Street	Mixed-Use Residential	43	8 Octavia Boulevard	Mixed-Use Residential
15	20 Jones Street	Place of Worship	44	22 Waller Street	Place of Worship
16	1075 Market Street	Mixed-Use Residential	45	41 Waller Street	Mixed-Use Residential
17	44 McAllister Street	Mixed-Use Residential	46	55 Waller Street	School
18	45 McAllister Street	Transient Lodging	47	1275 Market Street	Commercial (Dolby Laboratories)[b]

[3] The Dolby Laboratories building at 1275 Market Street is a commercial building that was constructed in 2015. Normally, it would be evaluated as being non-sensitive to noise and vibration, same as any other commercial office building. However, the Dolby Laboratories building contains at least one auditorium/theater space and several assembly spaces that could be sensitive to ground-borne vibration and ground-borne noise. As such, it is considered to be a vibration-sensitive facility. However, just like any other commercial office building, it is not considered to be sensitive to airborne noise. Vibration (and related ground-borne noise) from Bay Area Rapid Transit (BART), San Francisco Municipal Transportation Agency (SFMTA), and San Francisco Municipal Railway operations was an existing condition when the building was designed and completed in 2015.

No.	Location	Land Use[a]	No.	Location	Land Use[a]
19	54 McAllister Street	Residential	48	982 Market Street	Theater/ Auditorium
20	60 Leavenworth Street	Mixed-Use Residential	49	1127 Market Street	Theater/ Auditorium
21	1087 Market Street	Transient Lodging	50	1192 Market Street	Theater/ Auditorium
22	1139 Market Street	Transient Lodging	51	99 Grove Street	Theater/ Auditorium
23	1272 Market Street	Transient Lodging	52	545 Market Street	Library
24	1278 Market Street	Transient Lodging	53	100 Larkin Street	Library
25	1390 Market Street	School	54	1231 Market Street	Transient Lodging
26	1390 Market Street	Residential	55	1 Taylor Street	Theater/ Auditorium
27	8 10th Street	Residential	56	1000 Market Street	Residential
28	1 Polk Street	Mixed-Use Residential	57	1600 Market Street	Residential
29	50 Fell Street	School	58	48 Turk Street	Transient Lodging

Source: www.data.sfgov.org, building footprint layer, updated May 3, 2017; www.data.sfgov.org, land use layer, updated December 7, 2017; Wilson Ihrig 2018; Vibro-Acoustic Consultants, 2019; ICF 2019a.

a. There may be additional sensitive receptors in the vicinity of the project corridor that were not specifically considered in the noise and vibration analysis prepared for the proposed project. The receptors identified in this table are as close to noise- and vibration-generating activities as possible (i.e. directly adjacent to the project corridor) and therefore representative of other sensitive receptors that may exist along the project corridor but are not specifically listed.

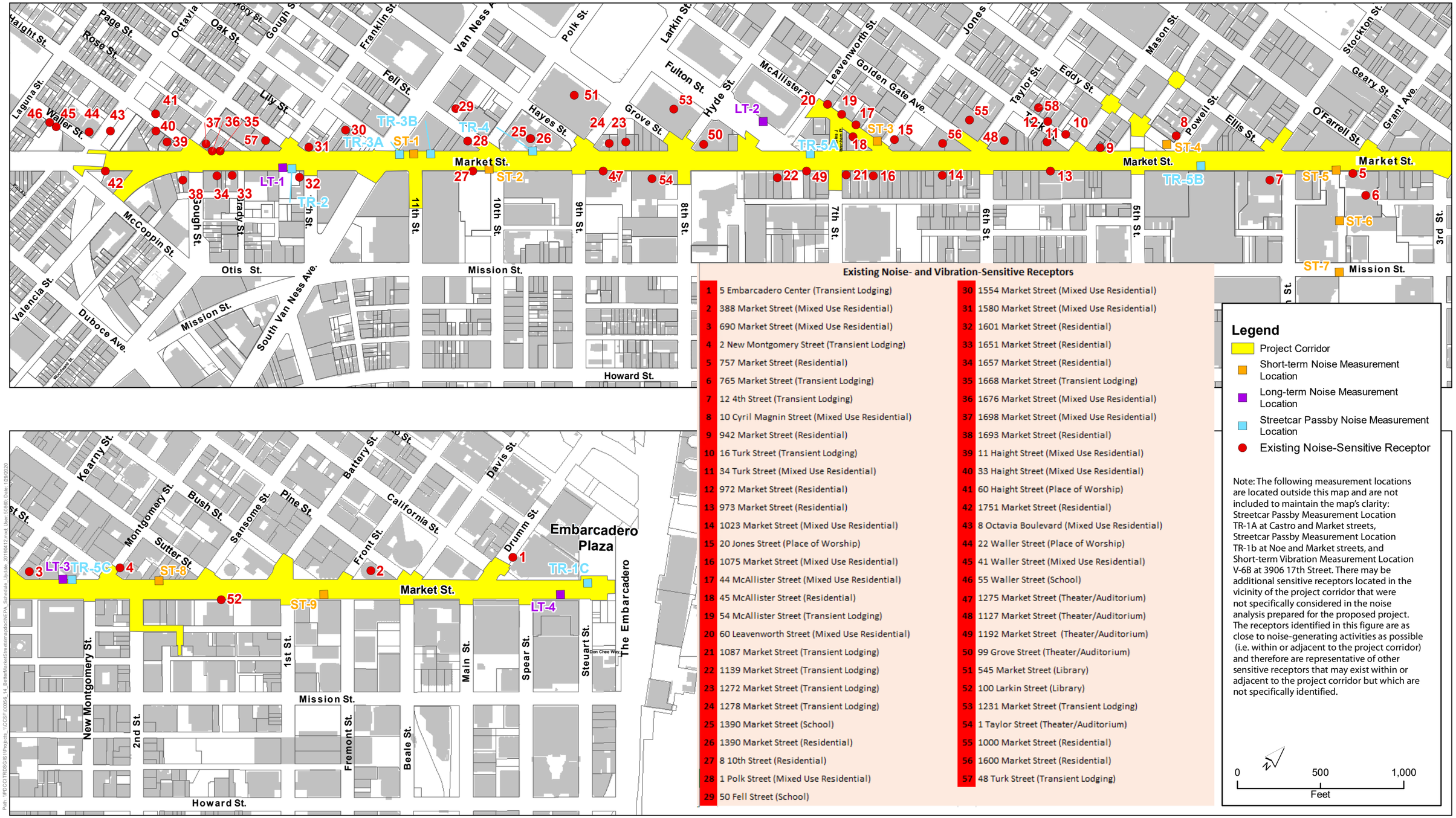
b. Uses in this building could be affected by ground-borne vibration and noise. Therefore, this is a vibration-sensitive facility. Just like any other commercial office building, this building is not considered to be sensitive to airborne noise.

Noise Monitoring

A noise measurement survey was conducted to characterize the existing noise environment along Market Street as well as side streets within three blocks of the project corridor. The survey consisted of attended and unattended monitoring of the prevailing ambient noise level as well as measurements of passby noise from the historic streetcars operating on the F-line on Market Street. Details regarding the noise measurement survey are provided in the *Noise Technical Memorandum* (February 2020).

Noise monitoring was conducted between April 30 and May 1, 2018, at four long-term and nine short-term measurement locations. Noise monitoring was also conducted on April 19, 2018, at 10 locations to measure streetcar passby noise.

In 2018, the noise environment of the project corridor was influenced largely by surface transportation, consisting of bus, automobile, and truck traffic as well as fixed-guideway electric streetcar operations. Table 2.2.5-7 provides locations and descriptions for the noise measurement sites. These locations are also shown in Figure 2.2.5-2.



Existing Noise- and Vibration-Sensitive Receptors

1. 5 Embarcadero Center (Transient Lodging)
2. 388 Market Street (Mixed Use Residential)
3. 690 Market Street (Mixed Use Residential)
4. 2 New Montgomery Street (Transient Lodging)
5. 757 Market Street (Residential)
6. 765 Market Street (Transient Lodging)
7. 12 4th Street (Transient Lodging)
8. 10 Cyril Magnin Street (Mixed Use Residential)
9. 942 Market Street (Residential)
10. 16 Turk Street (Transient Lodging)
11. 34 Turk Street (Mixed Use Residential)
12. 972 Market Street (Residential)
13. 973 Market Street (Residential)
14. 1023 Market Street (Mixed Use Residential)
15. 20 Jones Street (Place of Worship)
16. 1075 Market Street (Mixed Use Residential)
17. 44 McAllister Street (Mixed Use Residential)
18. 45 McAllister Street (Residential)
19. 54 McAllister Street (Transient Lodging)
20. 60 Leavenworth Street (Mixed Use Residential)
21. 1087 Market Street (Transient Lodging)
22. 1139 Market Street (Transient Lodging)
23. 1272 Market Street (Transient Lodging)
24. 1278 Market Street (Transient Lodging)
25. 1390 Market Street (School)
26. 1390 Market Street (Residential)
27. 8 10th Street (Residential)
28. 1 Polk Street (Mixed Use Residential)
29. 50 Fell Street (School)
30. 1554 Market Street (Mixed Use Residential)
31. 1580 Market Street (Mixed Use Residential)
32. 1601 Market Street (Residential)
33. 1651 Market Street (Residential)
34. 1657 Market Street (Residential)
35. 1668 Market Street (Transient Lodging)
36. 1676 Market Street (Mixed Use Residential)
37. 1698 Market Street (Mixed Use Residential)
38. 1693 Market Street (Residential)
39. 11 Haight Street (Mixed Use Residential)
40. 33 Haight Street (Mixed Use Residential)
41. 60 Haight Street (Place of Worship)
42. 1751 Market Street (Residential)
43. 8 Octavia Boulevard (Mixed Use Residential)
44. 22 Waller Street (Place of Worship)
45. 41 Waller Street (Mixed Use Residential)
46. 55 Waller Street (School)
47. 1275 Market Street (Theater/Auditorium)
48. 1127 Market Street (Theater/Auditorium)
49. 1192 Market Street (Theater/Auditorium)
50. 99 Grove Street (Theater/Auditorium)
51. 545 Market Street (Library)
52. 100 Larkin Street (Library)
53. 1231 Market Street (Transient Lodging)
54. 1 Taylor Street (Theater/Auditorium)
55. 1000 Market Street (Residential)
56. 1600 Market Street (Residential)
57. 48 Turk Street (Transient Lodging)

Note: The following measurement locations are located outside this map and are not included to maintain the map's clarity: Streetcar Passby Measurement Location TR-1A at Castro and Market streets, Streetcar Passby Measurement Location TR-1b at Noe and Market streets, and Short-term Vibration Measurement Location V-6B at 3906 17th Street. There may be additional sensitive receptors located in the vicinity of the project corridor that were not specifically considered in the noise analysis prepared for the proposed project. The receptors identified in this figure are as close to noise-generating activities as possible (i.e. within or adjacent to the project corridor) and therefore are representative of other sensitive receptors that may exist within or adjacent to the project corridor but which are not specifically identified.

Continued on panel below

Continued on panel above

Better Market Street Project

Figure 2.2.5-2
Noise Measurement Locations and Existing Sensitive Receptors in the Vicinity of the Project Corridor

Source: Parcels, City and County of San Francisco 2014;
Streets, City and County of San Francisco 2014;
Building Footprints, City and County of San Francisco 2011
Land Use,SF Planning Department, 2018
Wilson Ihrig, Vibro-Acoustic Consultants and ICF, 2018

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Table 2.2.5-7. Noise Monitoring Locations

Site ID	Site Location	Latitude	Longitude	Primary Noise Source(s)
Long-term Measurements (24 hours)				
LT-1	Between Brady and 12th streets, south side	37.7740	-122.4206	Streetcars and traffic
LT-2	Between Seventh and Eighth streets, on United Nations Plaza	37.7801	-122.4142	Traffic on side streets
LT-3	Between Montgomery and Kearny streets, north side	37.7885	-122.4026	Streetcars and traffic
LT-4	Between Spear and Steuart streets, south side	37.7942	-122.3951	Streetcars and traffic
Short-term Measurements (20–30 minutes)				
ST-1	Market Street at 11th Street, north side	37.7757	-122.4188	Streetcars and traffic
ST-2	Southwest corner, 10th and Market streets	37.7764	-122.4175	Streetcars and traffic
ST-3	Northwest corner of McAllister and Jones streets	37.7812	-122.4122	Streetcars and traffic
ST-4	East side of Hallidie Plaza	37.7845	-122.4079	Streetcars and traffic
ST-5	Southwest corner of Market Street and Yerba Buena	37.7862	-122.4050	Streetcars and traffic
ST-6	Yerba Buena, 300 feet from Market Street	37.7856	-122.4042	Traffic on side streets
ST-7	Yerba Buena, south side of Mission Street	37.7850	-122.4035	Traffic on side streets
ST-8	North side of Market Street, 100 feet east of Second Street	37.7896	-122.4012	Streetcars and traffic
ST-9	Between Fremont and First streets, south side	37.7914	-122.3985	Streetcars and traffic

The unattended noise monitors ("long-term" in the table) were mounted on existing utility poles, at an approximate height of 10 feet. The attended ("short-term") measurements were made using portable sound-level meters that were mounted on tripods and set at ear height. The short-term measurements provided supporting detail about the existing noise environment and served as "infill" measurements to complement the long-term monitoring results. Each long-term measurement covered a 24-hour period; short-term measurements were either 20 or 30 minutes in duration.

Daily noise levels are summarized in Table 2.2.5-8.

Table 2.2.5-8. Summary of Long- and Short-term Noise Monitoring[4]

	Calculated Using Hourly L_{eq} Levels				Calculated Using Hourly L_{50} Levels			
Site ID	**L_{eq}(24)**	**Peak Hour**	**L_{dn}**	**CNEL**	**L_{eq}(24)**	**Peak Hour**	**L_{dn}**	**CNEL**
Long-Term (24-hour) Levels (Measured)[a]								
LT-1[b]	70.8	78.3	75.1	75.6	66.9	70.2	71.5	71.9
LT-2[c]	67.0	74.3	72.9	73.1	64.1	68.9	71.0	71.1
LT-3[b]	71.9	75.2	77.0	77.5	68.7	71.4	73.0	73.4
LT-4[b]	70.2	73.1	74.7	75.0	68.3	71.2	72.3	72.7
Short-term Levels (Inferred)[a,d]								
ST-1[b]	67.8	75.2	72.0	72.5	64.2	67.5	68.8	69.2
ST-2[b]	69.5	77.0	73.7	74.3	66.4	69.7	71.0	71.4
ST-3[b]	65.0	72.5	69.3	69.8	68.9	72.2	73.5	73.9
ST-4[b]	70.6	73.9	75.7	76.2	65.8	68.5	70.1	70.5
ST-5[b]	70.6	73.9	75.7	76.2	68.3	71.0	72.6	73.0
ST-6[c]	65.3	68.6	70.4	70.9	63.2	65.9	67.5	67.9
ST-7[c]	63.7	66.9	68.8	69.3	60.2	62.9	64.5	64.9
ST-8[b]	70.4	73.7	75.5	76.0	66.5	69.2	70.8	71.2
ST-9[b]	72.5	75.4	77.0	77.3	65.8	68.7	69.8	70.2

Notes:
a. Noise monitoring was conducted April 30 and May 1, 2018.
b. Site located to measure primarily streetcar noise and traffic on Market Street.
c. Site located to measure primarily traffic noise on side streets adjacent to Market Street.
d. L_{dn} and L_{eq}(24) values for short-term measurements were extrapolated using long-term measurement data.
L_{eq}(24) = 24-hour equivalent sound level
L_{dn} = day-night sound level
Source: Vibro-Acoustic Consultants 2019.

Measured noise levels along Market Street were fairly uniform, with day-night sound-level (L_{dn}) values at the four long-term monitoring sites ranging from 73 to 77 dBA. The diurnal cycle is discernable but not particularly pronounced, and hourly noise levels rarely fell below 65 dBA. L_{dn} values at the short-term locations[5] ranged from 69 dBA to 77 dBA. The hour-by-hour variation in level covered a range of 9 to 14 decibels, depending on the location. At three of the four sites, the hourly average noise levels remained above 70 dBA for the majority of the day. Site 2 was the expected exception to this, being located 230 feet from the Market Street centerline compared with about 45 feet for the other monitoring locations.

[4] The noise monitoring survey was conducted in the project area prior to the implementation of private vehicle restrictions on Market Street. Because of the vehicle restrictions, it is anticipated that the noise environment in the area is currently louder now on streets near Market Street and quieter on Market Street itself. Vehicles that previously used Market Street likely now use these other roadways instead of Market Street. As such, the noise levels shown in Table 2.2.5-8 may be different than current conditions. Any differences in the noise levels are not expected to be substantial, however, because there are still buses, taxis, and streetcars on Market Street, in addition to other non-transportation noise sources. On side streets noise levels may be higher due to increased traffic, though not likely perceptibly higher.

[5] Daily metrics at the short-term positions were inferred by adjusting the nearest long-term level by the difference between the short-term level and the corresponding hourly noise level at that long-term site.

Streetcar Passby Noise Measurements

Streetcar passby measurements were conducted on April 19, 2018, using the historic F-line cars. By prior arrangement, these included a sampling of "Milan" streetcars, considered by SFMTA to be among the noisiest vehicles in the agency's inventory. A total of 43 passby measurements were obtained at 10 locations for the 11 different streetcars operating on the F-line. The measurements were made at a nominal distance of 30 feet from the rail centerline. The 10 passby measurement locations were selected to characterize track sections along Market Street that might be expected to differ acoustically.

The analysis showed no significant differences among the sites.

The majority of the 2.2-mile-long project section along the F-line consists of tangent (straight-line) track embedded in pavement. BART grates of various lengths (three to 50 linear feet) are distributed along the F-line tangent track. In total, approximately 1,500 linear feet of tangent track is over the BART grates within the project corridor. One section of short-radius curved track, approximately 100 linear feet, is found along the F-line within the project corridor at the intersection of Steuart and Market streets.

Table 2.2.5-9 lists the noise measurement locations, describes the locations, and summarizes the average noise levels for the streetcar passby noise measurements. The two in-service Milan streetcars were distinctly noisier that the other streetcars, exhibiting passby levels that were consistently 10 decibels higher than levels from any of the other streetcars. The inter-quartile range of levels across the non-Milan streetcars was 5 to 7 decibels. On short-radius curved track, the difference between Milan and non-Milan streetcars was notably smaller, with a range of 6 to 8 decibels within type.

Table 2.2.5-9. Existing Streetcar Passby Noise Measurement Locations and Noise Levels

Site ID	Site Location	Average Maximum Passby Level, Non-Milan Streetcars, dBA[a]	Average Maximum Passby Level, Milan Streetcars, dBA[a]	Average Single-Event Level, Non-Milan Streetcars, dBA[a]	Average Single-Event Level, Milan Streetcars, dBA[a]
Streetcar Passby Noise Measurement Locations (timing varies by passby)					
TR-1A[b]	Southeast corner of Castro Street and Market Street	80	82	85	92
TR-1B[b]	Southeast corner of Market Street and Noe Street	80	82	85	92
TR-1C[b]	Corner of Market and Steuart streets	80	82	85	92
TR-2[c]	Southwest corner of Market and 12th streets	76	89	84	95
TR-3A[c]	Northeast corner of Market Street and Van Ness Avenue	76	89	84	95
TR-3B[c]	Market between Van Ness Avenue and 10th Street (north side)	76	89	84	95
TR-4[c]	Market Street between Ninth and 10th streets (north side)	76	89	84	95
TR-5A[d]	Northwest corner of Market Street and Charles J. Brenham Place	82	92	88	98
TR-5B[d]	Market Street at Powell Street (south side)	82	92	88	98
TR-5C[d]	Northwest corner of Market and Montgomery streets	82	92	88	98

Source: Vibro-Acoustic Consultants 2019.

Notes:

a. Noise levels for streetcar passbys are averaged across sites, based on type of streetcar noise measured (e.g., tangent track over asphalt, tangent track over BART grates, curve squeal).

b. Location selected to measure primarily streetcar noise from squeal on curves.

c. Location selected to measure primarily streetcar noise from tangent track over asphalt.

d. Location selected to measure primarily streetcar noise from tangent track over BART grates.

dBA = A-weighted decibel

Wheel Squeal Noise

A number of passby measurements were made to characterize the flanging/wheel squeal noise produced by the streetcars when negotiating short-radius turns. This noise is caused when the streetcar wheel flanges rub against the rail or, in the case of squeal, transverse slip-stick forces excite wheel vibration. Measurements to capture this effect were made at Steuart Street and the Castro Street loop and assumed to be representative of conditions at the planned turnaround at McAllister Street. On curves, streetcar speeds were substantially reduced, and absent squeal, overall noise levels were lower compared to noise from streetcars running on tangent track (by 5 to 10 dBA). However, when present, wheel squeal typically increases noise levels by 10 to 15 dBA, equaling or often exceeding at-speed running levels.

Wheel squeal levels were variable and intermittent. The limited number of samples did not allow a clear pattern of behavior to be identified. However, all streetcars were observed to produce some degree of flanging and/or wheel squeal noise on short-radius turns.

Existing Vibration Levels

The existing vibration environment is largely dominated by surface transportation noise from bus, automobile, and truck traffic as well as fixed-guideway streetcar operations.

Vibration monitoring was conducted on April 19, 2018, at five short-term measurement locations[6] along the project corridor. Table 2.2.5-10 lists the vibration measurement locations, describes the locations, indicates the track type and distance from near-track centerline to measurement location, and summarizes the exterior ground vibration levels at buildings along the project corridor. Measurements were taken from one or two distances per location, one at the façade and/or one at the curb or similar intermediate distance from the building, to obtain a range of data. Details regarding the vibration measurement survey are provided in the *Noise Technical Memorandum* (February 2020).

Table 2.2.5-10. Existing Exterior Ground-Level Vibration at Vibration Measurement Locations

Site ID	Site Location	Track Type[1]	Distance from Near-track Centerline to Measurement Position (feet)	Vibration at the Façade (VdB)[2]
V-1	One Market Street on Steuart Street	DF (slow speed and curves)	33	46–62
V-2	801 Market Street (Old Navy)	B&T	21	43–79 (curb)
V-3	901 Market Street (Saks Off 5th)	B&T at crossover with ballast mat	55	58–74

[6] Measurement Site V-6B is not within the project corridor. Vibration was measured at Site V-6B on April 25, 2018, to provide additional data for direct-fixation ballasted track, with additional information collected at 25 feet (façade) from the track configuration at that location.

Site ID	Site Location	Track Type[1]	Distance from Near-track Centerline to Measurement Position (feet)	Vibration at the Façade (VdB)[2]
V-4	1100 Market Street (Proper Hotel)	B&T	59	62–70
V-5	825 Market Street (Walgreens)	B&T at crossover	52	60–68
V-6B	3906 17th Street (residence)	B&T (slow speed)	25	50–64

Source: Wilson Ihrig 2018.

Notes:

1 *Track type* refers to the manner in which the rail is fastened to the support structure. DF = direct-fixation track fastened to concrete; B&T = ballast-and-tie track embedded in pavement.

2 Vibration monitoring was performed on April 19, 2018, at Sites V-1 through V-5. Vibration monitoring was performed at Site V-6B on April 25, 2018. At all sites, the greatest vibration was caused by SFMTA streetcars.

The measurement locations were selected to obtain data for a range of track configurations (i.e., ballast and tie, direct-fixation track, crossover, ballast mat). Crossovers have a gap in the rail that tends to add vibration (5 to 10 decibels) as the wheel crosses the gap; ballast mats generally reduce vibration (10 decibels). Under some conditions, ballast-and-tie track and direct-fixation track can generate different vibration levels.

Table 2.2.5-11 provides estimates of the expected interior vibration levels at five buildings near the vibration measurement locations along the project corridor. The estimates are based on measured exterior vibration levels but have been adjusted for distance to the façade, if needed. This adjustment accounts for the coupling loss into the building, floor resonance amplification, and floor-to-floor attenuation (loss). Based on these results, it is anticipated that existing vibration levels do not exceed the FTA standard for interior vibration at a residential use (72 VdB) or institutional use (75 VdB).

Table 2.2.5-11. Expected Interior Vibration at Buildings near Vibration Measurement Locations on Market Street

Site ID[a]	Building Location	Track Type[b]	Vibration at Building (First Level) (VdB)	Vibration at Building (Second Level) (VdB)
V-1	One Market Street on Steuart Street	DF (slow speed)	36–52	40–56
V-2	801 Market Street (Old Navy)	B&T	29–64	33–68
V-3	901 Market Street (Saks off 5th)	B&T at crossover with ballast mat	48–64	52–68
V-4	1100 Market Street (Proper Hotel)	B&T	52–60	56–64
V-5	825 Market Street (Walgreens)	B&T at crossover	50–58	54–62

Source: Wilson Ihrig 2018.

Notes:

a. Site V-6B is not included in this table because it is not within the project corridor.

b. *Track type* refers to the manner in which the rail is fastened to the support structure.

DF = direct-fixation track fastened to concrete; B&T = ballast-and-tie track embedded in pavement.

2.2.5.3 Environmental Consequences

Construction Impacts

Build Alternative

Construction Noise Impacts

Noise from construction of the Build Alternative and design option may intermittently dominate the noise environment in the immediate area of construction. Construction activities will involve clearing; cut-and-fill activities; grading; demolition of existing tracks, curbs, and sidewalks; and paving roadway surfaces. Equipment used for these construction activities will be a source of noise. Implementation of detours may increase noise in some areas as a result of temporarily diverted traffic.

Construction of the project will require a phased approach, involving up to seven location-specific project segments over a projected six-year construction period, beginning in 2020. A project segment is generally defined as multiple blocks along the project corridor. Assumptions regarding construction phasing and equipment were based on information received from the project sponsor for one construction segment.

Noise levels generated by construction fluctuate, depending on the equipment type, duration of use, distance between noise source and listener, and the presence or absence of barriers, during each construction stage. In general, sensitive receptors will be exposed to the highest levels of construction noise during the outside/curb lane and sidewalk stages of construction. This could last for approximately seven months at any given location during the outside/curb lane stage and approximately 10 months at any given location during the sidewalk stage. These construction activities may or may not overlap. The construction stages will involve intense activity, including the use of excavators and backhoes to remove asphalt and concrete, in proximity to sensitive receptors. Construction activities involving asphalt and concrete removal, as well as the use of heavy construction equipment, will generate persistent, time-varying noise levels, which can be highly annoying. In addition, some nighttime construction will be required during the intersection stage to minimize impacts on transit riders; nighttime construction may require a special permit from the director of San Francisco Public Works, consistent with Section 2908 of the City and County of San Francisco (City) noise ordinance.

Construction equipment is expected to generate noise levels ranging from 75 to 90 decibels at a distance of 50 feet; noise levels attenuate over distance at a rate of about 6 decibels per doubling of distance. Noise levels are based on FHWA's *Road Construction Noise Model User's Guide*.

Each piece of construction equipment operates as an individual point source. For a worst-case scenario, with concurrent operation of the three loudest individual pieces of equipment, the composite noise level at the nearest residence will be up to 91 dBA L_{max} during construction (at a distance of 50 feet from an active construction area). The worst-case scenario will include concurrent operation of a jackhammer, scraper, and forklift. Worst-case construction noise is anticipated to be a temporary occurrence and will not affect any individual receptor for a prolonged period of time.

Construction activities will cause an increase in ambient noise levels at locations throughout the project corridor. Measured noise levels in the project area range from 68.8 to 77.0 dBA L_{dn}; under

the worst-case construction scenario, noise levels could be temporarily affected and increase to 91 dBA L_{max}.

Construction Vibration Impacts

Annoyance

As discussed above, vibration annoyance from construction is evaluated only for nighttime impacts at residential receptors and daytime and nighttime impacts at inpatient facilities. Although some nighttime construction could occur at intersections to minimize impacts on transit riders, no inpatient facilities are located along the project corridor. Should nighttime construction occur, it is possible that vibration could be perceptible and cause annoyance at nearby residential land uses. Pile driving is not proposed for project construction, and "vibration-intensive" activities are generally prohibited by Public Works during nighttime hours, although these activities are not defined. If a large bulldozer operates near residential land uses, it is estimated that vibration at a distance of 25 feet will be 0.089 PPV in/sec. This is below the annoyance impact threshold of 0.9 PPV in/sec for transient sources, as shown in Table 2.2.5-4. A small bulldozer will generate even less vibration (approximately 0.003 PPV in/sec at this distance). However, some equipment (such as large bulldozers) could operate within 25 feet of a nearby residence during nighttime hours, which could generate vibration levels that would cause annoyance. It is therefore possible that construction work conducted within 25 feet of residential land uses could generate vibration levels that would result in nighttime annoyance.

Structure Damage

With regard to construction-related vibration damage, the majority of the proposed project's construction will be at distances that preclude vibration damage to existing buildings. The buffer distances, listed by building type, necessary to avoid potential structural damage are as follows:

- For modern buildings (reinforced concrete structures), construction conducted within two feet could exceed the 2.0 PPV in/sec threshold for transient sources; construction conducted within 13 feet could exceed the 0.5 PPV in/sec threshold for continuous or frequent intermittent sources.
- For historic structures (reinforced), construction conducted within seven feet could exceed the 0.5 PPV in/sec threshold for transient sources; construction conducted within 22 feet could exceed the 0.25 PPV in/sec threshold for continuous or frequent intermittent sources.
- For historic structures (unreinforced), construction conducted within 13 feet could exceed the 0.2 PPV in/sec threshold for transient sources; construction conducted within 44 feet could exceed the 0.1 PPV in/sec threshold for continuous or frequent intermittent sources.

For example, track and most utility work will occur more than 25 feet from existing buildings. Because most of the track and utility work will be conducted at the curb or median, such activities will not cause a vibration impact. However, the sidewalk stage of construction will occur immediately adjacent to building façades along the project corridor (at zero feet from buildings).

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening

year and 2040 design year. Transit, bicycle, and walking facilities that are not currently programmed will not occur. Because fewer transportation projects would undergo construction for the No-Build Alternative, there will be a lower level of temporary construction noise and vibration relative to the Build Alternative.

Operational Impacts

Build Alternative

Traffic Noise

Traffic noise levels will decrease at some roadway segments and increase at others. For the analysis of build conditions in 2020 and 2040, compared to no-build conditions in these same years, 55 percent and 58 percent of roadway segments, respectively, will experience decreases or no change in traffic noise. Of the roadways where noise will increase, none will experience an increase greater than 3 dBA. The maximum increases under 2020 and 2040 build conditions are expected to be 2.2 dBA and 2.4 dBA, respectively. Therefore, all increases will be below the limit of perceptible change. The results of the traffic noise modeling analysis are shown in Appendix A of the *Noise Technical Memorandum*.[7]

Streetcar Noise

Streetcar noise from operation of the F-line is the predominant source of noise along the project corridor on Market Street. The addition of the F-loop and F-short with the proposed project will change the operational characteristics of streetcar-generated noise in the project corridor. This will affect some sensitive receptors along the F-loop that currently do not experience high levels of streetcar noise. Traffic, discussed above, is another primary source of noise along the project corridor.

The volume of streetcars on the portion of the F-line east of the F-loop (the new F-short route) will approximately double under the proposed project relative to existing conditions. This is because of the new streetcar service on the F-short that will be added to current streetcar operations on the F-line. Although the number of streetcars operating on the F-short will increase relative to existing conditions, bus transit traffic and existing ambient sources on Market Street will continue to be the dominant sources of noise along the F-short. Project-related noise levels due to streetcar operations will result in a noise-level increase of up to 2.1 decibels compared to existing noise levels along the project corridor. However, this maximum increase of 2.1 decibels in streetcar noise is below the limit of perceptibility. The results of the streetcar noise modeling analysis are shown in Appendix A of the *Noise Technical Memorandum* (February 2020).

[7] The traffic noise analysis evaluated conditions on roadway segments prior to the implementation of private vehicle restrictions on Market Street. Because the traffic noise analysis focuses on side streets and other roadways in the vicinity of Market Street but not Market Street itself, it is anticipated that the noise environment on the non-Market Street roadways is currently louder now that there are private vehicle restrictions on Market Street. Vehicles that previously used Market Street likely now use these other roadways instead of Market Street. As such, the traffic noise analysis is considered to be conservative, because it represents an existing noise environment on the non-Market Street roadways that is likely less loud than current conditions with the private vehicle restrictions. Traffic noise increases between build conditions and the existing conditions with private vehicle restrictions on Market Street are thus expected to be smaller than those discussed in this section; however, the difference in noise increases is not anticipated to be substantial.

Operational Vibration Impacts

Annoyance

Existing F-line streetcar vibration is the predominant source of vibration along the project corridor. The proposed F-line track alignment along Market Street will be nearly unchanged compared to the existing alignment, with the exception of alignment changes between Gough and Valencia streets, Fremont and Beale streets, and Main and Steuart streets. Using the FTA criteria for annoyance from operations in Table 2.2.5-5 and Table 2.2.5-6, no vibration impacts are anticipated to occur at vibration-sensitive uses along the project corridor. The specific evaluation scenarios are discussed below.

Receptors with Potential Existing Impacts from F-line Streetcars

The alignment for the proposed direct-fixation[8] F-line streetcar tracks on Market Street will be very close to the existing alignment. Although the F-line will be more than 55 feet from most residential buildings, one such building at 388 Market Street will be just 36 feet from the near-track centerline. It is anticipated that ground vibration without crossovers will be 76 VdB; with a crossover, ground vibration will be 78 VdB. However, the 55-foot buffer distance is conservative. It assumes that buildings are one- or two-story masonry structures, with the sensitive uses on the first floor. Several adjustments were made to evaluate vibration at second-floor offices as well as residential areas on the 17th floor. Vibration levels on the residential floors will be below 65 VdB after applying an adjustment of -1 to -2 decibels per floor and below the FTA vibration impact standard of 72 VdB for residential uses under existing and future conditions.

Receptors along the Proposed F-loop

There are no existing streetcars on Charles J. Brenham or McAllister Street. Therefore, buildings in the vicinity of the proposed F-loop are not currently affected by streetcar vibration. Proposed streetcar operations on the F-loop tracks on McAllister Street and Charles J. Brenham Place will be limited to 5 mph through the curves and turnouts, which will adjust the vibration by -14VdB, and 15 mph on the tangent tracks, which will adjust the vibration by -4 VdB; these will correspondingly reduce buffer distances. The residential buildings adjacent to the proposed F-loop streetcar tracks are small/mid-sized (four- to eight-story) structures. Therefore, there will be further adjustments to account for these building types.

For a four- to eight-story building, additional adjustments of -3 decibels are appropriate, compared to a smaller residential structure with potential first-floor residences. Therefore, the buffer distance will be adjusted to less than 5 feet at the turnouts and 15 feet at the tangent sections to be below the FTA vibration impact standard of 72 VdB for residential use. No residential buildings will be this close to the centerline of the track.

With these speed and building-type adjustments, vibration at the buildings will be below the FTA vibration annoyance impact standard of 72 VdB for residential uses.

[8] The vibration estimates are based on the vibration surface of the existing system, which uses primarily an embedded ballasted track type. However, no changes are expected overall by changing to the direct-fixation track type.

Other Receptors Affected by the Proposed F-loop

For existing receptors who will be exposed to streetcar vibration near the proposed F-loop, the tracks will be located at distances that will preclude vibration annoyance at sensitive uses within nearby buildings. Specifically, the Proper Hotel at 1100 Market Street/45 McAllister Street will be approximately 59 feet from the near-track centerline, which is more than the 55-foot distance for residential receptors. This is an area where non-diverging streetcars are anticipated to proceed through the proposed crossover along Market Street at 25 mph. At that speed, it is anticipated that the streetcar will generate a vibration level of 75 VdB at the building's façade. After applying adjustments for a mid-sized seven-story building (-10 decibels), floor resonance (+6 decibels), and attenuation from ground level to the second floor (-2 decibels), second-floor interior vibration will be 69 VdB under future conditions with the proposed F-loop crossover, which will be below the FTA vibration impact standard of 72 VdB.

Building Damage

If operational vibration were to approach or exceed 90 VdB (0.125 in/sec PPV) at buildings along the corridor, then a building damage assessment would be warranted to determine the potential building damage effect from project operations. The presence of buildings that will be exposed to vibration at this screening level is evaluated first. If further analysis is warranted, the operational vibration is converted to PPV to compare directly with the building damage criteria.

All buildings will be more than 15 feet from the centerline of the proposed track alignment. Therefore, operational vibration at these buildings will be 83 VdB or less, which is below the 90 VdB screening level (0.125 in/sec PPV), and no vibration-sensitive buildings along the Market Street F-line, F-short, or F-loop will be exposed to vibration that will exceed the applicable FTA criteria for building damage, as outlined in Table 2.2.5-3.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Transit, bicycle, and walking facilities that are not currently programmed will not occur, most likely resulting in more vehicle trips and congestion on Market Street and fewer streetcar trips. With respect to operational noise, the No-Build Alternative will result in higher levels of on-road vehicle noise, such as wheel-on-pavement noise, engine idling, and honking but lower levels of noise and vibration from streetcars.

2.2.5.4 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to noise and vibration are minimized under the proposed project:

- AMM-NOI-1: Caltrans Standard Specifications Section 14-8.02. Standard Caltrans procedures include implementation of the following measures to minimize temporary noise effects from construction (California Department of Transportation 2018):
    - Control and monitor noise resulting from work activities.
    - Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.

- AMM-NOI-2: Nighttime Construction Vibration Control Measures. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan shall evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan shall also require vibration levels at vibration-sensitive receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources.

  The project contractor shall:

  - Retain the services of a qualified professional to prepare a pre-construction assessment and vibration monitoring plan. This assessment and vibration monitoring plan shall identify all vibration-sensitive receptors adjacent to the project corridor that could be exposed to vibration from nighttime construction activities exceeding a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. The qualified professional shall submit the plan to Public Works for review and approval prior to issuance of a construction permit.
  - Inform vibration-sensitive receptors of upcoming construction activities that may generate high levels of vibration a minimum of one week in advance of such construction activities. Methods of notification shall include mailed notices as well as notifications hand-posted on doorways. The notification shall include the name and contact information for a person that can be reached during nighttime construction hours.
  - Perform real-time vibration monitoring during all construction activities conducted between the hours of 8 p.m. and 7 a.m. at a location representative of the nearest vibration-sensitive receptor. If vibration levels exceed a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources, the vibration monitor shall immediately alert the construction manager, who shall immediately cease construction activity. Construction activity shall resume only after the vibration-generating equipment is adjusted or relocated such that the vibration level no longer exceeds 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources or such activity is otherwise conducted between the hours of 7 a.m. and 8 p.m.

2.3 BIOLOGICAL ENVIRONMENT

2.3.1 Animal Species

2.3.1.1 Regulatory Setting

Many federal laws regulate impacts on wildlife. The U.S. Fish and Wildlife Service (USFWS), the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NOAA Fisheries Service) are responsible for implementing these laws. This section discusses potential impacts and permit requirements associated with animals not listed or proposed for listing under the federal Endangered Species Act. As described in the introduction to Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures,* the project would have no effect on species listed or proposed for listing as threatened or endangered, and therefore they are not discussed further in this section. All other animal species of special concern are discussed here, including non-listed CDFW fully protected species and candidate species.

Federal laws and regulations relevant to wildlife include the following:

- National Environmental Policy Act
- Migratory Bird Treaty Act
- Fish and Wildlife Coordination Act

2.3.1.2 Affected Environment

Information in this section is from the *Biological Resources Technical Memorandum* prepared for the proposed project (November 2019). Where other data sources were used, citations have been provided. The Biological Study Area (BSA) is equivalent to the project footprint (i.e., the project corridor).

Based on California Natural Diversity Database (CNDDB) search results for the U.S. Geological Survey (USGS) 7.5-minute San Francisco North quadrangle, it was determined that 23 animal species of special concern have been documented in the project region. All of these species were eliminated from further consideration with respect to the BSA because of the absence of suitable habitat (e.g., scrub, vernal pool, cliff, alkaline soil, riparian, wetland, chaparral, marsh, river and stream habitat), an unsuitable elevation, lack of habitat connectivity to source populations, and/or the developed and disturbed condition of the BSA. Several animal species of special concern occur within five miles of the BSA but have no potential to occur in the BSA. In addition, most of these occurrences are now considered extirpated by the CNDDB. No animal species of special concern were observed during the reconnaissance-level survey of the BSA.

The only animal species of special concern with potential to use the landscape vegetation in the BSA are migratory birds. Urban-adapted species such as rock pigeon (*Columba livia*), house sparrow (*Passer domesticus*), American crow (*Corvus brachyrhynchos*) and house finch (*Haemorhous mexicanus*) were observed during the reconnaissance-level survey of the BSA. Built structures and

existing vegetation (landscape trees and shrubs) provide nesting habitat for a variety of bird species that occur in the BSA.

2.3.1.3 Environmental Consequences

Construction Impacts

Build Alternative

Built structures and existing vegetation (landscape trees and shrubs) provide nesting habitat for a variety of bird species that occur in the BSA. All 753 existing street trees in the BSA will be removed and new street trees will be planted as a result of construction of the Build Alternative and design option. If tree removal is conducted during the nesting season (February 1 to August 31), the project may result in direct and indirect effects on nesting birds. Construction could injure or kill native birds nesting in trees or shrubs in the BSA. In addition, vegetation removal or trimming could destroy active nests, including eggs, nestlings, or juveniles. Construction-related disturbances (e.g., equipment noise, the presence of workers) may indirectly affect the normal nesting behavior of birds adjacent to the project corridor, resulting in nest abandonment and reproductive failure.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. The No-Build Alternative will include limited construction activity within the Market Street project corridor, which may result in the removal of some trees. Tree removal activities would be subject to similar protections for nesting birds. Therefore, construction activities associated with the No-Build Alternative will have no effect on nesting migratory birds.

Operational Impacts

Build Alternative

Operation of the Build Alternative and design option is not expected to result in any direct or indirect effects on migratory nesting birds. Project operation will not require direct removal of any nesting migratory bird habitat (e.g., trees and shrubs). Indirect operational effects could result from noise, light, and human activities in the BSA. However, because the BSA is in an urban area where these conditions are already present, operation of the project and design option will have no effect on migratory birds.

No-Build Alternative

The No-Build (No-Action) Alternative consists of reasonably foreseeable projects, plans, and transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Because the BSA is in an urban landscape where birds are adapted to noise, light, and human activity, operation of the No-Build Alternative will have no effect on migratory birds in the BSA.

2.3.1.4 Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects on animal species of concern are minimized under the proposed project:

- AMM-BIO-1: To avoid effects from tree removal on migratory nesting birds, tree removal will be conducted after August 31 and before February 1, outside the nesting season. To avoid effects of all other construction activities on active bird nests, including special-status bird species, a qualified biologist will conduct a preconstruction survey for nesting birds prior to any construction activities scheduled during the nesting season (February 1 to August 31). The survey will occur no more than 7 days prior to the initiation of ground-disturbing activities, including clearing, grubbing, and staging. The survey area will include the disturbance footprint and a 50-foot area around the footprint (buffer) for migratory birds protected by the Migratory Bird Treaty Act.
- AMM-BIO-2: If active nests are found during the survey, the biologist will establish exclusion zones around each nest. No work will be allowed in exclusion zones until the biologist has determined that the young have fledged or the nest is no longer active. The size of the exclusion zones will be based on the species' sensitivity to disturbance and planned work activities in the vicinity. The buffer size may be reduced if the biologist, after monitoring the nest and nearby construction activities, determines that no disturbance that would result in nest abandonment or premature fledging (e.g., young being startled by construction noise or visual disturbance and jumping out of the nest before they are able to fly) is likely to occur.
- AMM-BIO-3: If a lapse in project-related activities of 10 days or more occurs, another preconstruction survey will be conducted.
- AMM-BIO-4: One survey will be required prior to the initiation of construction in each segment of the project if construction within the segment is initiated during the nesting bird season (February 1 to August 31). In addition, one nesting bird survey will be required between April and May (at the discretion of the qualified biologist, depending on construction activities) of each year.

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2.4 CUMULATIVE EFFECTS

2.4.1 Regulatory Setting

Cumulative impacts are those that result from past, present, and reasonably foreseeable future actions, combined with the potential impacts of the proposed project. A cumulative effect assessment looks at the collective impacts posed by individual land use plans and projects. Cumulative impacts can result from individually minor but collectively substantial impacts taking place over a period of time.

Cumulative impacts to resources in the project area may result from residential, commercial, and industrial development. These land use activities can further degrade habitat and species diversity through consequences such as displacement and fragmentation of habitats and populations, alteration of hydrology, contamination, erosion, sedimentation, disruption of migration corridors, changes in water quality, and introduction or promotion of predators. They can also contribute to potential community impacts identified for the project, such as changes in community character, traffic patterns, housing availability, and employment.

A definition of cumulative impacts under the National Environmental Policy Act (NEPA) can be found in 40 Code of Federal Regulations (CFR) Section 1508.7.

2.4.2 Affected Environment

The cumulative analysis focuses only on topic areas that will be affected by proposed project implementation. Environmental issues that the proposed project will have no direct or indirect effects on are not discussed further in this analysis.

The study area for the cumulative impacts assessment varies based on the resource affected. The analysis accounts for past, present, and reasonably foreseeable projects in the vicinity of the project corridor, as well as planned land uses and transportation and circulation projections. The analysis is largely based on information provided by the San Francisco Planning Department and San Francisco Municipal Transportation Agency (SFMTA). In addition, the analysis is based on the environmental effects of the cumulative projects as described in their approved environmental documents and general knowledge of the project corridor. Other possible projects, which may have been discussed in the press, that have not been approved or funded, and that are too speculative to assume for purposes of this analysis, have not been included in this analysis and are not discussed further.

The projects identified in Appendix D were considered in the analysis. The cumulative analysis considers potential project impacts that, in combination with reasonably foreseeable cumulative projects, identified in Appendix D, could potentially result in cumulatively considerable effects. Such effects may be either adverse or beneficial.

2.4.3 Environmental Consequences

The cumulative impacts analysis focuses on the resources that the project may affect. According to the California Department of Transportation eight-step approach for developing a cumulative impact analysis, if the project will not result in impacts on a resource, it could not contribute to a cumulative impact. [1] The proposed project will only cause adverse effects requiring mitigation on cultural resources; all other potential adverse effects will be minimized through the AMMs presented in the resource sections of Chapter 2*, Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*.

The projects identified in Appendix D were considered together with the Build Alternative and design option for the potential for cumulative effects, which are described by resource area below. In addition to the projects identified in Appendix D, growth projections were used to evaluate cumulative impacts for transportation, air quality, and noise. Growth projections are built into the models used to project operational traffic volumes, air quality and greenhouse gas emissions, and noise levels for 2040. These analyses are included in each of their respective resource sections of Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, which includes Section 2.1.4, *Traffic and Transportation/Bicycle and Pedestrian Facilities*; Section 2.2.4, *Air Quality*; and Section 2.2.5, *Noise and Vibration*.

2.4.3.1 Parks and Recreational Facilities

Resource Study Area

The cumulative resource study area (RSA) for parks and recreational facilities includes the project corridor and the neighborhoods surrounding the project corridor.

Existing Condition and Historical Context

There are 21 parks and street-level plazas located within the project corridor or immediately adjacent to the project corridor. There are approximately 5,890 acres of parkland and open space available within the city. In addition to parks and recreational facilities, several existing bicycle facilities are within the project corridor, including dedicated bicycle lanes shared bicycle/vehicle lanes marked with sharrows, and protected bicycle tracks.

Build Alternative Impacts

Build Alternative and design option construction activities, as well as construction activities required for the projects identified in Appendix D, may result in temporary access disruptions for pedestrians and bicyclists and temporary disruption of passive recreational activities due to increased noise emissions and construction-related air quality degradation where construction

[1] Per Chapter 2, *Affected Environment, Environmental Consequences, and Avoidance, Minimization, and/or Mitigation Measures*, Coastal Zone, Wild and Scenic Rivers, Hydrology and Floodplain, Mineral Resources, Paleontology, Wetlands and Other Waters, Land Use, Growth, Farmlands/Timberlands, Relocations and Property Acquisitions, Natural Communities, Plant Species, Threatened and Endangered Wildlife Species, and Invasive Species are environmental issues that were considered but no adverse effects were identified. Therefore, there is no further discussion regarding these environmental issues in the document and they are not analyzed for cumulative effects.

activities would occur near recreational facilities. However, to minimize adverse cumulative effects on recreational facilities resulting from Build Alternative and design option construction, alternate pedestrian detours and bicycle routes will be provided to maintain access to recreational facilities, and construction will be completed in multiple stages to maintain access where possible. Operation of the Build Alternative and the design option would have beneficial cumulative effects on parks and recreational resources due to improved bicycle and pedestrian facilities.

Cumulative Impacts

Cumulative impacts on parks and recreational facilities could occur if the projects identified in Appendix D temporarily or permanently disrupt access to parks and recreational facilities, in addition to the impacts that will result from construction of the Build Alternative and design option. Although construction of some projects could result in temporary access disruptions, as with the Build Alternative and design option, these projects will also be subject to requirements to provide detours for pedestrians and bicyclists. Some projects, similar to the Build Alternative and design option, will have beneficial impacts on recreation by improving access and creating additional opportunities for recreation, including through the improvement to bicycle facilities. For example, the Transit Center District Plan, Central Subway Project, Muni Forward, and the 27 Bryant Transit Reliability Project, Central SoMa Plan, Western SoMa Community Plan, Market and Octavia Area Plan, Sixth Street Pedestrian Safety Project, Polk Street Streetscape Project, Van Ness Improvement Project, the Hub Plan, the Embarcadero Enhancement Project, and upcoming Vision Zero projects, would reduce personal vehicle use within the surrounding vicinity. Many of these projects also include pedestrian realm and bicycle infrastructure improvements and updated streetscape designs that improve safety for recreationalists along the project corridor. Therefore, impacts from construction and operation of the Build Alternative, in combination with impacts from the cumulative projects, will have a beneficial cumulative effect related to parks and recreational facilities.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, or mitigation measures are required.

2.4.3.2 Community Character/Cohesion and Environmental Justice

Resource Study Area

The cumulative RSA for community impacts and environmental justice includes the 17 block groups (BGs) intersecting the project corridor.

Existing Condition and Historical Context

According to the 2012–2016 American Community Survey, the population of the study area was approximately 23,460, representing 2.8 percent of the city's 850,282 residents. Market Street (i.e., the project corridor) is on one of the busiest surface streets in the city, with more than 400,000 people per day traveling the Market Street corridor by transit. The project corridor is densely developed with a variety of urban land uses, and the types and sizes of the businesses in the study area include large office buildings and government buildings in the Financial District and Downtown/Civic Center neighborhoods, small shops and businesses near Octavia Street in the southern end of the study area, and the city's main shopping districts in Union Square, Westfield

Mall, and Yerba Buena Gardens, which support a variety of department stores, hotels, and offices. There are also several parks/plazas, ground-floor retail establishments, restaurants, and Bay Area Rapid Transit (BART)/San Francisco Municipal Transportation Agency (SFMTA, or Muni) stations. The Mid-Market/Tenderloin District contains several landmark hotels as well as commercial and office uses. This district, as well as other districts along the project corridor, also contain some vacant land and empty storefronts. The project corridor contains a number of residents and households, with a lower average household size than the City overall, indicating less families live in the project corridor than in other parts of the City. The housing units in the project corridor are predominately renter-occupied as opposed to owner-occupied, indicating a population that may move apartments more frequently, and there is a high percentage of vacant housing units in the project corridor as compared to the City as a whole.

Minority and low-income populations exist throughout the study area. There is no clear pattern with respect to minority concentrations. Several block groups in the study area have concentrations of certain racial/ethnic groups that are higher than those of the city as a whole. In addition, a number of homeless people may occupy the study area at any given time. With respect to income, U.S. Census Bureau data show that per capita income in the study area varies but is generally lower than that of the city as a whole. The project corridor contains a number of tourist attractions, including Civic Center Plaza and City Hall, United Nations Plaza, San Francisco Public Library, numerous theaters and event venues, Union Square, Yerba Buena Center for the Arts, the San Francisco Museum of Modern Art, Embarcadero Plaza, and the Ferry Building.

Build Alternative Impacts

Construction of the Build Alternative and design option will generate noise and dust, and will temporarily alter loading access areas. The Build Alternative and design option will result in the relocation or removal of some delivery loading zones currently present on Market Street and will create approximately 22 new loading zones, which could be used for deliveries during off-peak hours and for additional bikeway space during off-peak hours. However, while the loading/unloading patterns for businesses will change, the Build Alternative and design option will benefit neighborhoods and businesses by enhancing public transit and access for pedestrian and bicyclists. The Build Alternative and design option will draw visitors by enhancing the pedestrian realm, and encouraging shopping, sight-seeing, and nighttime activities, which will in turn enhance community character. Local residents would also benefit from these improvements, including access to safer bicycle infrastructure and improved transit efficiency. Thus, operation of the Build Alternative and design option will result in a net benefit related to community character and cohesion.

With respect to environmental justice concerns, while there are minority and low-income populations within the project area, the nature of the project will result in similar construction impacts for all population groups within the project corridor and its vicinity. Slightly different impacts will result in CT 012501 BG 2 from off-corridor traffic changes at Eddy and Mason streets and in CT 012501 BG 1 from the sidewalk-level bikeway, street level bicycle lane, F-loop, operator restroom, and ADA-compliant ramp proposed along McAllister Street and Charles J. Brenham Place. While these project elements are unique to these BGs, the scope and scale of construction activities are less than those that would occur elsewhere throughout the project corridor where various project elements are proposed, and avoidance and minimization measures will be implemented to minimize these effects. Therefore, the Build Alternative and design option would not result in a disproportionate adverse effect on environmental justice populations. Furthermore, operation of the

Build Alternative and design option will not change vehicle volumes and will result in a negligible redistribution of vehicles on surrounding roadways and change in VMT, minor changes in vehicle delay and parking, and improvements to transit operations and service, pedestrian accessibility and bicycle facilities, and a reduction in the potential for conflicts between different modes of transportation. The benefits of the Build Alternative and design option will be shared by everyone throughout the study area. As such, the project will not result in disproportionately high or adverse effects on minority and low-income populations.

Cumulative Impacts

Cumulative impacts on community character and cohesion could occur if the projects identified in Appendix D, in combination with the Build Alternative and design option, affect local businesses (e.g., by changes to loading or access to businesses), residents (e.g., by exposure to construction-period noise and dust or temporary access restrictions), or community character (e.g., by shifting travel patterns). As with the Build Alternative and design option, construction activities associated with some of the projects identified in Appendix D will result in temporary nuisances, such as noise and dust, and temporarily alter or disrupt access. However, it is anticipated that most of the projects will not result in permanent effects to local businesses and will likely result in a net benefit to businesses by increasing economic activity and will also benefit residents with an improved streetscape and pedestrian realm, safer bicycle travel, and improved transit efficiency. It is also anticipated that the projects will include other circulation, streetscape, transit, bicycle, and pedestrian improvements that will result in a net benefit to community character and cohesion. Therefore, the projects identified in Appendix D will not result in a cumulative impact in the RSA. The Build Alternative and design option, in combination with the cumulative projects, will result in a beneficial cumulative effect related to community character and cohesion.

Cumulative impacts on environmental justice could occur if the projects identified in Appendix D, in combination with the Build Alternative and design option, result in disproportionately high or adverse effects on minority and low-income populations. Due to the nature of many of the projects, which include circulation, streetscape, transit, bicycle, and pedestrian improvements that will result in a net benefit to the community as a whole, it is anticipated that the combined effects of the projects will be shared by everyone throughout the RSA. Therefore, impacts from construction and operation of the Build Alternative, in combination with impacts from the cumulative projects, will not result in a cumulative impact on environmental justice populations.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to community character and cohesion are minimized under the proposed project: AMM-CI-1, AMM-CI-2, AMM-CI-3, AMM-CI-4, AMM-CI-5, AMM-CI-6, AMM-CI-7, AMM-CI-8, AMM-CI-9, AMM-CI-10, and AMM-CI-11.

2.4.3.3 Utilities/Emergency Services

Resource Study Area

The cumulative RSA for utilities includes the entire city and the cumulative RSA for emergency services includes the emergency service areas for emergency service providers.

Existing Condition and Historical Context

Regarding utilities, water is supplied to the project corridor by the San Francisco Public Utilities Commission's (SFPUC's) regional water system. The local water system distributes and stores water within the city. Recology provides solid waste collection, recycling, and disposal services for residential and commercial clients in San Francisco through its subsidiaries. Collected materials are hauled to the Recology transfer station/recycling center on Tunnel Avenue. Existing utilities along Market Street include a brick sewer line beneath the street, electrical components for the streetcar's overhead contact system (OCS), electrical conduits for the Path of Gold light standards and traffic signals, and other subsurface utilities beneath the right-of-way. Fire hydrants, in addition to the large Auxiliary Water Supply System (AWSS) hydrants, are also located within the project corridor.

Regarding emergency services, the San Francisco Police Department (SFPD) provides police protection services in the city. The project corridor crosses several police districts, including the Central, Tenderloin, Mission, Northern, and Southern Districts. The San Francisco Fire Department (SFFD) provides fire suppression and emergency medical services in the city.

Build Alternative Impacts

The Build Alternative and design option will include relocation or rehabilitation of combined sewer lines and catch basins, water lines, AWSS lines and fire hydrants, Muni traction power duct banks and OCS wires, traffic signal and streetlight electrical lines, and fiber optic lines to maintain a state of good repair and match curb movement. Certain Build Alternative and design option elements, such as construction of the widened center transit boarding islands and bulb-outs, will result in physical changes requiring the relocation or reconstruction of stormwater catch basins, combined sewer lines, and water lines. Operation of the Build Alternative and design option will not substantially increase water demand or wastewater generation, nor will it contribute to significantly increased stormwater generation and/or runoff.

With respect to emergency services, at least one transit travel lane will be maintained in each direction on Market Street during construction of the Build Alternative and design option. Emergency vehicles will be allowed at all times, and therefore emergency vehicle access will be maintained. Operation of the Build Alternative and design option will not impede or hinder emergency vehicles.

Cumulative Impacts

Cumulative impacts on utilities could occur if the projects identified in Appendix D generate growth that has not been accounted for by utility providers and that exceeds existing capacity. The projects will increase demands on water supplies as well as water infrastructure and treatment facilities. However, the SFPUC has incorporated the demand from other development projects in its future water service projections. Citywide water demand is forecast to increase steadily through 2040. However, the increase in wastewater flows will be less than any increase in water demand as a result of compliance with applicable requirements (e.g., LEED standards, California Building Code). The projects will also be required to implement erosion and sediment control plans, in compliance with the applicable regulations regarding wastewater treatment and discharge. Furthermore, it is anticipated that the projects will consist primarily of infill and redevelopment projects, which will not substantially increase the amount of impervious surfaces in the city. Long-range growth

forecasts are considered in the City's planning for future landfill capacity. Therefore, the projects identified in Appendix D will not result in a cumulative impact in the RSA.

Cumulative impacts on emergency services could occur if the projects identified in Appendix D impede emergency vehicles during construction, or generate population and employment growth that increases the number of service calls and creates the need for additional facilities. The projects identified in Appendix D would be bound to the same requirements as the Build Alternative and design option to maintain access for emergency vehicles during construction. Furthermore, it is anticipated that the growth generated by the projects will not exceed the levels anticipated and planned for by the SFFD and SFPD as these agencies plan for long-term population growth based on Citywide growth estimates. Therefore, the projects identified in Appendix D will not result in a cumulative impact in the RSA.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects on utilities and emergency services are minimized under the proposed project: AMM-UT-1, AMM-ES-1, and AMM-ES-2.

2.4.3.4 Visual/Aesthetics

Resource Study Area

The cumulative RSA for visual/aesthetics includes the areas in the vicinity of the project corridor that would have direct views of the proposed project and proposed project activities, during the construction and/or operations phases. Areas in the vicinity that fall within the cumulative RSA include both adjacent and non-adjacent viewers, based on topography, viewing distance, and potential viewshed obstructions.

Existing Condition and Historical Context

The landscape in the project corridor is characterized by gently sloping terrain that is mostly developed with commercial, residential, and urban land uses. Along most of the project corridor, a single row of street trees, in various states of health, is included within the sidewalks on either side of Market Street. The street trees along the project corridor are of varying health. The key factors affecting the health and structural condition of the street trees are microclimate, disease, poor soil environment, and conflicts with infrastructure. Overall, the result is a weak, unattractive street tree population. In addition, the existing brick paving on Market Street sidewalks does not meet federal standards regarding traction or joints for pedestrian access routes, which cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes. Open spaces generally consist of paved urban plazas with seating areas and landscaping.

Within the project corridor, there are scenic focal-point views toward the Embarcadero, Embarcadero Plaza, Harry Bridges Plaza, and the Ferry Building at the northeast end and Twin Peaks at the southwest end. While there are no scenic vistas within the project corridor because urban development has confined the views, the project corridor includes portions of ten historic districts with architecture and streetscape elements that contribute to the visual landscape along Market Street. The corridor also provides views of urban plazas and public art, features (e.g., fountains), and monuments.

Build Alternative Impacts

Build Alternative and design option construction activities will occur linearly in different locations along Market Street for an extended duration of time. Nighttime construction will be required in some non-residential project areas. In places where nighttime construction will occur, outdoor lighting sources such as floodlights, spotlights, and/or vehicle headlights will be used to maintain site safety, resulting in nighttime lighting effects throughout the duration of Build Alternative and design option construction. Increased nighttime lighting effects will occur over the duration of construction of the Build Alternative and design option. However, construction lighting will be focused on the particular area undergoing work. Construction will result in some disruptive effects, however these will be limited to the duration of construction.

Physical elements of the Build Alternative and design option will be consistent with the existing urban environment and the type and scale of the existing transportation facilities within the project corridor. All other physical improvements constructed as part of the Build Alternative will be at or below grade and will not affect views. As such, the Build Alternative will have a negligible permanent change on street views from Market Street as well as surrounding streets. Furthermore, although all existing street trees will be removed, new street trees will be planted in a new alignment within the furnishing zone, compliance with the established guidelines will ensure that the goal of optimizing the public benefits of the trees will be achieved with minimal effects.

Cumulative Impacts

Cumulative impacts on visual/aesthetics could occur if the projects identified in Appendix D, in combination with the Build Alternative and design option, obstruct scenic vistas, affect scenic resources, result in a substantial adverse effect on the existing visual character or quality of the public realm (e.g., an office tower that blocks views or is architecturally different in character from existing development), or increase the potential for light and glare. Although construction impacts associated with the Build Alternative and design option and other projects may result in temporary visual and aesthetic effects, these impacts will temporary and may not overlap with each other in location or time. It is anticipated that any tree removals associated with the projects will be protected or replaced, pursuant to the Urban Forestry Ordinance, which governs the protection of trees. The projects may add to ambient atmospheric lighting and glare in the area by infilling unlit areas with lit buildings and roadways, however these projects are likely to be required to follow most or all of the same design guidelines and policies that the Build Alternative and design option, which collectively aim to reduce unnecessary light and glare. Therefore, impacts from construction and operation of the Build Alternative and design option, in combination with impacts from the projects identified in Appendix D, will not result in a cumulative impact in the RSA related to visual/aesthetics.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are required.

2.4.3.5 Cultural Resources

Resource Study Area

The cumulative RSA for cultural resources includes the built environment and the archaeological Areas of Potential Effects (APEs) (Figure 2.1.6-1).

Existing Condition and Historical Context

There are six built environment resources located in the built environment APE that are listed in the NRHP. An additional 140 built environment resources within the APE were determined eligible for listing in the NRHP or have been assumed eligible by Caltrans for the purpose of this project only.

Fourteen known archaeological resources were identified within or directly adjacent to the archaeological APE. These resources include CA-SFR-28 (P-38-000028), CA-SFR-127H (P-38-000126), CA-SFR-156H (P-38-004362), CA-SFR-157H (P-38-004363), the Yerba Buena Cemetery (no trinomial), the Panama, the Byron, the Callao, the Autumn, the Galen,, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf. Three of these resources (CA-SFR-28, CA-SFR-156H, and CA-SFR-157H) are no longer extant due to removal during field investigations. The Rome, a feature associated with CA-SFR-127H (P-38-000126), was identified at 30 feet (9 meters) below ground surface.

The boundary of the Yerba Buena Cemetery intersects the archaeological APE in two locations: at United Nations Plaza and along the length of Charles J. Brenham Place. No intact portions of the Yerba Buena Cemetery are believed to exist within the archaeological APE at United Nations Plaza due to the 1970s construction of the Civic Center BART station, which excavated a trench 80- to 100-feet deep by 61-feet wide along Market Street and into United Nations Plaza. However, historic documentation indicates that intact deposits associated with Yerba Buena Cemetery could be present within the archaeological APE along Charles J. Brenham Place between 10 to 25 feet below ground surface. Artificial fill has been identified up to 8 feet below ground surface.

The San Francisco National Maritime Historical Park published a map in 2017 that depicts the possible locations of buried shipwrecks and wharves within downtown San Francisco. This map identified nine resources (the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf) within the archaeological APE. However, the locations depicted in the map have not been verified and none of the potential resources listed above have been the subject of archaeological investigations. Extensive excavation associated with the construction of BART is believed to have removed a portion or all of six of these resources (the Panama, the Byron, the Callao, the Autumn, the Galen, and the Market Street Wharf). However, these potential resources may exist within the archaeological APE at unknown depths. Additionally, three of these resources (the California Street Wharf, the Main Street Wharf and the Stuart Street Wharf) have not been subject to archaeological investigation and may still exist within the archaeological APE at unknown depths.

Build Alternative Impacts

Construction of the Build Alternative will adversely affect the Market Street Cultural Landscape District, but not any other cultural resources in the APE. The Better Market Street Project will result in incompatible alterations to many of the character-defining features of the Market Street Cultural

Landscape District related to its significant association with the Market Street Redevelopment Plan designed by master designers Halprin, Ciampi and Warnecke, including the following:

- Small plazas and associated street furniture located within the sidewalks
- Red brick paving in a herringbone pattern in the sidewalks
- London plane street trees (*Plantanus acerifolia*)
- Cluster arrangement of the street trees
- Bronze tree grates
- Vertical circulation features at Civic Center Muni/BART station
- Granite bollards with chain links located within the sidewalks
- Bronze Muni/BART elevators
- Square and circular pole-mounted street signs
- Semaphore-style traffic signage and signal lights

Because the Market Street Cultural Landscape District is eligible for listing in the NRHP under Criterion C due to the significance of the Market Street Redevelopment Plan streetscape design, the proposed project's alteration of the character-defining features listed above will constitute an adverse change to the Market Street Cultural Landscape District for this area of significance. However, the Proposed Project would not alter character-defining features related to the Market Street Cultural Landscape District's significance under NRHP Criterion A (as San Francisco's main circulation artery and facilitator of urban development and as a venue for civic engagement), such that the district would not experience an adverse effect under these areas of significance.

Several built environment historic properties within the public right-of-way or containing contributing elements that extend into the public right-of-way will experience minor modifications. These include the Civic Center Landmark District, United Nations Plaza, Bay Area Rapid Transit (BART) District, Auxiliary Water Supply System (AWSS), and Crown Zellerbach Complex. The modifications will not diminish the integrity of the resources overall or affect their eligibility for NRHP listing.

Project-related excavation proposed within the resource boundary will extend to up to 15 feet below ground surface, which could extend beyond the previous level of disturbance in the vicinity of Charles J. Brenham Place. Thus, ground disturbance associated with the proposed utility rehabilitation/replacement along the proposed F-loop (on Charles J. Brenham Place) could encounter intact portions of Yerba Buena Cemetery. The Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf may exist within the archaeological APE at unknown depths. Therefore, project-related ground disturbance has the potential to encounter these potential resources. In addition, five locations where archaeologically sensitive deposits are within the vertical archaeological APE have the potential to be affected by proposed project excavation. The Build Alternative and design option operation will not have the potential to affect other known archaeological resources or built historic resources.

Cumulative Impacts

Cumulative impacts on cultural resources could occur if the projects identified in Appendix D, in combination with the Build Alternative and design option, have or will propose changes to character-defining features that convey the significance of the Market Street Cultural Landscape District or other historic properties, or require excavation activities that encounter archaeological resources or human remains.

The projects listed in Appendix D generally involve new construction and modifications of existing buildings, both within and outside of known historic districts, as well as improvements to transportation and streetscape systems and features. The projects may propose changes to character-defining features that convey the significance of the historic districts and additional historic properties in the built environment APE, which could result in a cumulative impact in the RSA.

Although the Build Alternative would remove or alter many of the character-defining features that justify the Market Street Cultural Landscape District's inclusion in the NRHP under Criterion C, the property would still retain numerous character-defining features that support its NRHP eligibility under Criterion A. These include the following: Market Street's alignment as an axis; its grid alignment and linear plan; the presence of multi-modal transportation systems; the presence of sidewalks, roadways, rails, and other transit infrastructure; the presence of landmark buildings and verticality of the streetscape; sight lines down its axis; small-scale features such as the AWSS fire hydrants; its arrangement of plazas; and replica Path of Gold light standards and other monuments. These character-defining features generally relate to Market Street's overall spatial arrangement and the physical characteristics that support transportation and civic uses. Broadly speaking, the land use plans and development and transportation projects identified in Appendix D, considered together with the Build Alternative, would reinforce the overall spatial configuration of the Market Street Cultural Landscape District. Alterations that would occur to the district would include improvements to transportation infrastructure, relocation of some AWSS fire hydrants, reconstruction of Path of Gold light standards, and the potential replacement of some landmark buildings along the length of Market Street. However, these projects would result in new physical changes within a continuum of modifications to the Market Street corridor and downtown San Francisco over time, which have not substantially diminished the Market Street Cultural Landscape District's ability to convey its significance under Criterion A. As a result, the Market Street Cultural Landscape District would not experience a cumulative impact under this area of significance as a result of the Build Alternative, including the design option, and other projects.

Additionally, built environment historic properties within the public right-of-way or containing contributing elements that extend into the public right-of-way have the potential to experience cumulative impacts. The Civic Center Public Realm Plan is currently under design development, but preliminary designs include alterations to character-defining features of United Nations Plaza, which is individually eligible for listing in the NRHP and also contributes to the Civic Center Landmark District. Because the character-defining spatial arrangement, views, and features (such as the plaza's prominent fountain) that contribute to the significance of United Nations Plaza are anticipated to be altered following the implementation of the Build Alternative and the Civic Center Public Realm Plan, it is expected that United Nations Plaza and the Civic Center Landmark District would experience a cumulative impact that is adverse to both properties. However, in comparison to the alterations caused by the Civic Center Public Realm Plan, the Build Alternative would be responsible for relatively minor modifications to each of these complex historic properties, involving the

removal of granite curbing and inlaid bands, replacement of areas of brick paving, the reconstruction of Path of Gold light standards, and the relocation of the BART/Muni Civic Center Station elevator. The Build Alternative would alter features within limited areas of United Nations Plaza and the Civic Center Landmark District, in comparison to the more geographically expansive scope of the Civic Center Public Realm Plan. As such, the contribution of the Build Alternative to the cumulative impact on United Nations Plaza and the Civic Center Landmark District would not be significant. Furthermore, the Build Alternative and other projects—including the Hub Plan, 30 Van Ness Avenue Project, 98 Franklin Street Project, and Hub Housing Sustainability District—propose to relocate AWSS fire hydrants located within the public right-of-way. These projects acting in tandem would relocate a greater number of AWSS fire hydrants than the Build Alternative alone. However, the combined result of these projects would relocate or, in select instances, remove a small number of hydrants of a total number of approximately 1,600 such hydrants located across San Francisco. The AWSS would remain in operation in the manner in which it was historically intended (i.e., pressurized water from higher-elevation storage facilities, with multiple redundancies, is delivered to hydrants in the event of local pipe failure), and the Build Alternative combined with other projects would not be expected to alter this citywide fire suppression system to the extent that it would sustain an adverse effect. Therefore, there would be no cumulative impact to the AWSS.

The BART Market Street Canopies and Escalators Modernization Project would involve the installation of canopy covers over 22 of the Downtown San Francisco BART/Muni station entrances/exits along Market Street, and may involve limited changes to the original features of the BART/Muni station portals at street level. However, the BART Market Street Canopies and Escalators Modernization Project would not alter underground features of the BART District, including the station concourses, platforms, and tunnels that comprise the large majority of elements that convey the significance of this expansive historic district. When the BART Market Street Canopies and Escalators Modernization Project is considered in tandem with the Build Alternative, which would relocate one BART/Muni station elevator that is not understood to be significant, the BART District would not experience a cumulative impact.

None of the projects identified in Appendix D would alter character-defining features of the Crown Zellerbach Complex, such that there would be no cumulative impact to this historic property.

Some of the projects may occur in the vicinity of known archaeological resources, including Yerba Buena Cemetery, as well as the five ships (the Panama, the Byron, the Callao, the Autumn, and the Galen) and four wharves (the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf) identified on the San Francisco Maritime Historical Park 2017 Map. Projects may also occur in locations with higher sensitivity with respect to yielding currently unknown archaeological resources, including both human remains and tribal cultural resources. However, archaeological discovery and treatment measures are anticipated to be conditions of approval for the projects listed in Appendix D, which would avoid or minimize impacts to these resources and therefore avoid a cumulative impact.

Due to the project elements described above and the resulting demolition of character-defining features that convey the Market Street Cultural Landscape District's significance under NRHP Criterion C, the proposed project will result in diminished integrity of the resource and affect the district's eligibility for the NRHP. However, impacts from construction and operation of the Build Alternative and design option, in combination with impacts from the cumulative projects, will not make significant contributions to identified cumulative impacts to United Nations Plaza and the Civic Center Landmark District. No other cumulative impacts to cultural resources are identified.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to cultural resources are minimized under the proposed project: AMM-CUL-1, AMM-CUL-2, and AMM-CUL-3 and AMM-CUL-4.

2.4.3.6 Water Quality and Stormwater Runoff

Resource Study Area

The cumulative RSA for water quality and stormwater runoff includes the Channel and Northshore watersheds and the Downtown Groundwater Basin.

Existing Condition and Historical Context

Stormwater runoff within the combined sewer system is treated at the Southeast Treatment Plant before discharging to San Francisco Bay. Water quality impairments in central San Francisco Bay, the area the Southeast Treatment Plant discharges to, include chlordane, dichlorodiphenyltrichloroethane, dieldrin, dioxin compounds (including 2,3,7,8-TCCD), furan compounds, invasive species, mercury, polychlorinated biphenyls (including dioxin-like), selenium, and trash. Existing beneficial uses of the Downtown Groundwater Basin include municipal and domestic water supply as well as agricultural water supply, with potential uses that include industrial process water supply and industrial service water supply.

Build Alternative Impacts

Construction of the Build Alternative and design option will require the use of fuels and other potentially hazardous materials that, if spilled and uncontained, would release such materials to the environment. If such materials entered waterbodies (manmade or natural), water quality degradation would occur. Water quality degradation may also occur due to erosion and sedimentation, which commonly occur as a result of ground-disturbing construction activities.

During operation, the Build Alternative and design option will not change the amount of surface permeability relative to existing conditions, will not alter topography of the area, and will not change groundwater recharge rates, therefore it would not increase runoff, erosion, siltation, and groundwater discharge. In addition, the Build Alternative and design option will implement low-impact development best management practices, which will reduce the discharge of contaminants to the combined sewer system.

Cumulative Impacts

If Build Alternative and design option construction activities, in combination with construction activities required for any of the projects identified in Appendix D, were to result in accidental releases of hazardous materials into waterbodies or were to pollute waterbodies with sediment, a cumulative impact on water quality could result. However, most of the cumulative projects identified in Appendix D must adhere to similar requirements as the Build Alternative and design option, including a Stormwater Control Plan and a SWPPP, a cumulative impact on water quality from construction of these projects is not anticipated to occur.

With respect to operation, the RSA is a highly developed urban area that consists primarily of paved surfaces. Stormwater within the RSA is discharged to the combined sewer system, reducing the

potential for contaminants to be discharged to natural waterbodies. Impacts from operation of the projects listed in Appendix D, in combination with impacts from the Build Alternative and design option, are not anticipated to substantially change the permeability of existing surfaces, topography, or groundwater discharge rates relative to existing conditions. Therefore, a cumulative impact on water quality from operation is not anticipated to occur.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that project effects related to water quality and stormwater runoff will be minimized: AMM-WQ-1, and AMM-WQ-2.

2.4.3.7 Geology/Soils/Seismic/Topography

Resource Study Area

The cumulative RSA for geology, soils, seismic, and topography concerns includes the project corridor.

Existing Condition and Historical Context

Regarding primary seismic hazards, the project corridor is underlain primarily by unconsolidated artificial fill and dune sand, with historic high groundwater levels ranging from 6 to 32 feet below the ground surface. The fault nearest the project corridor is the northern segment of the San Andreas fault, located approximately 7 miles west of the project corridor. Given the project corridor's proximity to the northern segment of the San Andreas fault, the potential exists for strong seismic ground shaking along the project corridor during an earthquake event.

Regarding secondary seismic hazards, according to the Seismic Hazard Zones Map for San Francisco, which illustrates areas that are subject to liquefaction, a large portion of the project corridor is within an area that has been mapped as a liquefaction hazard zone. The project corridor is underlain primarily by unconsolidated artificial fill and dune sand within a highly developed urban area. The soil materials underlying the project corridor consist primarily of artificial fill of varying composition and dune sand. The dune sand is primarily fine-grained sand, which is not expansive.

Build Alternative Impacts

Construction of the Build Alternative and design option will be required to meet the requirements of the San Francisco Building Code and the California Building Code and the construction contractor will be required to prepare and implement a SWPPP. Furthermore, all construction, including engineered fills, will comply with Caltrans' Standards and Specifications. These measures and design standards will avoid or minimize impacts related to liquefaction, erosion, and expansive soils Although the potential for seismic ground shaking and ground failure within San Francisco is unavoidable, improvements to, and the redesign of, existing transportation, streetscape, and utility infrastructure will generally not create new seismic hazards for people or structures during operation. Compliance with seismic design standards, as part of the Public Works permitting process, and design specifications will ensure that the potential for damage from seismic activity will be minimized during construction and operation of the Build Alternative and design option.

Cumulative Impacts

Geology, soils, seismic, and topography are generally site specific and highly localized. It is anticipated that the projects identified in Appendix D will be required to comply with State and local regulations and design standards to reduce risks related to strong ground motion, liquefaction, slope instability, or seismic settlement during construction. These regulations and design standards are effective in minimizing the risk from seismic events, and avoiding or minimizing impacts related to geology and soils. Therefore, impacts from the projects identified in Appendix D, in combination with impacts from the Build Alternative and design option, will not result in a cumulative impact.

Avoidance, Minimization, and/or Mitigation Measures

No avoidance, minimization, and/or mitigation measures are required.

2.4.3.8 Hazardous Waste/Materials

Resource Study Area

The cumulative RSA for hazardous waste/materials includes the project corridor, the neighborhoods surrounding the project corridor and the neighborhoods of the projects listed in Appendix D.

Existing Condition and Historical Context

No visual signs of soil discoloration or surface contamination were observed during a field survey of the project corridor. Nothing at the ground surface was observed that would indicate issues belowground. Aerially deposited lead (ADL), which is often found in the surface and near-surface soils along roadways because of the historical use of tetraethyl lead in motor vehicle fuels, could be present within the project corridor. Additionally, Caltrans studies have identified that painted yellow/white thermoplastic striping (pre-2005) and markings (pre-1997) may contain elevated lead and chromium levels; yellow and white traffic striping and markings are located within the project corridor.

Three sites were identified in a database search as known recognized environmental conditions (PRECs) and three sites were identified as historical recognized environmental conditions (HRECs). Two of the HRECs, both of which were formerly used for lead production and may be potential sources of lead contamination in the soil and/or groundwater within the project corridor, are located along Market Street (Northwest Lead Co. at 444 Market Street and Bunker Hill Co. at 660 Market Street), with the third HREC located outside of the project corridor at 405 Montgomery Street. All three PRECs are located outside of the project corridor at 395 Grant Street, 101 Polk Street, and 150 Turk Street.

Build Alternative Impacts

There is minimal potential for exposure of humans to hazardous materials, including soil and groundwater contamination, previously unknown hazardous materials, and other hazardous conditions, during construction of the Build Alternative and design option. No impact would occur during operation of the project as the transportation, handling, and disposal of hazardous materials will be consistent with applicable laws and regulations, including regulations enforced by San

Francisco Municipal Transportation Agency and California Division of Occupational Safety and Health, which will avoid or minimize impacts.

Cumulative Impacts

It is anticipated that the construction and operation of the projects identified in Appendix D, in combination with the Build Alternative and design option, will be required to comply with State and local regulations and design standards pertaining to the exposure of humans to hazardous materials and seismic hazards. These regulations are effective in minimizing the risk of exposure to hazardous materials and seismic events. Therefore, impacts from the projects identified in Appendix D, in combination with impacts from the Build Alternative and design option, will not result in a cumulative impact with respect to the exposure of humans to hazardous materials and seismic events.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to hazardous wastes and materials are minimized under the proposed project: AMM-HAZ-1, AMM-HAZ-2, AMM-HAZ-3, and AMM-HAZ-4.

2.4.3.9 Air Quality

Resource Study Area

The RSA for the analysis of potential cumulative air quality affects consists of the San Francisco Bay Area Air Basin (SFBAAB), including the City and County of San Francisco. Areas in the vicinity of construction activities, especially those with sensitive receptors, may be more susceptible to cumulative air quality affects.

Existing Conditions

Existing air quality conditions in the project area can be characterized in terms of the ambient air quality standards that the federal and state governments have established for various pollutants. For some pollutants, separate standards have been set for different measurement periods. Most standards have been set to protect public health. For some pollutants, the standards are based on other values (e.g., protection of crops, protection of materials, avoidance of nuisance conditions). The project area (San Francisco County) is in State and Federal (where applicable) attainment for carbon monoxide, nitrogen dioxide, sulfur dioxide, sulfates, and lead. The project area is in State nonattainment but federal attainment for PM10 and both state and federal nonattainment for ozone. State attainment for both hydrogen sulfide and visibility-reducing particles is unclassified. The nearest air quality monitoring station to the project corridor that reported pollutant concentrations between 2015 and 2017 is the Arkansas Street monitoring station (ARB ID 90306/ EPA AQS 060750005), approximately 1.5 miles south of the project corridor. In 2017, this station identified several violations of the PM10 and PM2.5 standards. No other violations occurred during the three-year monitoring period.

There are numerous sensitive receptors located along the project corridor. Sensitive receptors are identified as residences, recreational facilities (including parks and plazas), day care facilities, schools, and religious facilities.

Construction

Build Alternative

Construction of the Build Alternative and design option will generate TACs, but will not expose sensitive receptors to substantial quantities of these compounds. However, construction activities will emit approximately 192 pounds of NO_X daily, a quantity in excess of permitted emissions thresholds. Because the Build Alternative and design option will be constructed in an area that currently has poor air quality, any additional air quality degradation within this area will contribute cumulatively to further air quality degradation.

Operations

Build Alternative

Operation of the Build Alternative will overall encourage pedestrian, bicycle, and transit use within the RSA and throughout the city as a result of improvements to transit operations and bicycle and pedestrian facilities. Additionally, it will not induce or generate new vehicle trips that would result in a substantial increase in VMT or associated criteria pollutant emissions.

Cumulative Impacts

A project's air emissions contributions are by nature a cumulative effect within the project's respective regional air basin. If a project's emissions are below the project-level thresholds, the project will not be considered to contribute considerably to any cumulative air quality impacts. Such impacts can occur during project construction due to emissions from diesel construction equipment use and from fugitive dust generated during ground-disturbing activities. If multiple past, present, and reasonably foreseeable projects involve concurrent construction activities, emissions resulting from construction activities can lead to localized or regional air quality degradation. Cumulative air quality impacts can also occur over time during the operational phase due to anticipated greenhouse gas emissions from diesel- and gas-powered vehicle operation. Combined emissions from multiple operational past, present, and reasonably foreseeable projects operating in close proximity can also lead to localized or regional air quality degradation.

It is expected that construction of the present, and reasonably foreseeable projects identified in Appendix D, in combination with the Build Alternative and design option, will require substantial ground-disturbing activities, such as development projects and some additional transportation projects. These projects could independently degrade air quality through the use of diesel construction equipment and through earthmoving, which will generate fugitive dust. SFMTA and the City's commitment to implement off-road Tier 3 or 4 final emissions standards will reduce Project emissions to within permissible levels, including a reduction of NO_X emissions from 192 pounds daily to 51 pounds daily.

However, construction of the Build Alternative and design option, in combination with past, present, and reasonably foreseeable projects requiring similar construction activities, could still contribute to cumulative air quality effects if multiple construction activities for multiple projects, including the Build Alternative and design option, occur concurrently and in the same vicinity; these activities, in combination, could result in air quality threshold exceedances. Therefore, construction of the Build Alternative and design option, in combination with the projects identified in Appendix D, will result

in a cumulative impact on regional air quality. The contribution of the Build Alternative and design option will be cumulatively considerable.

Numerous past, present, and reasonably foreseeable projects identified in Appendix D will improve transit, bicycle, and pedestrian infrastructure, resulting in operational reductions in pollutant emissions when compared to current conditions. Therefore, because the Build Alternative and design option, as well as numerous past, present, and reasonably foreseeable cumulative projects, will divert individuals from private vehicles into alternative transit modes, Build Alternative and design option operations will result in a reduction in pollutant emissions, and contribute to a subsequent beneficial cumulative effect with respect to air quality.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects related to air quality are minimized under the proposed project: AMM-AQ-1, and AMM-AQ-2.

2.4.3.10 Noise

Resource Study Area

The RSA for cumulative noise effects is the project corridor, and the surrounding vicinity, including all cumulative projects identified in Appendix D, located along Market Street, as well as north and south of Market Street.

Existing Conditions

The project corridor is in a densely developed urban area, consisting almost entirely of mid- to high-rise structures. The existing noise environment is largely dominated by surface transportation noise from bus, automobile, and truck traffic as well as fixed-guideway electric trolley operations. BART, SFMTA, and the San Francisco Municipal Railway (Muni) contribute vibration (and related ground-borne noise) in the vicinity. Noise- and vibration-sensitive receptors in the project corridor are buildings or land uses where the occupants would be affected or annoyed by noise and/or vibration, residences, lodging, hospitals, schools, libraries, museums, places of worship, and auditoriums/theater spaces.

Overall, the project corridor has a substantial amount of existing noise, primarily resulting from transportation activity. Noise monitoring conducted between April 30 and May 1, 2018 measured fairly uniform noise levels along Market Street, with L_{dn} values ranging from 73 to 77 dBA at four long-term monitoring sites. During long-term noise monitoring, hourly noise levels rarely fell below 65 dBA. L_{dn} values at the short-term locations ranged from 69 dBA to 77 dBA, with the hour-by-hour variation covering a range of 9-14 dB depending on the location.

A vibration measurement survey was conducted on April 19, 2018 to characterize the existing vibration environment along Market Street. At all locations, the highest vibration was caused by SFMTA streetcars. Vibration levels varied with the different streetcars because of the speeds, vehicle suspension systems, and/or wheel conditions, among other factors. The measurements were conducted at the curb and nearby façades.

Construction

Build Alternative

Construction activities required for the Build Alternative and design option will require use of heavy equipment (bulldozers, excavators, drills, etc.), all of which will contribute to elevated noise levels. Noise levels generated during Build Alternative and design option construction will vary, depending on the equipment type, duration of use, distance between noise source and listener, and the presence or absence of barriers during each construction stage. Build Alternative and design option construction will be linear and will last for approximately seven months at any given location during the outside/curb lane stage and approximately 10 months at any given location.

Operations

Build Alternative

During operation, it is expected that traffic noise levels with implementation of the Build Alternative and design option will decrease at some roadway segments and increase at others. The maximum anticipated roadway noise increases for 2020 and 2040 build conditions are expected to be 2.2 dBA and 2.4 dBA, respectively, which is below the limit of perceptible change in noise levels (3 dBA). Similarly, project-related noise levels due to streetcar operations will result in a noise-level increase of up to 2.1 decibels compared to existing noise levels along the project corridor. However, this maximum increase of 2.1 decibels in streetcar noise is below the limit of perceptibility.

Operation-related vibration effects from changes to the location of the F-line alignment and the addition of the F-loop would not result in annoyance or building damage.

Cumulative Impacts

Most projects identified in Appendix D that will involve construction activities are development projects, which will require continuous construction activities at a specific project site for the duration of the cumulative project's construction phase. Build Alternative and design option construction activities occurring simultaneously with construction activities required for present, and reasonably foreseeable projects within a shared vicinity could exceed permitted noise thresholds, which would result in a cumulative impact. The contribution of the Build Alternative and design option to this cumulative impact is cumulatively considerable due to the overall length of the construction schedule for the proposed project and the moderate potential for overlapping construction activities that could result in elevated noise levels.

The projects identified in Appendix D are primarily residential, retail, and commercial office development projects, and therefore operation of these projects is not expected to generate substantial noise emissions in the area that, in combination with the proposed project, will result in a cumulative impact. Additionally, past, present, and reasonably foreseeable projects that include improvements to public transit and the pedestrian/bicyclist network in the project vicinity will collectively reduce traffic noise generated by private single-occupancy vehicle use in the RSA. It is expected that these projects, in combination with the Build Alternative and design option, will result in overall reductions in noise along Market Street and the surrounding vicinity. Therefore, cumulative operation noise impacts will not occur.

Construction and operation-related cumulative vibration effects of the Build Alternative and design option would not result in annoyance or building damage. Although the actual occurrence and timing of vibration-generating construction activities would vary, multiple simultaneous project construction activities would have to be conducted within very close proximity of each other to exceed the threshold for continuous or frequent intermittent sources to result in physical damage or annoyance. Therefore, a cumulative vibration impact would not occur.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that noise and vibration effects are minimized under the proposed project: AMM-NOI-I and AMM-NOI-2.

2.4.3.11 Biological Environment

Resource Study Area

The cumulative RSA for biological resources includes the project corridor and the neighborhoods surrounding the project corridor.

Existing Condition and Historical Context

The cumulative RSA is absent of suitable habitat (e.g., scrub, vernal pool, cliff, alkaline soil, riparian, wetland, chaparral, marsh, river and stream habitat). In addition, it includes an unsuitable elevation, lack of habitat connectivity to source populations, and is heavily developed.

Build Alternative Impacts

Construction of the Build Alternative and design option will require vegetation removal and trimming, including the removal of all existing street trees along the project corridor. Vegetation that will be removed or trimmed during construction could support nesting bird species. Disturbance such as habitat removal, as well as construction noise and light disturbance, could adversely affect avian species. However, avoidance and minimization measures focused on nesting bird protection will avoid or minimize impacts during construction of the Build Alternative and design option.

Operation of the Build Alternative and design option will not introduce new sources of disturbances to nesting bird species beyond those already present along Market Street.

Cumulative Impacts

Past, present, and reasonably foreseeable projects that will also require vegetation trimming or removal, or construction activities that could interfere with avian behavior through excessive noise and/or lighting, which in turn could result in similar effects as those of the Build Alternative and design option. Collectively, vegetation removal and disruptive construction activities for both the Build Alternative and design option in concert with the projects identified in Appendix D will be avoided or minimized due to the measures for nesting bird protection.

Additionally, while some of the past, present, and reasonably foreseeable projects could include glass features that may present avian hazards, the Build Alternative and design option will not

include the installation of such materials, and therefore will not contribute cumulatively to this impact.

Avoidance, Minimization, and/or Mitigation Measures

The following AMMs will ensure that effects on animal species of concern are minimized under the proposed project: AMM-BIO-1, AMM-BIO-2, AMM-BIO-3, and AMM-BIO-4.

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Chapter 3
Comments and Coordination

3.1 INTRODUCTION

Early and continuing coordination with the general public and public agencies is an essential part of the environmental process. It helps planners determine the necessary scope of environmental documentation and the level of analysis required, and to identify potential impacts and avoidance, minimization, and/or mitigation measures and related environmental requirements. Agency and tribal consultation and public participation for this project have been accomplished through a variety of formal and informal methods, including interagency coordination meetings, public meetings, public notices, Project Development Team (PDT) meetings, phone calls, and letters. This chapter summarizes the results of Caltrans and the City and County of San Francisco's efforts to fully identify, address, and resolve project-related issues through early and continuing coordination. Copies of agency correspondence are included in Appendix E.

3.2 SCOPING PROCESS

A formal scoping process is a required feature of environmental review for an Environmental Impact Statement, but it is not required for an EA. However, a scoping process that involved consultation with agencies and other interested parties to provide input on the focus of the project and environmental analysis was conducted as part of the environmental review pursuant to CEQA. The CEQA scoping process is separate from this EA, however input received during the CEQA process informed the focus of the project. A summary of agency and stakeholder engagement for the CEQA environmental process follows.

In January 2015, the San Francisco Planning Department issued a notice of preparation (NOP) for an environmental impact report (EIR) as well as a notice for a public scoping meeting. The notices were circulated to each responsible and trustee agency to indicate the intention of the environmental planning division of the San Francisco Planning Department to prepare an EIR for the proposed project. In accordance with chapter 31 of the San Francisco Administrative Code, notices were published in the newspaper, circulated to owners of all real property, and, to the extent practicable, distributed to residential occupants within 300 feet of all exterior boundaries of the project corridor. Notices were also distributed to organizations on the San Francisco Planning Department's neighborhood organization list and individuals who requested notification. The notice of availability for the NOP was distributed to more than 6,500 addresses. Copies of the NOP were placed in the main library of the San Francisco Public Library system. The notice of availability for the NOP was provided in English, Spanish, Chinese, and Filipino.

A public scoping meeting was conducted on Wednesday, February 4, 2015, at 5:30 p.m. at 1455 Market Street. Oral and written comments concerning the scope of the EIR were accepted at this meeting. Written comments also were accepted at the San Francisco Planning Department until February 13, 2015. Twenty-two people attended the scoping meeting. Eight written comment were submitted, identifying concerns relative to roadway configuration, private vehicle access, traffic signals, surface transit, pedestrian/bicycle facilities, and commercial and passenger loading.

The notice of availability for the initial study as well as the initial study prepared for the proposed project were published on March 30, 2016. The initial study examined the project to identify its potential effects on the environment.

At least 44 events were held with various stakeholder groups between 2014 and 2018 as part of the environmental review phase up through publication of the Draft EIR prepared for the proposed project, including two public meetings held in March 2018 to present the refined proposal to the public. No further CEQA documentation for the Market Street Project is anticipated.

3.3 CONSULTATION AND COORDINATION WITH PUBLIC AGENCIES

This section summarizes the results of contact and consultation with other public agencies which was conducted specifically for this EA. These include specific consultation with federal, state, and local agencies listed below. Copies of written consultation with agencies are included in Appendix E unless otherwise noted.

AC Transit
Attn: Linda Morris
1600 Franklin Street
Oakland, CA 94612

Amtrak
401 I Street
Sacramento, CA 95814

Association of Bay Area Governments
Attn: Therese McMillan, Executive Director
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

Bay Area Air Quality Management District
Attn: Katie Rice
375 Beale Street Suite 600
San Francisco, CA 94105

Bay Area Rapid Transit (BART)
Attn: Val Menotti
300 Lakeside Drive, 16th Floor
Oakland, CA 94612

California Integrated Waste Management Board
Permitting & Inspection Branch, MS #15
Attn: Reinhard Hohlwein
1001 I Street
P.O. Box 4025
Sacramento, CA 95812-4025

California Integrated Waste Management Board
Permitting & Inspection Branch, MS #15
Attn: Sue O'Leary
1001 I Street
P.O. Box 4025
Sacramento, CA 95812-4025

California Public Utilities Commission
505 Van Ness Avenue
San Francisco, CA 94102

Caltrans
Division of Aeronautics, MS 40
1120 N Street, Suite 3300
P.O. Box 942874
Sacramento, CA 94274-0001

Caltrans
Attn: Patricia Maurice, District Branch Chief
111 Grand Avenue, MS-10D
Oakland, CA 94612-3717

Caltrans
Attn: Sherie George
111 Grand Avenue
Oakland, CA 94612

Caltrans
Attn: Patricia Maurice
111 Grand Avenue
Oakland, CA 94612

City and County of San Francisco Planning Department
Attn: PIC County
1650 Mission Street, 1st Floor
San Francisco, CA 94103

City and County of San Francisco
San Francisco Real Estate Department
Attn: John Updike, Director or Real Estate
25 Van Ness Avenue, Suite 400
San Francisco, CA 94102

City of Daly City
Wastewater Treatment Plant
Attn: Dennis Baker, Chief of Operations
153 Lake Merced Boulevard
Daly City, CA 94015

Department of Building Inspection
Attn: Tom C. Hui, Director
1660 Mission Street, 6th Floor
San Francisco, CA 94103

Golden Gate Bridge Highway and Transportation District
Attn: Ron Downing, Director of Planning
1011 Anderson Drive
San Rafael, CA 94901

Governor's Office of Planning and Research
State Clearinghouse
1400 Tenth Street
Sacramento, CA 95814

Local Development-Intergovernmental Review
111 Grand Avenue, MS-10D
Oakland, CA 94612-3717

Mayor's Office of Economic Development
Attn: Director
1 Dr. Carlton B. Goodlett Place, City Hall, Room 448
San Francisco, CA 94102-4689

Mayor's Office of Housing and Community Development
Attn: Eugene T. Flannery, Environment Compliance Manager
1 South Van Ness Avenue, 5th Floor
San Francisco, CA 94103

Metropolitan Transportation Commission
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

National Park Service
Attn: Lauren Joss, General Superintendent
Fort Mason, Building #201
San Francisco, CA 94123

Police Department
Planning Division Hall of Justice
Attn: Tim Falzey, Captain
850 Bryant Street, Room 500
San Francisco, CA 94103

Recreation and Park Department
Capital and planning Division
Attn: Stacy Bradley, Deputy Director of Planning
30 Van Ness Avenue, 3rd Floor
San Francisco, CA 94102

Regional Clearinghouse Coordinator
Attn: Association of Bay Area Governments
375 Beale Street, Suite 700
San Francisco, CA 94105

Regional Water Quality Control Board
San Francisco Bay Region
Attn: Victor Aelion
1515 Clay Street, Suite 1400
Oakland, CA 94612

SamTrans
PO Box 3006
San Carlos, CA 94070-1306

San Francisco Bay Area Rapid Transit District
P.O. Box 12688
Oakland, CA 94604-2688

San Francisco County Transportation Authority
Attn: Tilly Chang, Executive Director
1455 Market Street, 22nd Floor
San Francisco, CA 94103

San Francisco Department of Public Works
Bureau of Street Use and Mapping
1155 Market Street, 3rd Floor
San Francisco, CA 94013

San Francisco Fire Department
Bureau of Equipment
Attn: Captain
698 Second Street, Room 304
San Francisco, CA 94017

San Francisco Municipal Transportation Agency
Attn: Tom Maguire, Acting Director
1 South Van Ness Avenue, 7th Floor
San Francisco, CA 94103

San Francisco Municipal Transportation Authority
Sustainable Street Division
Attn: Charles Rivasplata
1 South Van Ness Avenue, 7th Floor, Suite #7463
San Francisco, CA 94103-5417

San Francisco Municipal Transportation Authority
SFMTA Finance—Real Estate Group
Attn: Ken Yee
1 South Van Ness Avenue, 7th Floor, Suite #7313
San Francisco, CA 94103-5417

San Francisco Planning Commission
Attn: Jonas Ionin, Commission Secretary
1650 Mission Street, Suite 400
San Francisco, CA 94013

San Francisco Planning Department
Attn: John Rahaim, Planning Director
1650 Mission Street, Suite 400
San Francisco, CA 94103

San Francisco Planning Department
Environmental Planning
Attn: VirnaLiza Byrd
1650 Mission Street, Suite 400
San Francisco, CA 94103

San Francisco Police Department
1245 3rd Street
San Francisco, CA 94158

San Francisco Public Utilities Commission, Wastewater Enterprise, and Redevelopment Planning and Design
Attn: Craig Freeman
525 Golden Gate Avenue, 11th Floor
San Francisco, CA 94102

San Francisco Public Utilities Commission
Wastewater Enterprise
Attn: Marla Jurosek
525 Golden Gate Avenue
San Francisco, CA 94102

San Francisco Unified School District
Attn: Dawn Kamalanathan, Chief Facilities Officer
555 Franklin Street
San Francisco, CA 94102

San Francisco Unified School District
Attn: Karissa Yee Findley, Director of School Portfolio Planning
555 Franklin Street
San Francisco, CA 94102

San Francisco Unified School District
Superintendent
555 Franklin Street
San Francisco, CA 94103

State Historic Preservation Officer
Office of Historic Preservation
Attn: Julianne Polanco
1725 23rd Street, Suite 100
Sacramento, CA 95816

Successor Agency to the San Francisco Redevelopment Agency
Attn: Nadia Sesay, Interim Executive Director
1 South Van Ness Avenue, 5th Floor
San Francisco, CA 94103

U.S Fish and Wildlife Service
2800 Cottage Way, Room W-260
Sacramento, CA 95825-1846

WestCAT
601 Walter Avenue
Pinole, CA 94564

3.3.1 Federal Highway Administration

The Federal Highway Administration's (FHWA's) plans, programs, and projects are required to conform to the applicable State Implementation Plan for achieving National Ambient Air Quality Standards. This applies to transportation plans, transportation improvement programs, and projects funded or approved by FHWA or the Federal Transit Administration in areas that do not meet or previously have not met air quality standards for ozone (O3), carbon monoxide (CO), particulate matter, or nitrogen dioxide (NO2). The proposed project is listed in the Plan Bay Area 2040 financially constrained RTP/Sustainable Communities Strategy (SCS) and found to conform by the Metropolitan Transportation Commission (MTC), as described in Section 2.2.4, *Air Quality*. FHWA and FTA made a regional conformity determination confirming that the project conforms to the purpose of the State Implementation Plan for achieving the National Ambient Air Quality Standards. The project is also included in MTC's financially constrained 2019 TIP, which was determined to conform by FHWA and FTA and the latest amendment, Amendment 25, was also determined to conform by FHWA and FTA.

Following circulation of the Draft Environmental Assessment for public review, Caltrans will submit a request to FHWA for concurrence on project-level conformity because the project is not a Project of Concern for PM2.5 as defined at 40 CFR 93.123(b)(1), and as such, an explicit, detailed PM2.5 hot-spot analysis is not required. Concurrence from FHWA will be provided in the Final Environmental Assessment.

3.3.2 Consultations Pursuant to Section 106 of the National Historic Preservation Act

3.3.2.1 State Historic Preservation Office

Federally funded transportation projects must follow FHWA and Caltrans procedures for historic preservation. A historic property survey report (HPSR), archaeological survey report (ASR), and historical resources evaluation report (HRER) were prepared and submitted to the State Historic Preservation Officer (SHPO) in March 9, 2020.

Six resources in the project area were identified as being listed on the National Register of Historic Places (NRHP). As a result of the project, nine additional resources were evaluated as eligible for listing in the NRHP, and 14 resources were evaluated as not eligible for listing in the NRHP. A letter was sent to the State Historic Preservation Officer on March 9, 2020 to confirm the eligibility determinations of the properties in the area of potential effects. On April 23, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations for 21 resources and requested edits to the evaluations of two others, including splitting one evaluation into two. On May 6, 2020, Caltrans sent edited determinations of eligibility to SHPO. On May 22, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations of three resources. Correspondence with the SHPO is contained in Appendix E.

3.3.3 Tribal Consultation

Outreach to local Tribal Groups was conducted to assist in identifying sensitive areas or sites that may be listed in the Sacred Land File (SLF) within the archaeological APE, Public Works sent outreach letters to tribal representatives on April 15, 2019. Letters were sent to the following contacts:

- Charlene Nijmeh, Chairperson, Muwekma Ohlone Indian Tribe of the San Francisco Bay Area
- Tony Cerda, chairperson, Costanoan Rumsen Carmel Tribe
- Andrew Galvan, Ohlone Indian Tribe
- Ann Marie Sayers, Chairperson, Indian Canyon Mutsun Band of Costanoan
- Irene Zwierlein, Chairperson, Amah Mutsun Tribal Band of Mission San Juan Bautista

These representatives were identified as having interest or input regarding the proposed project during correspondence with the Native American Heritage Commission (NAHC) in 2015. The outreach letters included a description of the project and a map that provided a depiction of the APE. On April 26, 2019, the NAHC was contacted to confirm the list of representatives. On April 30, 2019, the NAHC provided a list of five representatives and indicated the SLF search did not identify any sacred lands within the APE. The same five representatives identified by the NAHC in 2019 were included in the list of representatives identified by the NAHC in 2015.

On May 2, 2019, ICF (on behalf of Public Works) performed follow-up phone calls to all five representatives. Four of the tribal representatives were not able to be reached. Ann Marie Sayers, Chairperson of the Indian Canyon Mutsun Band of Costanoan, requested that an archaeological and Native American monitor be present during all ground disturbance. Public Works sent a letter to Ms. Sayers in January 2020 to acknowledge her request and clarify that Native American monitoring will not be required because the proposed project will not result in an adverse effect to any known prehistoric Native American resources. After further investigation, it was determined Native American monitoring will be required in areas where project-related ground disturbance has the potential to extend into dune sands considered sensitive for prehistoric resources. As of the date of this environmental document, no additional resources were identified during outreach.

3.3.4 Coordination Under Section 4(f) of the U.S. Department of Transportation Act of 1966

Section 4(f) requires coordination with the agencies that have jurisdiction over the resources eligible for protection under Section 4(f). Before making Section 4(f) approvals, the Section 4(f) evaluation must be provided for comment and coordination to the officials with jurisdiction over the Section 4(f) resource. Refer to Appendix A and Appendix B of this document for a description of the resources that were evaluated relative to the requirements of Section 4(f).

As described in Appendix A, *Draft Section 4(f) Evaluation* and Appendix B*, Draft Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations*, Section 4(f) resources that were subject to consideration include publicly owned lands consisting of 28 parks and recreational facilities, including Class 1 paths, and 145 historic properties. No wildlife and waterfowl refuges fall within the project area.

The Better Market Street project will impact the following parks and recreational facilities, proposed to result in *de minimis* impacts under Section 4(f): Mark Twain Plaza, Mechanics Monument Plaza,

Robert Frost Plaza, Embarcadero Plaza, and United Nations Plaza. 23 parks and recreational facilities will have no use under 4(f). Pursuant to 23 CFR 774.5(a), the draft *de minimis* 4(f) impact findings will be circulated to the respective officials with jurisdiction as shown below.

- San Francisco Public Works: Mark Twain Plaza, Mechanics Monument Plaza, Robert Frost Plaza, and United Nations Plaza
- San Francisco Recreation and Parks Department: Embarcadero Plaza

These resources are discussed in Appendix B. Consultation with these officials with jurisdiction is currently pending.

The Better Market Street project will impact the Market Street Cultural Landscape District, a historic property eligible for listing in the NRHP, which is proposed to result in a permanent Section 4(f) use. This historic property is discussed in Appendix A. Pursuant to 23 CFR 774.5(a), the draft individual 4(f) evaluation will be circulated to the Department of the Interior. Impacts on 9 historic properties are proposed to result in a *de minimis* use under Section 4(f). In addition, the project will result in no use under Section 4(f) for 135 historic properties. These resources are discussed in Appendix B. Section 106 consultation with SHPO is currently pending. Additionally, Caltrans will coordinate with the National Park Service regarding the proposed Section 4(f) findings on the Civic Center Landmark District and San Francisco Cable Cars National Historic Landmark, two historic properties that are designated as National Historic Landmarks.

A discussion of the use findings is also summarized in Section 2.1.1.3 and Section 2.1.6.4, *Section 4(f)*.

3.4 AGENCIES CONSULTED

The following agencies were consulted as part of the initial public and agency consultation process. They will each receive notice of the availability of this environmental document (see Chapter 5, *Distribution List*).

AC Transit
1600 Franklin Street
Oakland, CA 94612

Amtrak
401 I Street
Sacramento, CA 95814

Association of Bay Area Governments
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

Bay Area Air Quality Management District
375 Beale Street Suite 600
San Francisco, CA 94105

Bay Conservation and Development Commission
375 Beale Street, Suite 510
San Francisco, CA 94105

Golden Gate Bridge Highway Transportation District
1011 Anderson Drive
San Rafael, CA 94901

Metropolitan Transportation Commission
375 Beale Street, Suite 800
San Francisco, CA 94105-2066

SamTrans
PO Box 3006
San Carlos, CA 94070-1306

Bay Area Rapid Transit District
P.O. Box 12688
Oakland, CA 94604-2688

WestCAT
601 Walter Avenue
Pinole, CA 94564

3.5 ONGOING PUBLIC INVOLVEMENT

The Better Market Street Project website is available at the following URL: http://www.bettermarketstreetsf.org. The website offers updated information and design on the project, ongoing studies, emerging issues, and schedule. Information on upcoming Better Market Street Project events, such as community information meetings, Community Working Group meetings, or public hearings, was also posted to the website. Members of the community also used the website to contact the Better Market Street Project team at any time with issues or concerns about the proposed project. Public Works continues to hold regular stakeholder engagement meetings, and also provides regular updates to various City agencies and commissions.

Chapter 4
List of Preparers

4.1 CALIFORNIA DEPARTMENT OF TRANSPORTATION

Kelli Alahan, Associate Environmental Planner, PI Prehistoric Archaeology. Contribution: Environmental document review.

Helen Blackmore, Senior Environmental Planner, Architectural History. Contribution: Environmental document review.

Keevan Harding, Associate Environmental Planner – Natural Sciences. Contribution: Environmental document review.

Tom Holstein, Senior Environmental Planner. Contribution: Environmental document review.

Kevin Krewson, Senior Transportation Engineer. Contribution: Environmental document review.

Beck Lithander, Landscape Associate. Contribution: Environmental document review.

Dan Rivas, Associate Environmental Planner. Contribution: Environmental document review.

Kimberly White, Senior Landscape Architect. Contribution: Environmental document review.

Haiyan Zhang, Senior Environmental Planner. Contribution: Environmental document review.

Tammy Massengale, Supervising Environmental Planner. Contribution: 4(f) Evaluation review.

4.2 SAN FRANCISCO PUBLIC WORKS

John Dennis, ASLA, Landscape Architect. B.L.A. and M.L.A., University of California at Berkeley. 20 years of experience in the planning design and construction of complete streets projects. Contribution: Landscape architect, Urban designer.

Boris Deunert, Ph.D., Manager of Regulatory Affairs. M.A., Geology, M.A., Ethnography, M.A., Pre-and Early History, M.S., Transportation Management, University of Hamburg, Australian National University, Hawaii Loa College, and San Jose State University. 26 years of experience in European, Australian, and U.S. environmental document preparation and review. Contribution: Environmental document review.

Oliver Iberien, Regulatory Affairs Specialist. M.C.R.P., California Polytechnic State University at San Luis Obispo. M.A., Journalism, University of Missouri at Columbia. 15 years of experience in environmental assessment and environmental planning. Contribution: Environmental document review.

Janey Kiyoi, Landscape Architect. M.L.A., University of Southern California. 6 years of experience in landscape architecture and urban design. Contribution: Illustrative plans and construction document preparation for environmental document.

Ophelia Lau, PE, Lead Project Engineer. B.S., Civil Engineering, University of California at Davis. 17 years of experience in design, construction management, and material testing of complete street projects. Contribution: Environmental document review.

Cristina Calderón Olea, PE, Senior Project Manager. B.S., Civil Engineering, Santa Clara University. 20 years of experience in design and project management of infrastructure projects to improve safety and mobility. Contribution: Environmental document review.

4.3 SAN FRANCISCO MUNICIPAL TRANSPORTATION AGENCY

Liz Brisson, Major Corridors Planning Manager. M.C.R.P., University of North Carolina at Chapel Hill. 11 years of experience in transportation planning. Contribution: Environmental document review.

Melinda Hue, Environmental Review Planner. M.A., Urban and Regional Planning, University of California at Los Angeles. B.A., Architecture, University of California at Berkeley. 10 years of experience in environmental planning. Contribution: Environmental document review.

Ian Trout, Associate Engineer. B.S., Civil Engineering, Portland State University. 5 years of experience in transportation planning. Contribution: Environmental document review.

4.4 ICF

Jennifer Andersen, AICP, Project Manager. B.A., Environmental Studies, University of Southern California. 8 years of experience in environmental planning and document preparation. Contribution: Environmental document review.

Lily Arias, Archaeologist. M.A., Cultural Resources Management, Sonoma State University. B.A., History, University of California at Los Angeles. 9 years of experience in cultural resources management. Contribution: Co-author of Cultural Resources section.

Shahira Ashkar, Managing Director. M.A., Anthropology, University of Arizona. B.A., Anthropology, California State University at Sacramento. 25 years of experience in environmental planning and project management. Contribution: Environmental document review.

Devan Atteberry, Environmental Planner. B.S., Environmental Management and Protection, California Polytechnic State University at San Luis Obispo. 1 year of experience in environmental planning and document preparation. Contribution: Author of Utilities, Environmental Justice, and Community Character and Cohesion sections.

Jennifer Ban, PLA, Senior Visual Resource Specialist. B.LA., Pennsylvania State University. 20 years of experience in visual resource assessments. Contribution: Author of Visual/Aesthetics section.

Gretchen Hilyard Boyce, Senior Manager/Historic Preservation Specialist. M.S., Historic Preservation, University of Pennsylvania. B.A., Architectural History, University of Virginia. 13 years of experience in preservation planning, architectural history, and cultural landscapes. Contribution: Senior review of Cultural Resources section.

David Buehler, Managing Director. B.S., Civil Engineering. California State University at Sacramento. 35 years of experience conducting environmental noise and vibration studies for CEQA and NEPA documentation. Contribution: Senior review of Noise and Vibration section.

Aaron Carter, Project Manager. B.A., Geography. California State University at Fullerton. 12 years of experience preparing environmental analysis for NEPA and CEQA documentation and project management. Contribution: Project management and environmental document review.

Aileen Cole, Environmental Planner. B.A. Zoology, Spanish, and Latin American Ecology and Conservation, University of Wisconsin-Madison. 2 years of experience as a research biologist and 3 years of experience in environmental planning and environmental document preparation. Contribution: Author of Cumulative section.

John Cook, AICP, Principal. M.C.R.P., University of California, at Berkeley. B.A., American Studies, Colby College. 22 years of experience in environmental and urban planning. Contribution: Preparation of Project Description chapter.

Eleanor Cox, Senior Architectural Historian. M.S., Historic Preservation, Columbia University. B.A., History, University of California, Santa Cruz. 8 years of experience in cultural resources management. Contribution: Co-author of Cultural Resources section.

Mike Davis, Project Director. M.U.P., Urban and Regional Planning, Texas A&M University. B.A., Geography, University of North Alabama. 38 years of experience in environmental and community planning. Contribution: Project team oversight.

Torrey Edell, Senior Biologist. B.S., Ecology and Systematic Biology, California Polytechnic State University at San Luis Obispo. 13 years of experience in biological resource review and analysis. Contribution: Author of Biology section.

J. Tait Elder, Archaeologist. B.A. Archaeology (geology minor), Western Washington University. M.A. Anthropology, Portland State University. 15 years of experience in cultural resources management. Contribution: Senior review of Cultural Resources section.

Anthony Ha, Publications Specialist. B.A., English, Saint Mary's College of California. 14 years of experience in document preparation and publication. Contribution: Environmental document formatting and compiling.

Seth Hartley, Lead Air Quality Specialist. M.S., Atmospheric Science, University of Washington. B.S., Physics, North Carolina State University. 15 years of experience in environmental analysis of air quality, health risk, emissions, and climate change impacts in transportation projects. Contribution: Co-author of Air Quality section.

Susan Lassell, Managing Director. M.A. Historic Preservation Planning, Cornell University. B.S. Environmental Design, University of California at Davis. 25 years of experience in cultural resources management and environmental compliance. Contribution: Senior review of Cultural Resources section.

David Lemon, Senior Historic Preservation Specialist. M.A. Public History, CSU Sacramento. B.A. US History, University of California Santa Barbara. 17 years of experience in cultural resources management (architectural history) and preservation planning. Contribution: Senior review of Cultural Resources section.

Sandy Lin, Air Quality and Climate Change Specialist. M.C.P., City and Regional Planning, University of Pennsylvania. B.A., Urban Studies and Planning, University of California at San Diego. B.A., Economics, University of California at San Diego. 9 years of experience in environmental planning and CEQA and

NEPA document preparation; 2 years of experience in air quality and climate change analysis. Contribution: Co-author of Air Quality section.

John Mathias, Senior Editor. B.A., Communications, California State University at Northridge. 22 years of experience in editing. Contribution: Environmental document editing.

Cory Matsui, Noise Specialist. B.A., Atmospheric Science, University of California at Berkeley. 8 years of experience in evaluating noise impacts and preparing environmental impact documents. Contribution: Author of Noise and Vibration section.

Tim Messick, Senior Graphic Designer. B.A. Botany and M.A. Biology, Humboldt State University. 13 years of experience in biological consulting plus 22 years of experience in graphic design, cartography, and visual simulation. Contribution: Graphics preparation for the environmental document.

Lucy Rollins, Environmental Planner. B.S., Environmental Policy Analysis and Planning, University of California at Davis. 3 years of experience in environmental planning and project coordination. Contribution: Author of Transportation and Traffic section.

Tina Sorvari, Senior Environmental Planner. B.A., Anthropology, California State University at Sacramento. 10 years of experience in environmental planning and document preparation. Contribution: Author of Hazardous Waste and Materials section.

Katrina Sukola, Water Quality and Hydrologist Specialist. M.S., Chemistry, University of Manitoba. B.S., Environmental Chemistry, University of Waterloo. 15 years of experience in water quality, stormwater, and water resource management. Contribution: Senior review of Water Quality and Storm Water Runoff section.

Jessica Viramontes, Deputy Project Manager. M.S., Environmental Management, University of San Francisco. B.S., Environmental Management and Protection, California Polytechnic State University at San Luis Obispo. B.A., English, California Polytechnic State University at San Luis Obispo. 13 years of experience in environmental planning and project management. Contribution: Project management and environmental document review.

Claudia Watts, Project Coordinator. B.S., Environmental Studies, Shepherd University. 3 years of experience in environmental planning and document preparation. Contribution: Project management and environmental document preparation.

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Matt Goyne, PE, Project Manager and Senior Associate. B.A. Civil Engineering, Cal Poly San Luis Obispo. 11 years of experience in transportation planning and engineering and CEQA/NEPA studies. Contribution: Senior review of the Transportation section and co-author of the Transportation Report.

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Chapter 5
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5.1 INTRODUCTION

The following agencies, officials, organizations, and individuals received printed or electronic copies of this document.

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National Park Service, Pacific West Region
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California Highway Patrol
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City and County of San Francisco Office of Community Investment and Infrastructure
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Mayor's Office of Housing and Community Development
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San Francisco Fire Department
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San Francisco Fire Department
Bureau of Equipment
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Member of the U.S. Senate
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The Honorable Scott D. Wiener
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Chapter 6
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Appendix A

Draft Section 4(f) Evaluation

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Table of Contents

Appendix A **Better Market Street Draft Section 4(f) Evaluation** **A-1**

1 Introduction A-1

2 Project Description A-2

2.1 Purpose and Need A-3

2.2 Existing Conditions A-6

2.3 Proposed Build Alternative and Design Option A-9

2.4 Construction and Staging A-34

2.5 No-Build Alternative A-37

3 Section 4(f) Properties A-37

3.1 Attributes and Function of the Section 4(f) Property A-55

3.2 Unusual Characteristics of the Section 4(f) Property A-58

3.3 Consultation with the SHPO A-58

4 Use of the Section 4(f) Property A-58

4.1 Market Street Cultural Landscape District A-59

5 Avoidance Alternatives A-63

5.1 No-Build Alternative A-64

5.2 Accelerated Repair and Maintenance Alternative A-68

5.3 Mission Street with Bus Lanes Alternative A-72

5.4 Mission Street with Cycle Tracks Alternative A-77

5.5 Summary of Avoidance Alternatives A-82

6 Other Project Alternatives A-82

6.1 Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative A-82

6.2 Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative A-84

6.3 Market Street Partial Build Alternative-1 ..... A-85

6.4 Market Street Partial Build Alternative-2 ..... A-85

6.5 Core Elements Alternative A-87

7 Measures to Minimize Harm A-88

8 Least Overall Harm Analysis A-89

9 Coordination with Agencies Having Jurisdiction A-90

10 References A-95

List of Tables and Figures

Tables

Table 1 Collisions per Million Vehicle Miles Traveled A-4
Table 2 Logical Termini for Each Mode of Transportation A-6
Table 3 Pedestrian Route Accessibility Requirements from the United States Access Board A-26
Table 4 Section 4(f) Properties and Section 4(f) Determinations A-38
Table 5 Contributing Features of the Market Street Cultural Landscape District A-56
Table 6 Contributing Features of the Market Street Cultural Landscape District Altered by the Project A-60
Table 7 Historic Districts Potentially Affected by the Mission Street Alternatives A-74
Table 8 Summary of Avoidance Alternatives Analysis A-83
Table 9 Measures to Minimize Harm A-89
Table 10 Least Harm Analysis A-91

Figures

Figure 1 Proposed Project Transportation and Streetscape Improvements A-11
Figure 2 Proposed Project and Design Option Conceptual Plans A-21
Figure 3 Proposed Project and Design Option Cross Sections A-22
Figure 4 From Contract Drawings for Market Street Reconstruction: Herringbone Brick Pattern A-25
Figure 5 Market Street Cultural Landscape District A-43
Figure 6 Mission Street Alternative with Center-running Bus Lanes. A-73
Figure 7 Mission Street Alternative with Side-running Bus Lane A-73
Figure 8 Mission Street Bikeway with Two-way Cycle Track on One Side A-78
Figure 9 Mission Street Bikeway with One-way Cycle Track on Each Side A-78

Appendix A

Better Market Street Draft Section 4(f) Evaluation

1 Introduction

Section 4(f) of the U.S. Department of Transportation Act of 1966, codified in federal law at 49 United States Code (USC) 303, declares that "it is the policy of the United States government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites." Section 4(f) specifies that the Secretary of Transportation may approve a transportation program or project requiring the use of publicly owned land of a public park, recreation area, or wildlife and waterfowl refuge of national, state, or local significance, or land of a historic site of national, state, or local significance (as determined by the federal, state, or local officials having jurisdiction over the park, area, refuge, or site), only if:

- There is no prudent and feasible alternative to using that land, and
- The program or project includes all possible planning to minimize harm to the park, recreation area, wildlife and waterfowl refuge, or historic site resulting from the use.

Section 4(f) further requires coordination among the Department of the Interior and, as appropriate, the involved offices of the Department of Agriculture and the Department of Housing and Urban Development in developing transportation projects and programs that use lands protected by Section 4(f). If historic sites are involved, then coordination with the State Historic Preservation Officer is also needed.

The California Department of Transportation (Caltrans) is the federal lead agency for National Environmental Policy Act and Section 4(f), pursuant to 23 USC 326 and 23 USC 327 and the Memorandum of Understanding dated December 23, 2016, and executed by the Federal Highway Administration (FHWA) and Caltrans. Responsibility for compliance with Section 4(f) has been assigned to Caltrans, including determinations and approval of Section 4(f) evaluations as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

This document is the Draft Section 4(f) Evaluation. It is being circulated for comment at the same time as circulation of a Draft Environmental Assessment on the project. Caltrans will review comments made during the circulation period, and input received by the Officials with jurisdiction over the Section 4(f) resource (i.e., the State Historic Preservation Officer [SHPO]) and take them into account in the preparation of the Final Section 4(f) Evaluation.

The Draft Section 4(f) Evaluation compares the one build alternative presented in the Draft Environmental Assessment with other alternatives as required by 23 Code of Federal Regulations (CFR) 774. The analysis and identification of the alternative that has the least overall harm will be documented in the Final Section 4(f) Evaluation.

2 Project Description

San Francisco Public Works, in coordination with the Citywide Planning Division of the San Francisco Planning Department, the San Francisco Municipal Transportation Agency (SFMTA), the San Francisco Public Utilities Commission (SFPUC), and the San Francisco County Transportation Authority (SFCTA), proposes to redesign and provide various transportation and streetscape improvements to Market Street.

The project includes changes to or replacement/modification of:

- Roadway configuration and private vehicle access
- Traffic signals
- Surface transit, including transit-only lanes, stop spacing, service, transit-stop location, transit-stop characteristics, and infrastructure
- Bicycle facilities
- Pedestrian facilities
- Commercial and passenger loading
- Vehicular parking
- Utilities
    - Sewer Line Replacement
    - Water Line Replacement
    - Traction Power System Improvement
    - PUC Power System Installation
    - DT Fiber Conduit Installation
    - Overhead Contact System Replacement
    - Track Replacement
    - F-loop Installation
    - Streetlight improvement
    - Irrigation System Improvement
    - Fire Hydrant Improvement
    - Curb Ramps and Accessibility Improvement
    - Streetscape Improvement

All of the various proposed project elements will be constructed within the public right-of-way; the majority of these elements will be implemented within the operational public right-of-way. The project will require a temporary encroachment permit for construction activities and a permanent encroachment permit (for modifications within the Van Ness Avenue and Central Freeway rights-of-way) from Caltrans.

The total area of disturbance is approximately 40 acres. Excavations to approximately 3 to 15 feet will be necessary for underground utility rehabilitation/replacement. At one location, 691 Market Street, the depth of soil disturbance could be as much as 35 feet because of an existing two-story sub-sidewalk basement. No roadway cut-and-fill work is anticipated to be required.

The project will be entirely within the area served by San Francisco's combined sewer/stormwater system. It will not entail any new or intensified land uses that could increase the amount of wastewater. Therefore, the project will not require environmental regulatory approvals from state or federal regulatory agencies concerning wastewater.

The project corridor consists primarily of the 2.2 miles of Market Street between Octavia Boulevard and the Embarcadero in the city and county of San Francisco, spanning the Downtown/Civic Center, South of Market, and Financial District neighborhoods. The project corridor also includes the following street segments/intersections:

- Valencia Street between Market and McCoppin streets
- McAllister Street between Market Street and Charles J. Brenham Place
- Charles J. Brenham Place between Market and McAllister streets
- Four off-corridor intersections (see Figure 1-1 in the environmental assessment)
- Portions of adjacent Caltrans facilities that intersect Market Street on its north and south sides
    - Immediate intersection area of South Van Ness Avenue (U.S. 101)
    - Portion of the Market Street/Octavia Boulevard intersection (U.S. 101/I-80 eastbound connector)

2.1 Purpose and Need

The principal purpose of the project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians. Ancillary purposes of the project are to replace infrastructure in the corridor that is reaching the end of its operational design life, and to improve the accessibility of the corridor and quality of its streetscape environment.

Need

Capacity, Transportation Demand, and Safety

Market Street is the main artery of the San Francisco Municipal Railway (Muni), with the majority of routes operating on or crossing Market Street. Market Street is among the slowest corridors in the Muni system, with average speeds of approximately 5.1 mph on Market Street between Larkin and First streets because of conflicts between different modes of transportation, stop spacing, and heavy passenger volumes. In addition to an average of approximately 250,000 transit boardings per day and private-vehicle traffic, Market Street sees substantial pedestrian use (approximately 85,000 pedestrians per weekend day on Market Street between Fourth and Fifth streets) and has experienced a substantial increase in the number of bicyclists. (At Market Street and Van Ness Avenue during the p.m. peak hour, there were approximately 165 bicyclists in 1995 compared to 467 bicyclists in 2015, a 183 percent increase.)

Market Street is located on a high-injury network, with 166 reported pedestrian collisions along the project corridor, consisting of 137 collisions between vehicles and pedestrians and 29 collisions between pedestrians and bicyclists between January 2012 and December 2016. Market Street's collision rate (67 Muni/auto collisions and 53 bicycle/pedestrian or pedestrian/auto collisions total on Market Street for the period 2012–2013, the most recent data available) is higher than the statewide average for an urban four-lane undivided road (see Table 1).

Table 1. Collisions per Million Vehicle Miles Traveled

Market Street	32.0
Statewide average for urban four-lane undivided road	1.53
Caltrans District 4 average	0.58
San Francisco County	4.7
Mission Street	6.9

Collision data: SFMTA, 2015; Caltrans, 2014.

The entire length of Market Street is approximately 0.4 percent of San Francisco's total street miles but the site of 11 percent of the city's severe/fatal bicyclist injuries and 6 percent of the city's severe/fatal pedestrian injuries. On average, one person is killed each year along the corridor. Market Street has three of the top-five intersections for bicyclist-involved injury collisions (at Octavia, Gough and Fifth streets) and two of the top-five intersections for pedestrian-involved injury collisions (at Fifth and Seventh streets).[1] A 2015 study (San Francisco Municipal Transportation Agency 2015; Perkins and Will et al. 2011) by SFMTA concluded that the nature of the collisions suggests that the mixing of automobiles on a street that carries a large volume of bicyclists, pedestrians, and transit buses is contributory because shared facilities pose conflicts between modes of transportation.

Roadway Deficiencies

Design deficiencies that contribute to a higher-than-average collision rate and pose potential hazards for all modes of transportation are outlined below.

- Shared vehicle, transit, and bicycle facilities pose potentially hazardous conditions for all modes of transportation.
- High demand for parking and loading by private vehicles and the low availability of non-commercial parking spaces in the area lead to conflicts between vehicles, double parking, and parking on the sidewalk and create pinch zones at commercial on-street loading areas.
- Congestion results from limited opportunities for vehicles to pass in center lanes, particularly when vehicles are queued while making right turns.
- Curbside lane blockages at right-turn areas or commercial loading areas lead to conflicts between traffic and loading vehicles

[1] San Francisco Department of Public Health, using San Francisco Police Department records and the Statewide Integrated Traffic Records System, 2012 to 2016.

- The lack of existing dedicated bicycle facilities east of Eighth Street leads to bicyclists, transit, and vehicles competing for the same space; vehicles weaving in bus lanes; and pinch zones in lanes due to encroachment from boarding islands.
- Left turns are not defined for bicyclists at several intersections, which can make bicyclists unsure of where and how to cross
- Lack of intersection waiting space for bicyclists leads to unsafe conditions when waiting to turn
- Rails for Muni streetcars and ventilation grates for the Bay Area Rapid Transit (BART) system can be hazards for bicyclists
- Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks do not comply with the Americans with Disabilities Act (ADA). The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters.
- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA compliant. United States Access Board Guidelines require bus boarding and alighting areas to provide a clear length of 96 inches measured perpendicular to the curb or vehicle roadway edge, and a clear width of 60 inches measured parallel to the vehicle roadway, in order to provide sufficient clearance.

Logical Termini and Independent Utility

The logical termini for the project are the aggregates of the logical termini for each of the principal modes of transportation which the project addresses. The purpose of the project is safer and more efficient for all modes of transportation, but each mode has different logical termini, which are presented in Table 2.

As shown in Table 2, no additional projects are required to establish the utility of the Better Market Street project. The work will extend from the ends of all lines to the end of the four-lane segment of Market Street where the reduction of roadway capacity impacts transit and traffic, and captures the largest transfer point (Market Street and Van Ness Avenue). For bicycles, the project will complete the existing Class IV facility for Market Street. For pedestrians, the project will capture the entire area with non-ADA-compliant pavers and ramps.

Table 2. Logical Termini for Each Mode of Transportation

Mode of Transportation	Eastern Terminus of Mode	Western Terminus of Mode
Transit	**Market Street & Steuart Street** All bus lines terminate at Market Street and Steuart Street	**Market Street & Van Ness Avenue** Market Street at Van Ness Avenue is the biggest transfer point between regular buses, Bus Rapid Transit, and the Metro. It is also the point at which the density of bus lines drastically increases (from 16 lines west of Van Ness to 30 east of Van Ness).
Traffic	**Market Street & Steuart Street** Market Street terminates at Steuart Street	**12th Street/Franklin Street & Market Street** This is the point at which the number of lanes on Market Street reduces from six to four, correspondingly reducing capacity and increasing congestion.
Bicycles	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront. Currently, cyclists can dismount and walk their bicycles through the existing plaza between Steuart Street and the Embarcadero.	**Octavia Street & Market Street** The existing Class IV facility ends here.
Pedestrians	**Embarcadero** The Embarcadero is the end destination on Market Street and provides connections to the waterfront.	**Octavia Street & Market Street** This is the western limit of the brick pavers; the area east of here contains all the non-compliant curb ramps.

2.2 Existing Conditions

Market Street is a major city street and a significant regional destination, functioning as the backbone to San Francisco's local and regional (Bay Area Rapid Transit [BART]) transportation systems, a significant bicyclist commuter route, and a major retail portal, serving a population both within and outside the city. The project corridor crosses or is adjacent to several distinct districts and neighborhoods. The land use distribution along Market Street is primarily commercial and office, with few residential uses but several hotels.

In general, there are four travel lanes on Market Street between 12th Street and Main Street. The blocks between Main and Steuart streets have three travel lanes. West of 12th Street, Market Street widens to seven travel lanes to allow left turns onto northbound Franklin Street and southbound Valencia Street. Market Street has traffic signals at most intersections.

As of January 29, 2020, private vehicles are not permitted on Market Street eastbound (outbound) between 10th and Main streets and westbound (outbound) between Steuart Street and Van Ness Avenue. Where permitted to travel on Market Street, vehicles are restricted from using transit-only lanes at all times. Eastbound private vehicles are required to turn right at 10th Street.

Market Street's center transit-only lanes permit use by public transit, taxis, and emergency vehicles 24 hours a day, seven days a week. Existing transit-only lanes are located in the westbound (outbound) direction between Third Street and Van Ness Avenue and between 12th and Third streets in the eastbound (inbound) direction. Streetcar tracks run in both directions on Market Street in the center lanes between Octavia Boulevard and Steuart Street.

The San Francisco Municipal Railway (Muni) operates 23 bus routes and one streetcar line (the F line, on a tie-and-ballast track) along the surface of Market Street during the evening peak hour within the project corridor. Of these, five trolleybuses and 10 motor coaches travel on Market Street for more than one block (the remainder cross Market Street, travel only a short distance, or do not stop on Market Street). Most of these routes operate throughout the day and serve at least one of 17 curbside stops (eight inbound, nine outbound) and 23 center boarding island stops (12 inbound, 11 outbound) within the project corridor.

In addition to the daytime bus routes, Muni operates two late-night bus routes on Market Street. Amtrak Thruway coaches also travel eastbound on Market Street, serving a stop between Powell and Fourth streets. During late-night hours, SamTrans route 397 and AC Transit route 800 also run on Market Street between Van Ness Avenue and 11th Street and Octavia Boulevard and Beale Street, respectively.

Existing bicycle facilities consist of dedicated lanes or shared lanes that are marked with sharrows, depending on location. There is a protected cycle track with plastic safe-hit posts as well as partially raised bikeways between Gough Street and halfway between Ninth and Eighth streets in the eastbound direction and between Eighth Street and Octavia Boulevard in the westbound direction. Sharrows are painted in the curb lanes at all other locations on Market Street to indicate that bicycles and vehicles share these lanes. Valencia Street has an existing road-level bikeway in each direction between Market and McCoppin streets. Nine Ford Go-Bike pods are located along Market Street. Bicycle racks are also located at a number of locations along Market Street.

Existing sidewalks on Market Street are generally wider east of Van Ness Avenue (between 25 and 35 feet) than they are west of Van Ness Avenue (closer to 15 feet).

Market Street's sidewalks are constructed of red bricks set in a herringbone pattern, with 18-inch-wide granite curbs separating sidewalks from the roadway. The brick paving does not meet federal standards regarding traction or joints for pedestrian access routes. The numerous joints associated with the existing brick paving have been found to cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes.[2] The requirement related to joints in the surface of the pedestrian access route is intended to eliminate, to the greatest extent possible, surfaces that tend to cause the front end of a wheelchair to vibrate or bounce as it travels across the surface. For many people who must use wheelchairs, this vibration can cause pain or muscle spasms, possibly

[2] Conclusions in this discussion are drawn from the Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks, accessed December 12, 2018.

leading to loss of control of the wheelchair. Moreover, the existing herringbone pattern, with its wide joints, poses challenges for visually impaired persons. Joints between bricks can be wide enough to catch the tip of a cane and thus be dangerous for those with walking aids. In addition, brick has a tendency to buckle over time, creating tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Moreover, many sidewalk crossings lack ADA-compliant curb ramps.

A number of objects are located on the existing sidewalks, including bus shelters, trees, signage, newspaper kiosks and boxes, flower stands, public art, bicycle racks, self-cleaning bathrooms, advertising signs, bollards with chains at several intersection crossings, Auxiliary Water Supply System (AWSS) hydrants, and two sets of light standards (the Path of Gold light standards and the Golden Triangle light standards, described below).

The AWSS is a high-pressure fire suppression water supply system that was instituted after the 1906 earthquake to create redundancies in the city's system. It includes the Twin Peaks Reservoir, two water pump stations, two storage tanks, approximately 1,600 water hydrants, sub-surface distribution pipes, gate valves, and approximately 200 underground cisterns. Approximately 65 AWSS hydrants, as well as the associated sub-surface distribution pipes and gate valves, line both sides of Market Street within the project corridor.

The Path of Gold light standards are decorative light poles with a trident-shaped top; each top part supports a light globe. The Path of Gold light standards are a City and County of San Francisco (City) historic landmark, as defined under article 10 of the San Francisco Planning Code (Landmark No. 200). A total of 327 Path of Gold light standards are located between 1 Market Street and 2490 Market Street (near Castro Street); 236 Path of Gold light standards are located within the 2.2. miles of the project corridor (Steuart Street to Octavia Boulevard).

The Golden Triangle light standards are also decorative light poles but with a two-part top with two light globes. A total of 189 Golden Triangle light standards remain standing, generally between Mason, Market, and Sutter streets.

As of a 2017 survey, there were 767 trees within the project's limit of work, of which 93 percent were various cultivars of London plane tree. Of the total, 360 trees, or 47 percent, were evaluated as "fair to healthy," and 407 trees, or 53 percent, were evaluated as "declining to dead," with contributing factors that included scant soil quantities, poor soil quality, poor drainage, limited water, and underground constraints, such as sub-sidewalk basements and utilities (San Francisco Bureau of Urban Forestry 2017).

Market Street has a limited number of designated on-street commercial and passenger loading bays. However, a limited number of curb cuts exists on Market Street, allowing access to off-street parking and loading facilities.

Existing utilities along Market Street include a brick sewer line beneath Market Street, electrical components for the streetcar overhead contact system (OCS), electrical conduits for the Path of Gold light standards and traffic signals, and other subsurface utilities beneath the Market Street right-of-way. Fire hydrants, in addition to the large AWSS hydrants, are also located within the project corridor.

2.3 Proposed Build Alternative and Design Option

The Build Alternative includes changes to, or replacement/modification of, the various elements listed in Section 2, Project Description. Figure 1, Sheets 1 through 10, pp. A-11 through A-20, show the Build Alternative's proposed improvements.

The design option reflects differences in emphasis with respect to prioritizing different modes of transportation, principally transit and bicycles, and refers to the approximately 0.6-mile portion of Market Street between Octavia Boulevard and a point approximately 300 feet east of the intersection of Hayes and Market streets. This design option also includes a portion of 11th Street south of Market Street. There are fewer transit lines west of the 9th/Hayes/Larkin/Market intersection—only Muni routes 6, 7, 9 and the F-line remain. Also, substantial high-density residential development is underway in this area known as The Hub, with the majority concentrated within one block of the Market/Van Ness intersection. Several thousand new residents are expected to move into the new residential towers. As part of the public outreach for the Hub Area Plan, the community asked for a design option for Better Market Street that provided more space for pedestrians and further reduced conflicts with vehicles. As a result, this design option between the intersections of Ninth/Hayes/Larkin/ Market and Gough/Market is being considered. It differs from the Build Alternative in that there are additional turn restrictions, only one vehicle lane in each direction, and wider sidewalks. Only transit, paratransit, taxis, and emergency vehicles will be allowed to use the roadway in this area. Delivery vehicles westbound on Market will be detoured onto Hayes or Larkin streets. Eastbound, all private and delivery vehicles will be detoured before reaching 12th Street. Figures 2 and 3, pp. A-21 and A-22, show the differences between the Build Alternative and the design option.

The design option will not materially increase construction costs. The proposed project, with or without the design option will cost approximately $603.7 million.

2.3.1 Project Elements – Measures to Increase the Efficiency of the Facility for Transit, Bicyclists, Pedestrians, and Commercial Vehicles

The project proposes to increase the efficiency of the corridor for transit, bicyclists, pedestrians, and commercial vehicles and, consequently, make the facility safer for all modes of transportation. In addition, the project proposes to bring elements of city infrastructure in the corridor that are reaching the ends of their operational design lives into a state of good repair. The project elements as well as construction of staging are described below.

Roadways

The project will continue to provide four travel lanes on Market Street, with two center lanes and two curb lanes between Franklin and Beale streets but with the following exceptions: up to seven lanes will be provided west of Franklin Street; only three lanes will be provided east of Main and Beale streets and two lanes east of Spear Street. The project will generally convert the existing center lanes on Market Street from transit-only to Muni-only lanes. These

lanes will permit only Muni buses, streetcars, and emergency vehicles at all times. The Muni-only lanes will also extend from Gough to Main in the eastbound direction and from Beale Street to 12th Street in the westbound direction.

The width of the center travel lanes will remain about the same as under existing conditions (approximately 10.5 to 12 feet wide). Existing outer lanes (curb lanes) are 11 to 13 feet wide; the project will reduce these to 11 feet. Although the two center lanes will remain at approximately the same location, curbside lanes will deviate from their current alignment to allow for the inclusion of four new center boarding islands and widening of the existing center boarding islands that remain.

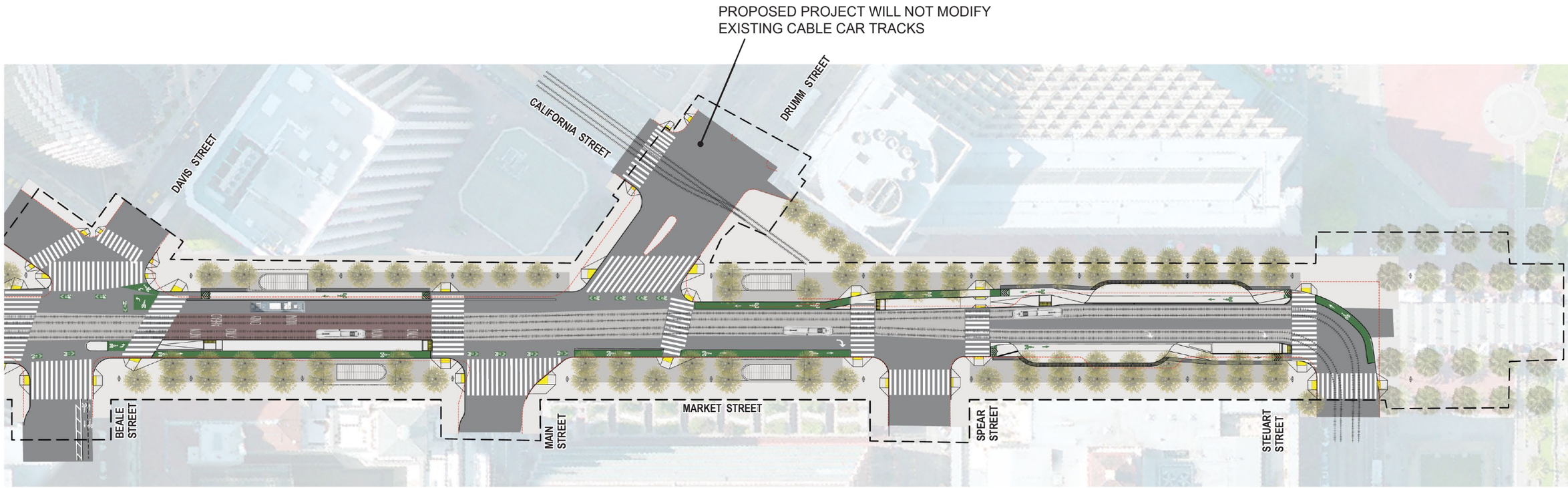
Some intersections will be reconfigured. Intersection reconfigurations will include, but are not limited to, curb extensions for bulb-out construction to minimize crossing distances, curb pull-back for sidewalk-level bikeway coordination, relocation or modification of existing traffic islands, addition of small islands for sidewalk-level bikeway protection, raised crosswalks at alleyways, updated curb radii to accommodate bus movements, and updated curb ramps to meet the latest ADA requirements and align with proposed crosswalks. Major intersection reconfigurations include:

- Modification of track and curb alignments at the Market/Charles J. Brenham Place/Seventh Street and Market Street/McAllister Street/Jones Street intersections.
- Conversion of existing roadway to plaza space at northwest corner of Market and Bush streets.
- Reconfiguration of Market Street/Kearny Street/Geary Street intersection to accommodate proposed traffic island.

The project will include signal timing changes, control modifications, and signal relocations at all existing signal locations. Traffic signal modifications will occur at eight intersections (Golden Gate Avenue/Jones Street, Eddy Street/Mason Street, Turk Street/Taylor Street, McAllister Street/Charles J Brenham Place, Ellis Street/Powell Street, Ellis Street/Cyril Magnin Street, Drumm Street/California Street, and Eddy Street/Cyril Magnin Street) to accommodate new two-way/one-way changes. In addition, the project will install two new signals at 11th and Market streets and at Steuart and Market streets.

Design Option

This design option will modify the design of the Build Alternative to include additional sidewalk widening to provide a 14-foot-wide two-way bikeway along Page Street between Franklin and Market Street. The number of westbound (outbound) travel lanes on Market Street will be reduced from two to one between Hayes and 12th streets. The number of eastbound (inbound) travel lanes on Market Street will be reduced from two to one between 12th and 11th streets. These will be 12.5 to 13.5 feet wide to provide, at a minimum, a 26-foot clear width for fire department access. These lanes will be accessible only to Muni, taxis, paratransit, and emergency vehicles. Furthermore, as with the proposed project, the design option will create a new northbound Muni-only lane on 11th Street, extending approximately 155 feet south of Market Street.



Notes:

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- This figure does not illustrate some project-related activities that will result in changes to existing cultural resources (e.g., relocating and rehabilitating underground Auxiliary Water Supply System lines).

N

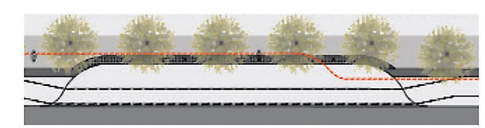
0 50 100 150 200

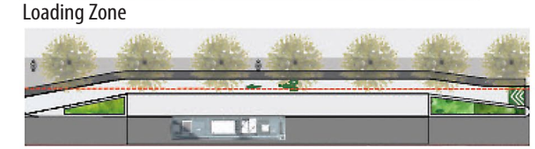
Feet

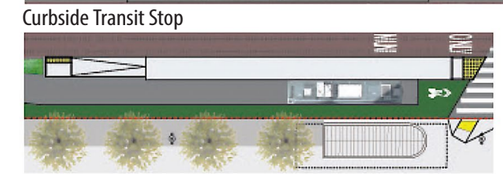
Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks


Loading Zone

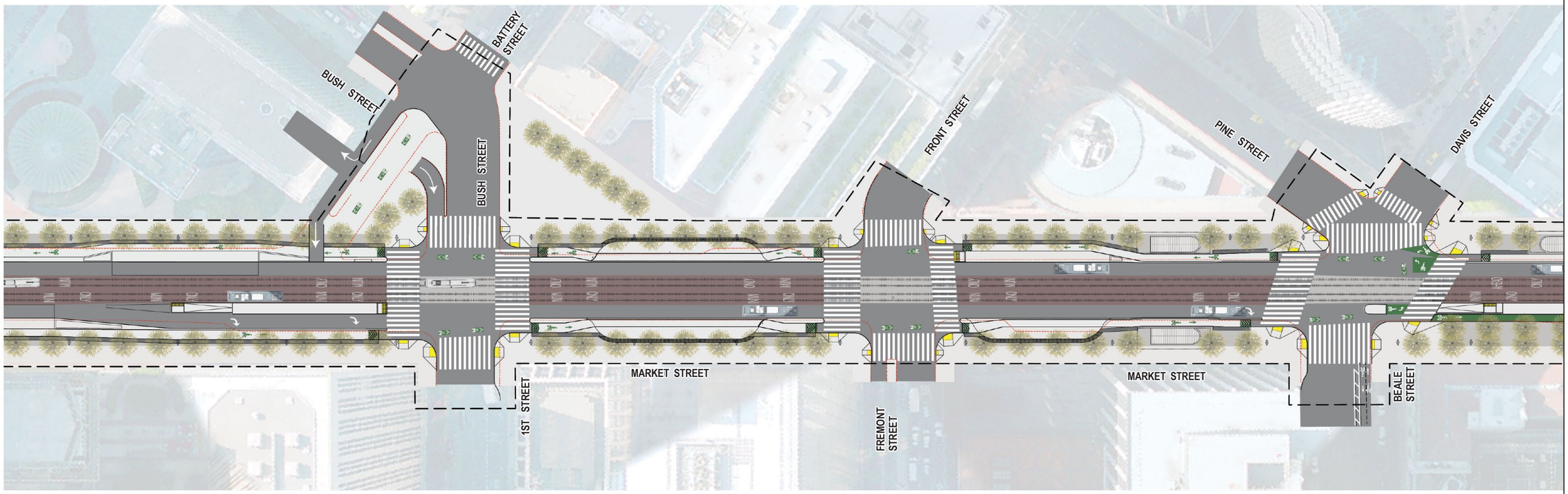

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-21-2020)

Better Market Street Project

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 1 of 10)



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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

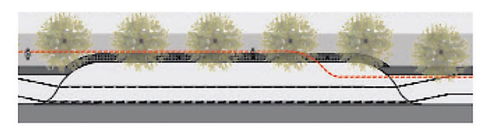
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

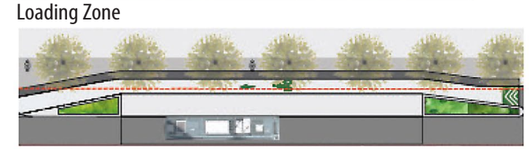
Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

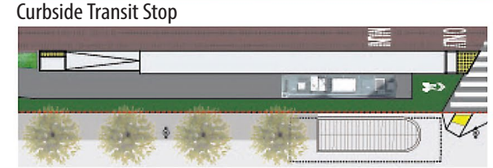
Streetcar Tracks



Loading Zone



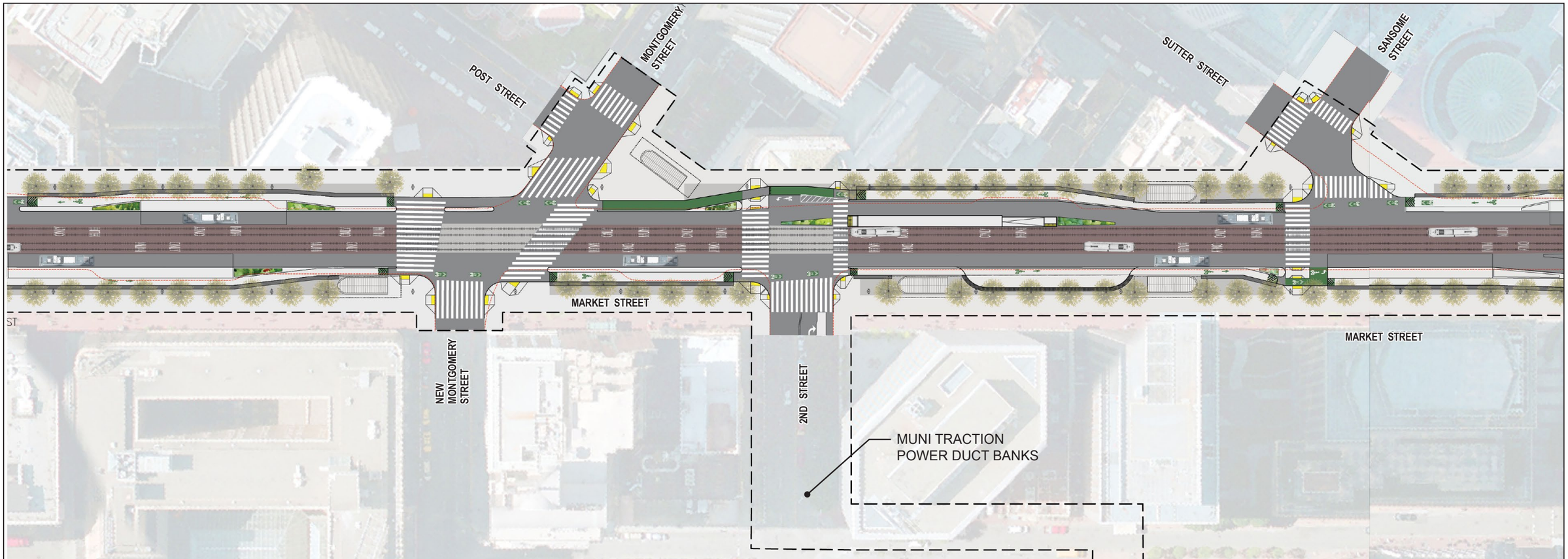
Curbside Transit Stop



Center Transit Boarding Island

00056.14 (1-21-2020)

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 2 of 10)



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N

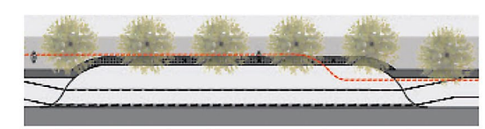
0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks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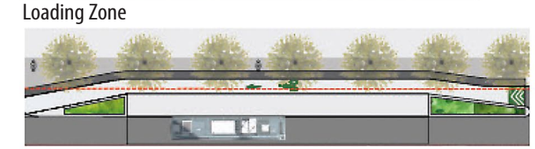
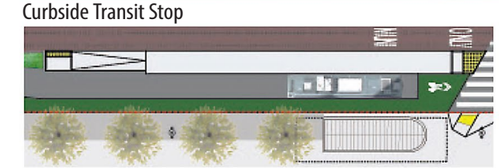
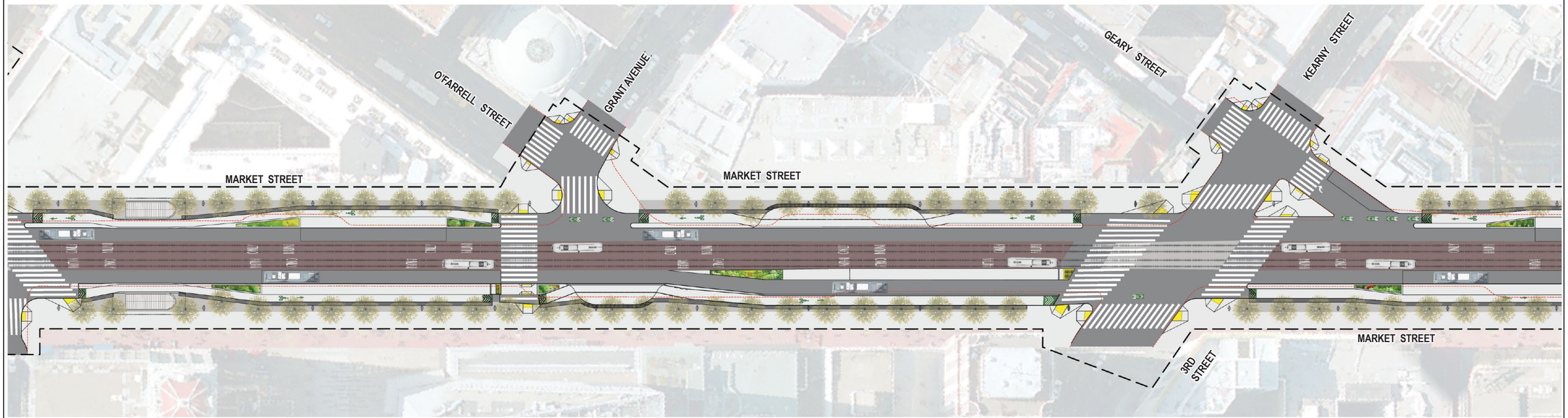

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (12-21-2020)

Better Market Street Project

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 3 of 10)



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N

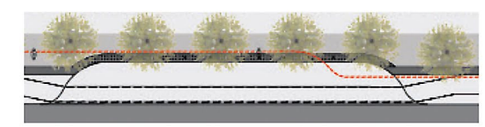
0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks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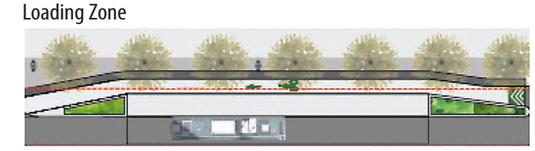
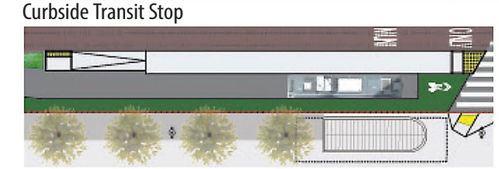
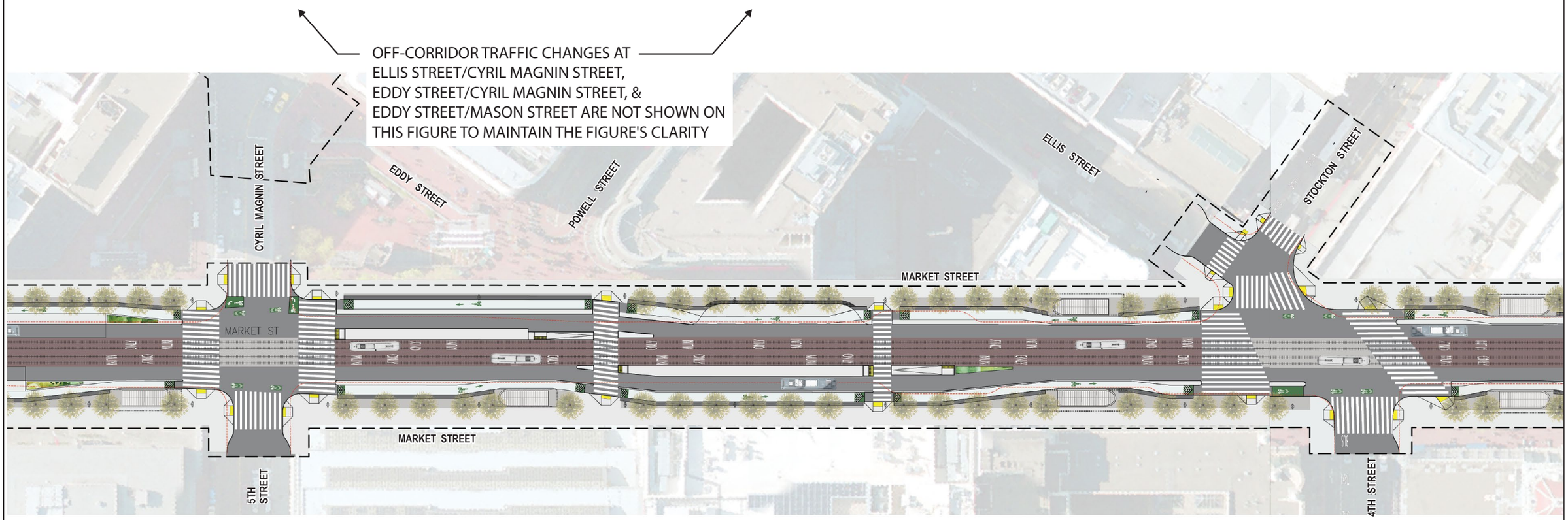

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-21-2020)

Better Market Street Project

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 4 of 10)



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N

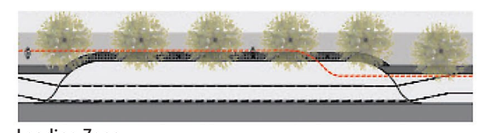
0 50 100 150 200

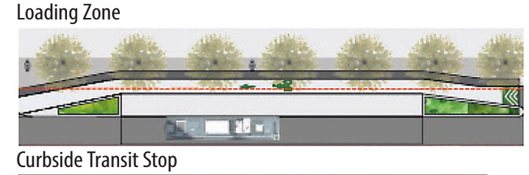
Feet

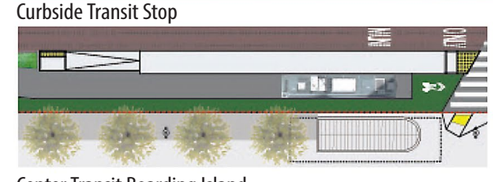
Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks

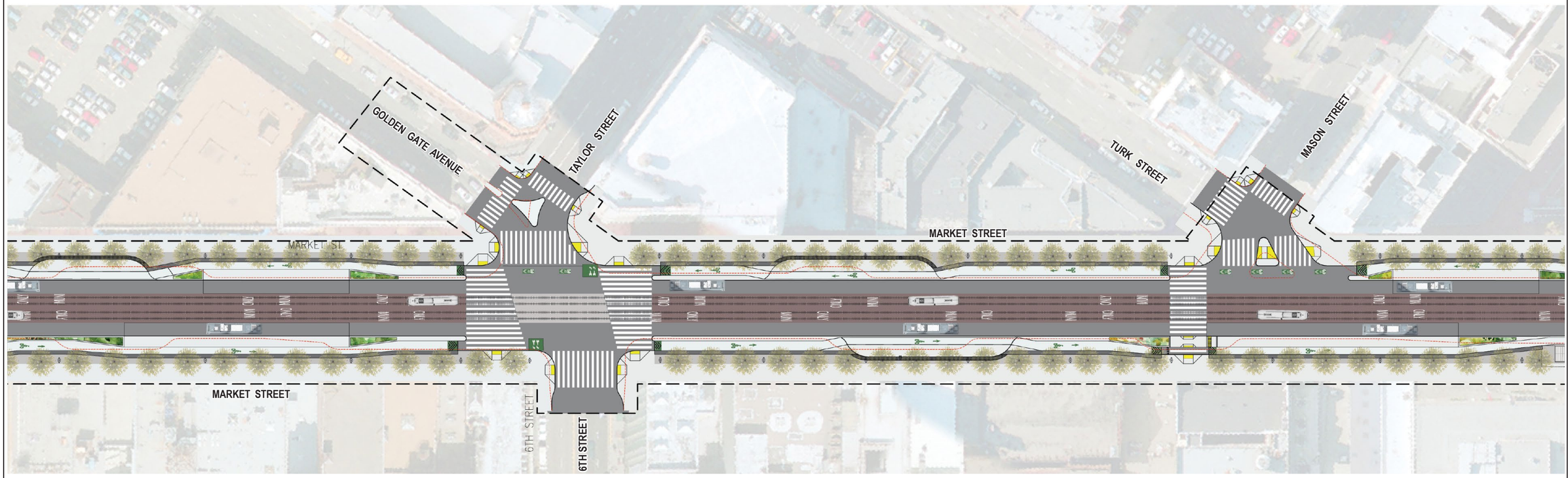

Loading Zone


Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-20-2020)

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 5 of 10)



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N

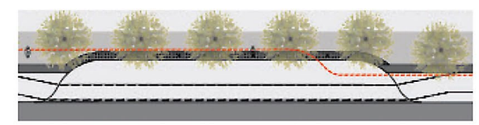
0 50 100 150 200

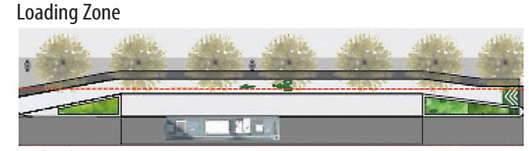
Feet

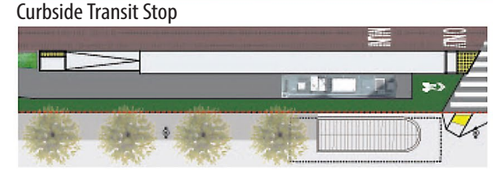
Source: San Francisco Public Works, 2020.

Legend

- Project Corridor (area of ground disturbance)
- Existing curb
- SIDEWALK
  - Buffer
  - Furnishings Zone
  - Pedestrian Through Zone
- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks


Loading Zone

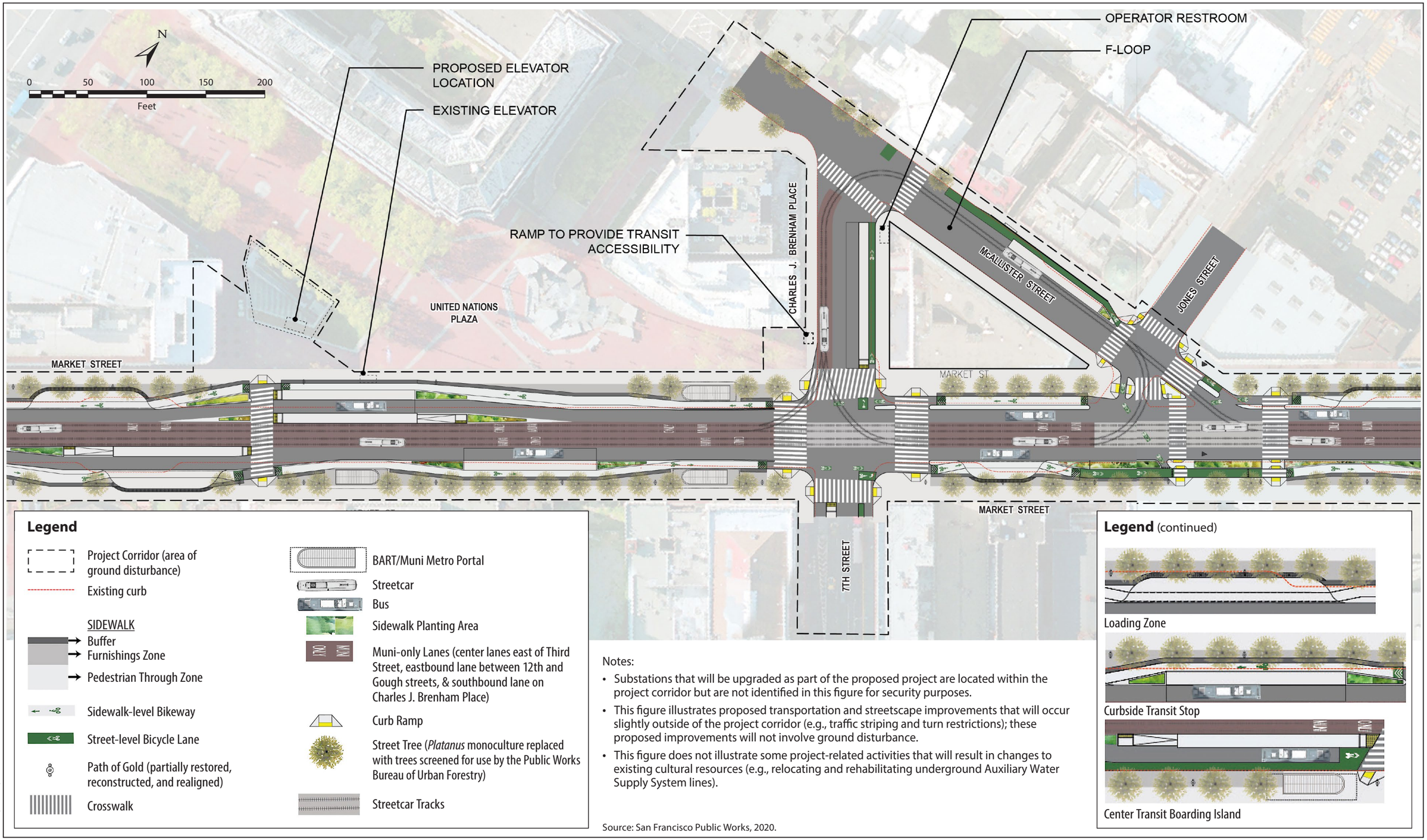

Curbside Transit Stop


Center Transit Boarding Island

00056.14 (1-20-2020)

Better Market Street Project

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 6 of 10)



Notes:

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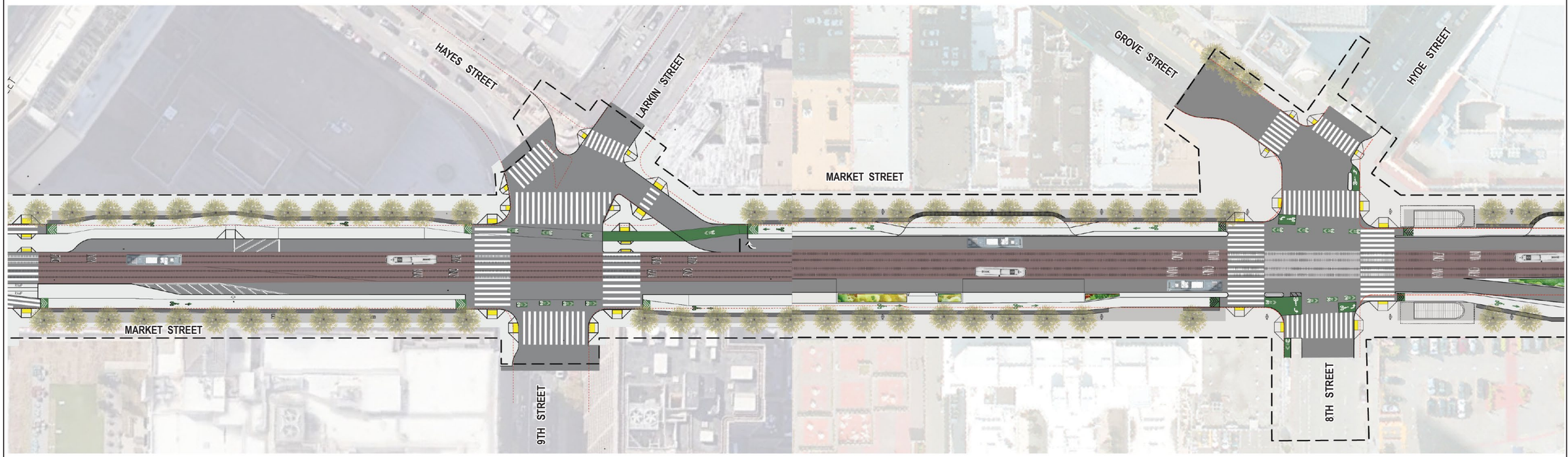
- This figure does not illustrate some project-related activities that will result in changes to existing cultural resources (e.g., relocating and rehabilitating underground Auxiliary Water Supply System lines).

Source: San Francisco Public Works, 2020.

00056.14 (1-20-2020)

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 7 of 10)



Notes:

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N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

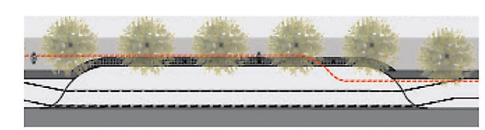
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

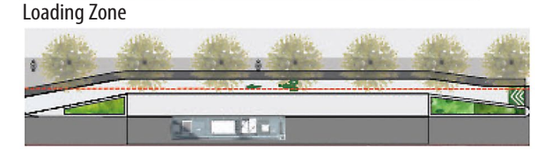
Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

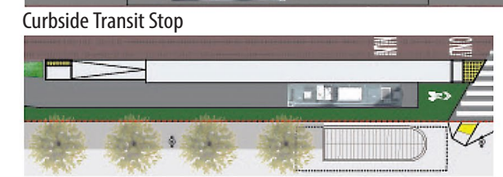
Streetcar Tracks



Loading Zone



Curbside Transit Stop



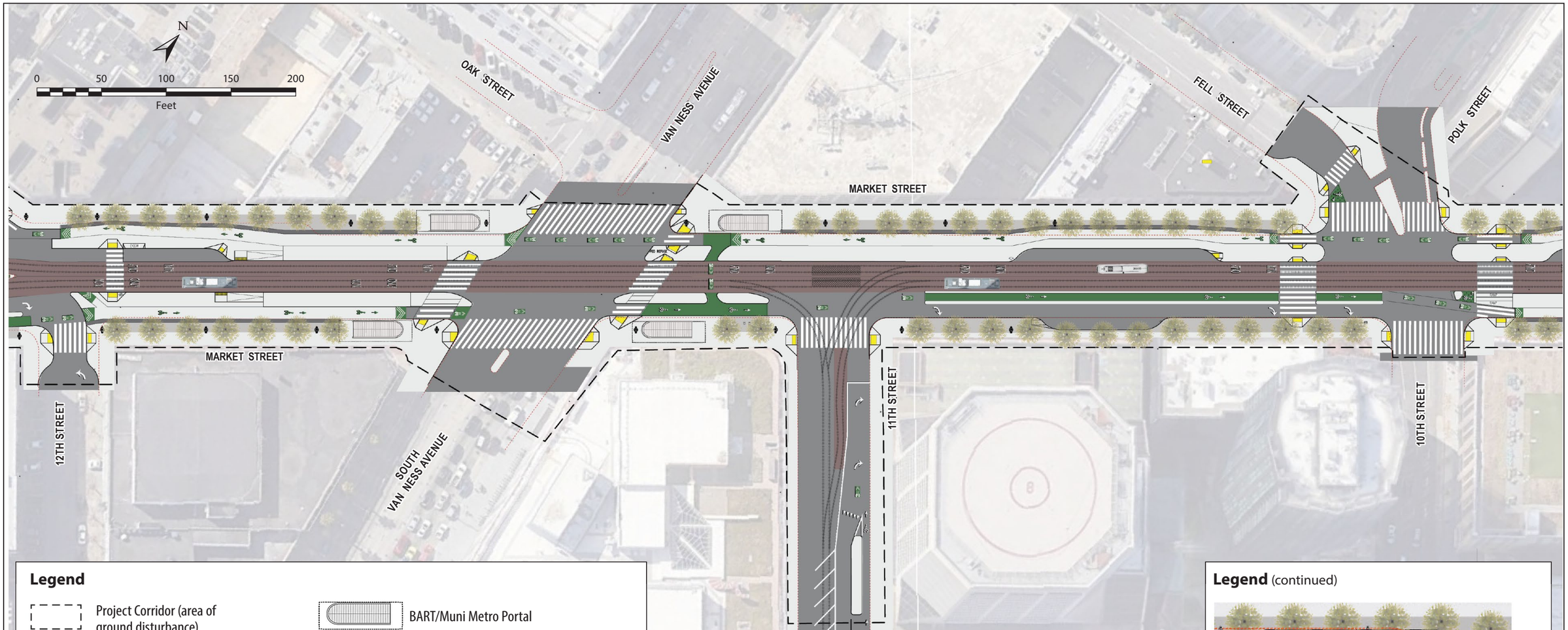
Center Transit Boarding Island

00056.141(1-20-2020)

Better Market Street Project

Figure 1

Proposed Project Transportation and Streetscape Improvements (Sheet 8 of 10)



Legend

- Project Corridor (area of ground disturbance)
- Existing curb

SIDEWALK
- Buffer
- Furnishings Zone
- Pedestrian Through Zone

- Sidewalk-level Bikeway
- Street-level Bicycle Lane
- Path of Gold (partially restored, reconstructed, and realigned)
- Crosswalk
- BART/Muni Metro Portal
- Streetcar
- Bus
- Sidewalk Planting Area
- Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)
- Curb Ramp
- Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)
- Streetcar Tracks

Notes:

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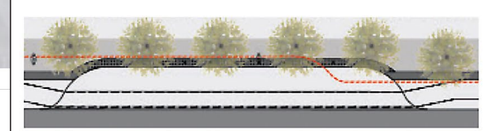
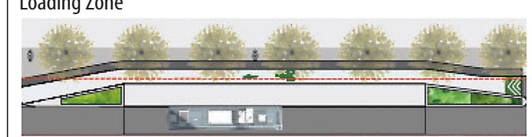
Source: San Francisco Public Works, 2020.

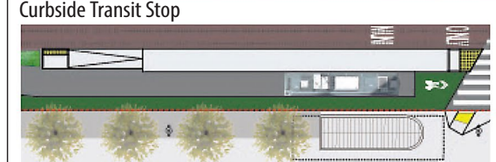
Legend (continued)



Loading Zone



Curbside Transit Stop



Center Transit Boarding Island

00056.14 (1-20-2020)

Figure 1
Proposed Project Transportation and Streetscape Improvements (Sheet 9 of 10)

Notes:

- Substations that will be upgraded as part of the proposed project are located within the project corridor but are not identified in this figure for security purposes.
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- This figure does not illustrate some project-related activities that will result in changes to existing cultural resources (e.g., relocating and rehabilitating underground Auxiliary Water Supply System lines).

N

0 50 100 150 200

Feet

Source: San Francisco Public Works, 2020.

Legend

Project Corridor (area of ground disturbance)

Existing curb

SIDEWALK

Buffer

Furnishings Zone

Pedestrian Through Zone

Sidewalk-level Bikeway

Street-level Bicycle Lane

Path of Gold (partially restored, reconstructed, and realigned)

Crosswalk

BART/Muni Metro Portal

Streetcar

Bus

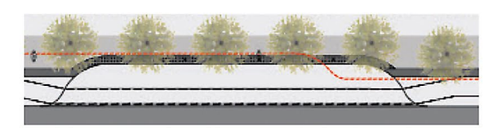
Sidewalk Planting Area

Muni-only Lanes (center lanes east of Third Street, eastbound lane between 12th and Gough streets, & southbound lane on Charles J. Brenham Place)

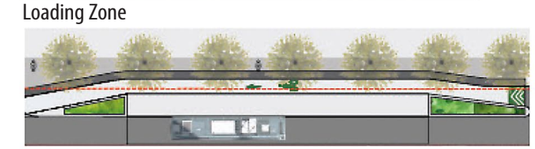
Curb Ramp

Street Tree (*Platanus* monoculture replaced with trees screened for use by the Public Works Bureau of Urban Forestry)

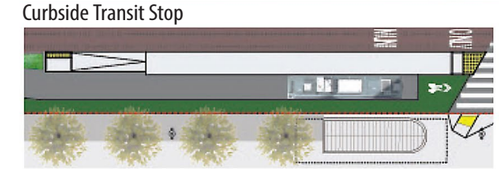
Streetcar Tracks



Loading Zone



Curbside Transit Stop

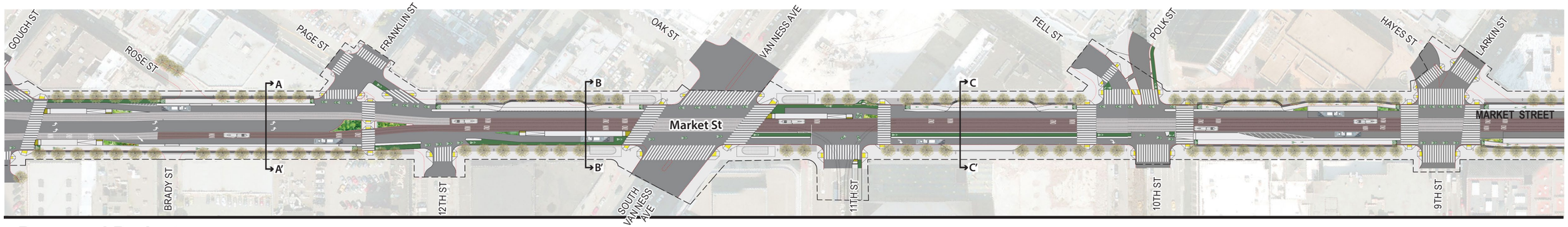


Center Transit Boarding Island

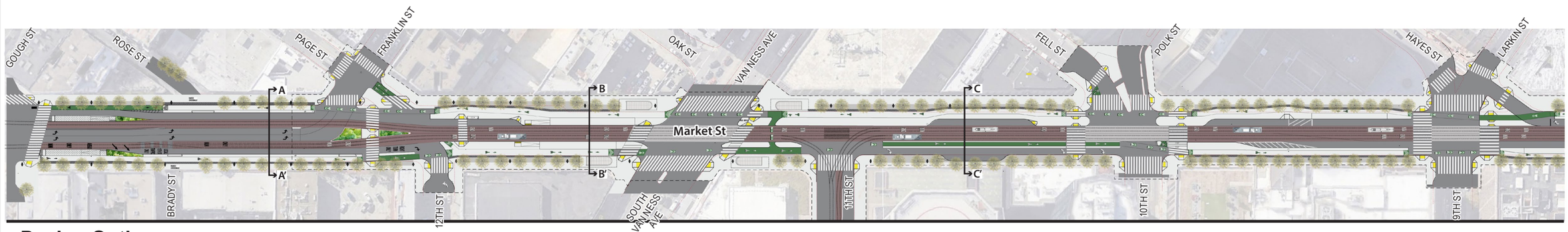
00056.14 (1-29-2020)

Figure 1

Proposed Project Transportation and Streetscape Improvements (Sheet 10 of 10)



Proposed Project



Design Option

N

0 100 200 300 400

Feet

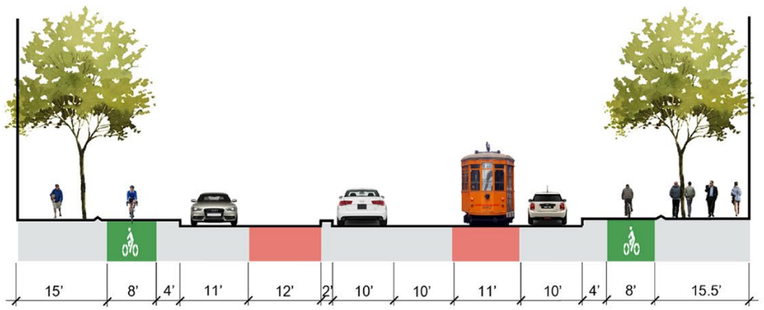
Notes:

- This figure illustrates proposed transportation and streetscape improvements that will occur in the project corridor in the vicinity of Market Street and Van Ness Avenue. It does not show the full extent of the project corridor. The project's proposed transportation and streetscape improvements outside of the design option also apply to the design option.
- See Figure 3 for cross sections A, B, and C shown in this figure.

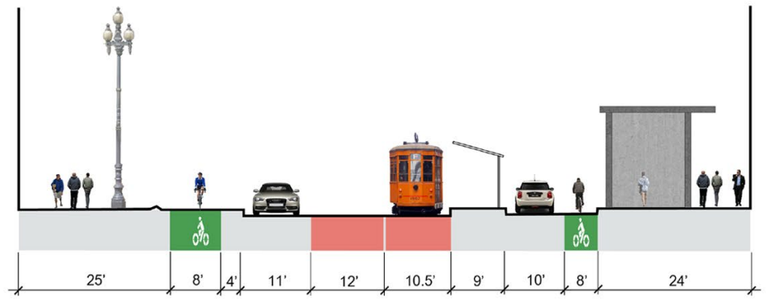
Source: San Francisco Public Works, 2020.

Figure 2
Proposed Project and Design Option Conceptual Plans

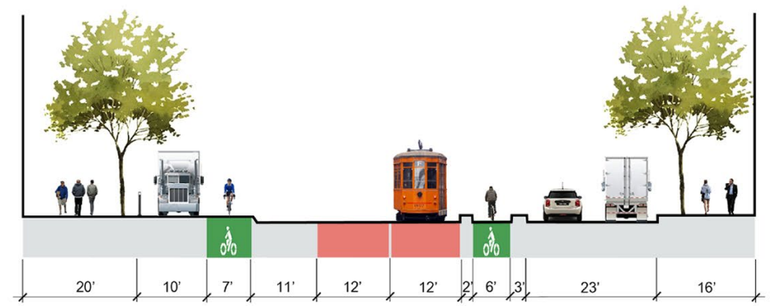
Gough Street to Franklin Street / 12th Street
Cross Section A–A'



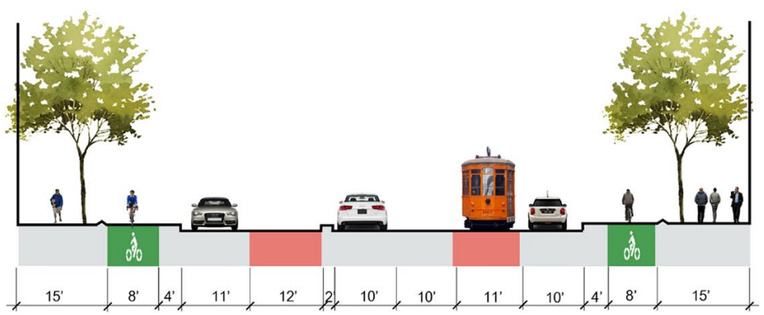
12th Street to Van Ness Avenue
Cross Section B–B'

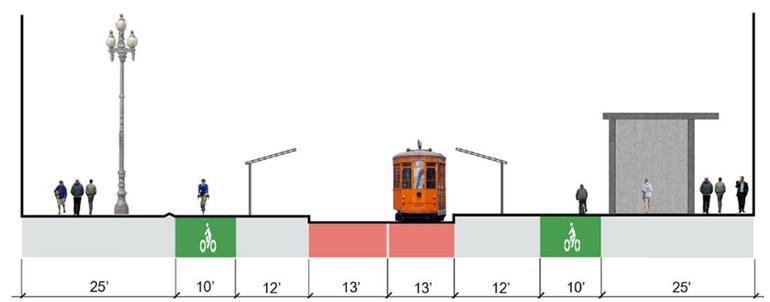


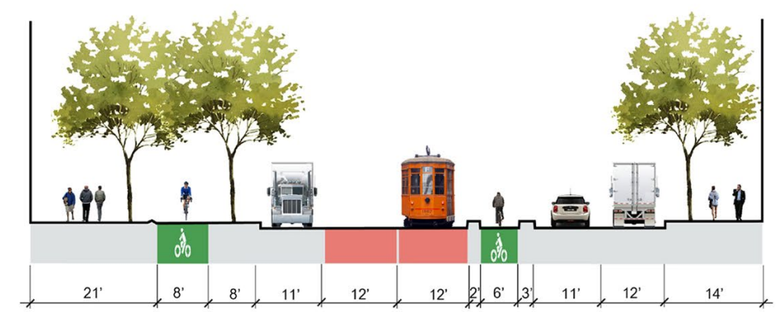
Van Ness Avenue to Fell Street / Polk Street
Cross Section C–C'



Proposed Project







Design Option

Note: See Figure 2 for the locations of cross sections A, B, and C.

Source: San Francisco Public Works, 2020.

00056.14 (4-10-2020)

Figure 3
Proposed Project and Design Option Cross Sections

The signal phase for the eastside Market Street crosswalk will be modified so that pedestrians cross the intersection at the same time that northbound 12th Street traffic turns left onto Market Street. This design option will also include reconfiguration of the intersection at 11th and Market streets, which will maintain the stop sign for 11th Street traffic, create a northbound 11th Street Muni-only lane for approximately 155 feet, and shift the northbound bus stop to midblock to create a 65-foot-long bus boarding island. In addition to the improvements described for the proposed project, the design option will also include a new F Market & Wharves streetcar line turnout on Market Street at 11th Street to allow westbound F Market & Wharves streetcars to turn directly onto southbound 11th Street.

Access Control Restrictions

No additional private vehicle restrictions will be implemented with the proposed project.

Design Option

The design option will modify the design of the Build Alternative to include additional private vehicle restrictions beyond those currently in effect. These modifications will extend private vehicle access restrictions for all westbound (outbound) private vehicles from Van Ness Avenue to 12th Street. The design option will also require a right turn for eastbound (inbound) Market Street vehicles at 12th Street. The design option will require that northbound 12th Street traffic only be allowed to turn left onto westbound Market Street. Commercial vehicles will not be permitted to travel westbound on Market Street between Ninth and 12th streets and eastbound between 12th and Ninth streets (with the exception of the general purpose curb lane between 11th and 10th streets).

Sidewalks

All existing sidewalks within the project footprint will be removed from the property line to the curb and replaced. Existing brick sidewalk surfaces will be replaced with paving materials consistent with federal accessibility requirements.[3] Replacement sidewalk surfaces will meet current City standards for traction (a minimum coefficient of friction of 0.65 for a relatively flat sidewalk and 0.80 for sloped surfaces greater than 1:20) and be consistent with the requirements of San Francisco's 1995 Downtown Streetscape Plan for special sidewalk surfaces, which are applicable elsewhere in the downtown area. The new surface will consequently comply with the United States Access Board's Public Rights-of-Way Access Advisory Committee Final Report, part III, section X02.1.6, and its minimum requirements for public sidewalks (discussed in the section that follows titled *Americans with Disabilities Act*), which call for pedestrian routes on new sidewalk surfaces to be as free of jointed surfaces and visually uniform as possible. All new sidewalks will comply with federal accessibility requirements regarding minimum widths and allowable materials for an accessible pedestrian route.[4]

[3] Public Works Order 200369 sets forth numerous regulations regarding allowable paving materials, shapes, and dimensions; it also describes the installation requirements.

[4] See Public Works Order 200369.

Sidewalks east of 12th Street will generally provide a 15-foot-wide "through" (i.e., walking) zone for pedestrians. West of 12th Street, the sidewalk through zone will be approximately 10 feet wide.

In addition to the pedestrian through zone, sidewalks will generally include a furnishing zone that will be between 4 and 10 feet wide, depending on whether a curbside transit island, center boarding island, or loading zone is proposed at a particular location. The furnishing zone will include trees, landscaping, street furniture, and public art elements. In locations where curbside transit stops, center transit boarding islands, or loading zone are present, the furnishing zone will generally be 4 to 5 feet wide. Wherever there is a sidewalk without proposed transit stops or loading zones, the furnishing zone will be approximately 10 feet wide. The majority of the sidewalks along Market Street between Van Ness Avenue and Steuart Street will include these wider 10-foot furnishing zones.

Bulb-outs will be installed at crosswalks where possible. Most bulb-outs will shorten the side-street crossings, not the Market Street crossing. Corner curb radii along Market Street will typically be 12 to 15 feet, depending on the angle of the intersecting street, with a 33-foot radius at the intersection with Taylor Street. Bulb-outs will extend 4 to 8 feet into the street and typically be 20 to 25 feet long.

Crossing distances at Market Street will depend on whether a boarding island is present and the angle of the intersecting street. Crosswalk distances at Market Street will vary from 54 feet (typical right-angle, 90-degree crossing) to 115 feet (54-degree crossing at South Van Ness Avenue). Crossing distances at side streets also will vary (typically between 40 and 50 feet).

As feasible, straight pieces of granite curb will be reused within the proposed project. The project is still in the design phase, but at this time, it is estimated that approximately 20 percent of the existing granite curb on Market Street is straight enough for reuse. The remainder of the existing granite curb is likely to be irreparably damaged during removal and therefore assumed to be not suitable for reuse.

Americans with Disabilities Act

"Alterations" that affect or could affect the usability of all or part of the Market Street corridor, as proposed under the project, must comply with the ADA. The ADA is a federal civil rights law that prohibits discrimination against people with disabilities. Under this law, people with disabilities are entitled to all rights, privileges, advantages, and opportunities that others have when participating in civic activities. Title II of the ADA applies to all state and local governments as well as all departments, agencies, special purpose districts, and other instrumentalities of state or local government ("public entities"). It applies to all programs, services, or activities of public entities. The City has broad obligations under Title II of the ADA, providing its programs, services, and activities in a manner that is accessible to persons with disabilities.

New facilities and additions or alterations to existing facilities require compliance with federal, state and local design standards for accessibility. According to the *Joint Technical Assistance on the Title II of the Americans with Disabilities Act Requirements to Provide Curb*

Ramps when Streets, Roads, or Highways are Altered through Resurfacing (U.S. Department of Justice and U.S. Department of Transportation 2013), public-rights-of-way are to be upgraded to current ADA standards whenever a facility is altered. Alterations of streets, roads, or highways include activities such as reconstruction, rehabilitation, resurfacing, widening, and projects of similar scale and effect (U.S. Department of Justice 2010).[5]

The proposed project constitutes an alteration of the transportation facility provided by Market Street in the project area, as the scope of the project includes substantial renovation and upgrading of the transportation, transit, cycling, and pedestrian infrastructure.

For an alteration that affects or could affect the usability of or access to an area of a facility containing a primary function, the entity shall make the alteration in such a manner that, to the maximum extent feasible, the path of travel to the altered area is readily accessible to and usable by individuals with disabilities, including individuals who use wheelchairs (28 CFR § 35.151(b)(4); 49 CFR § 37.43(a)(2)). Therefore, for a facility such as Market Street, accessible routes are required from site arrival points such as transit stops, public streets and sidewalks, from accessible passenger loading zones, and from accessible parking spaces. It is essential to provide continuous accessible routes that connect a City facility with the pedestrian and transportation network of the City in the public right-of-way.

The brick surfacing of the existing sidewalk, installed using 4-inch by 8-inch by 2-inch (Figure 4) standard brick in a herringbone pattern, does not comply with the standards set by the United States Access Board (Access Board), the federal agency that produces the de facto standards and guidelines and standards for the built environment and transportation. The Access Board produced its *Public Rights-of-Way Access Advisory Committee Final Report* in January 2001 (United States Access Board 2001a), with a supplement published in the *Federal Register* on July 26, 2011 (United States Access Board 2011). Section X02.1 presents New Construction: Minimum Requirements: Public Sidewalks (Table 3). General provisions relating to the proposed replacement of the existing herringbone-pattern brick sidewalk surface are as follows:

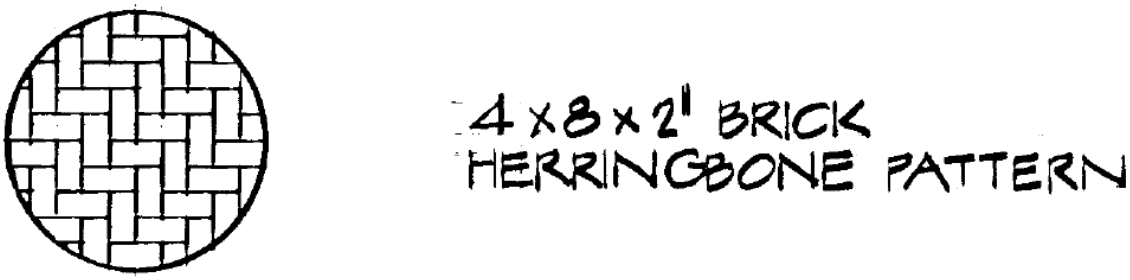


Figure 4. From Contract Drawings for Market Street Reconstruction: Herringbone Brick Pattern

[5] Maintenance activities on streets, roads, or highways, such as filling potholes, are not alterations.

Table 3. Pedestrian Route Accessibility Requirements from the United States Access Board

Chapter	Requirement
X02.1.1 General.	Where provided, public sidewalks shall comply with this section.
X02.1.2 Pedestrian Access Route X02.1.2.1 General.	Where public sidewalks are provided, they shall contain a pedestrian access route. The pedestrian access route shall connect to elements required to be accessible in Section X02.3 and shall meet the requirements set forth in Section X02.1.1 through Section X02.1.7.
X02.1.2.2	General Reduced Vibration Zone. Within the pedestrian access route, there shall be an unobstructed reduced vibration zone meeting the requirements of this section. The reduced vibration zone shall be a contiguous part of the pedestrian access route that connects to elements required to be accessible in Section X02.3, and shall meet the requirements set forth in Section X02.1.1 through Section X02.1.7.
X02.1.6.1	General. The surfaces of the pedestrian access route shall comply with proposed ADAAG Section 302 and shall be as free of jointed surfaces and as visually uniform as possible. The accessible route should be the same, or be located in the same area as, the general route used by people without mobility disabilities.

The number of perpendicular joints encountered in a representative section of the sidewalk along Market Street along a line drawn down the path of travel surfaced with the herringbone brick pattern is a minimum of two per foot. This density of perpendicular joints results in a rough surface that is a barrier to accessibility. The following extract from the “Discussion” for X02.1.6.1 in the 2001 Public Rights-of-Way Access Advisory Committee Final Report (United States Access Board 2001a) explains why this is so:

> The requirement related to joints in the surface of the pedestrian access route is intended to eliminate, to the greatest extent possible, surfaces that tend to cause the front end of a wheelchair to vibrate or bounce as one travels across the surface. For many people, this vibration can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability of the wheelchair. Allowances need to be made for expansion and contraction of the sidewalk material. This smooth surface would also serve as a reliable, uniform surface for the placement of crutches, free of unpredictable surface anomalies. The ADAAG [ADA Accessibility Guidelines] Manual, developed by the Access Board in July 1998, states in Section 4.5.4, "Irregular paved surfaces, where jointed surfaces may be recessed below the level of the paving unit, can disrupt wheelchair maneuvering even if the differences in level are less than 1/4 inch." As stated on page 20 of FHWA's Designing Sidewalks and Trails for Access, "Surface quality significantly affects ease of travel for walking aid users. Grates and cracks wide enough to catch the tip of a cane can be potentially dangerous for walking-aid users. Icy or uneven surfaces can also be hazardous because they further reduce the already precarious stability of walking-aid users." The FHWA document further states, in Section 6.3.3.1.4, "Although asphalt and concrete are the most common surfaces for sidewalks, many sidewalks are designed using decorative materials such as bricks or cobblestones. Although these materials improve the aesthetic quality of the sidewalk, they may increase the amount of work required for mobility. For example, tiles that are not spaced tightly together can cause grooves that catch wheelchair casters. These decorative surfaces may also create a bumpy ride that can be uncomfortable to those in wheelchairs. In addition, brick and cobblestone have a tendency to buckle creating changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments. For these reasons, brick and cobblestone sidewalks are not recommended."

San Francisco Public Works' Order No. 200369, "Standard Paving Materials in San Francisco's Public Right of Ways," incorporates these standards for use on San Francisco streets, so any new sidewalk installed by the City will meet the Access Board Standards (City and County of San Francisco n.d.). Current City standards for an ADA compliant sidewalk using pavers rather than concrete require the minimum paver length to be 36 inches, with a range of widths from 6 to 12 inches. Pavers must be placed with the longest dimension parallel with the direction of travel. Additional standards are provided for warpage, lippage, and roughness.[6] Replacement of the existing brick with new pavers will reduce the number of perpendicular joints encountered to one per yard, producing a much smoother surface.

In addition to replacing the sidewalk, the project proposes "Streetlife Zones" to maximize the reuse of underutilized street space to encourage the activation of public spaces. Streetlife Zones will be extra-wide furnishing zones adjacent and complementary to the pedestrian through zone and the sidewalk-level bikeway. These Streetlife Zones will allow the installation of features such as street furniture, benches, moveable tables and chairs, small retail stands (e.g., flower sellers, food carts), public restrooms, wayfinding signs, real-time transit information, and newsstands.

The Access Board Public Rights-of-Way Access Advisory Committee Final Report additionally states that street furniture provided for pedestrian use or operation, installed on or adjacent to a public sidewalk, and accessed from the public right-of-way shall be provided access to the same standards as the for the sidewalk (United States Access Board 2001b). Accordingly, compliance with the ADA would mean that no brick sidewalk surface could be used where it would interfere with access to these Streetlife Zones.

This herringbone brick that presents a barrier to accessibility is considered a contributing element to a historic landscape, specifically the Market Street Cultural Landscape District. In California, the application of ADA standards to historic resources is the remit of the Division of the State Architect and is addressed in the State Historical Building Code. The ADA mandates standards for application of the ADA by the Department of Justice, which devolves the process of setting processes and standards for application of ADA to historic properties to the state. This delegation of authority for implementing the ADA to the state is memorialized in California in the State Historical Building Code, Part 8, Title 24, of the California Code of Regulations.[7]

In general, retaining the historic features of a cultural property where these features present barriers to access would require some form of equivalent facilitation (Chapter 8 of the California Historic Building Code). "Equivalent facilitation" means the use of alternatives that provide "substantially equivalent or greater accessibility and usability" (United States Access Board n.d.). This could include, for example, a video presentation provided in a historic structure where there is no ramp or elevator to convey visitors in wheelchairs to the upper stories of a building, when the historic fabric of the building would be irreparably harmed by the installation of ramps and/or

[6] Warpage is the variation in the planarity of the walking surface of an individual paver. Lippage is the variation in the height of the walking surface of adjacent installed pavers and adjoining materials, defined in ANSI (American National Standards Institute) Standards A108/A118/A136. Roughness, in the context of accessibility for persons with disabilities, is a measurement of whole-body vibrations caused by traveling over a surface in a wheelchair.

[7] California Government Code commencing with Section 4450 incorporates the federal accessibility requirements and the California Building Requirements for all state and local jurisdictions in California.

elevators. In this case, equivalent facilitation would mean restriction of access to the upper stories of the building, but with provision for an alternative experience. Equal treatment is a fundamental purpose of the ADA. People with disabilities must not be treated in a different or inferior manner.

The terms under which the California Division of the State Architect would consider an equivalent-facilitation request are the following:

1. Such alternatives shall be applied only on an item-by-item or a case-by-case basis.
2. Access provided by experiences, services, functions, materials and resources through methods including, but not limited to, maps, plans, videos, virtual reality and related equipment, at accessible levels. The alternative design and/or technologies used will provide substantially equivalent or greater accessibility to, and usability of, the facility.
3. The official charged with the enforcement of the standards shall document the reasons for the application of the design and/or technologies and their effect on the historical significance or character-defining features. Such documentation shall be in accordance with Section 8-602.2, Item 2, and shall include the opinion and comments of state or local accessibility officials, and the opinion and comments of representative local groups of people with disabilities. Such documentation shall be retained in the permanent file of the enforcing agency. Copies of the required documentation should be available at the facility upon request (California State Historic Building Code Section 8-604).

In the case of the proposed project, any attempt to provide equivalent facilitation would entail restricting access to the public right-of-way from people with disabilities. However, persons with disabilities must be able to participate equally in basic civic activities such as using the public transportation system, traveling along sidewalks and crosswalks, enjoying a public park, and attending or participating in park events individually or with family and friends. The integration of people with disabilities into the mainstream of American life is a fundamental purpose of the ADA (Jensen 2019). In the case of a public route such as along Market Street, either a pedestrian has access, or they do not; there is no half measure.

The U.S. Department of the Interior addresses accessibility issues for cultural landscapes in its Preservation Brief No. 32, Making Historic Properties Accessible (U.S. Department of the Interior 1993). This brief does not address a situation comparable to that of Market Street. While "[f]ull access throughout a historic landscape may not always be possible," as the authors state (p.10), restricting access to the public right-of-way on San Francisco's pre-eminent ceremonial street and the main artery of the Muni transit system is not consistent with the intent of the ADA because equivalent facilitation is not feasible.

That alternative design and/or technologies could provide substantially equivalent or greater accessibility to Market Street is improbable. Also improbable would be the support of representative local groups of people with disabilities for retaining the bricks and accepting some of equivalent facilitation. Members of these groups have regularly made complaints to Public Works about the barriers to mobility posed by the bricks. A pedestrian realm focus group was convened to gather opinions from persons with disabilities on the performance of various possible surfaces to be used in the Better Market Street improvements (San Francisco Public Works, Better Market Street Project, and Mayor's Office on Disability 2013). This focus group advised that the Market Street brick does not meet the goals of accessibility for the Better

Market Street project. Other paving materials and design schemes would provide better accessibility, usability, safety, durability, and maintainability, especially for those with mobility disabilities and visual and sensory disabilities. Choices for paving materials should have texture for slip resistance and color for visual cues. The group also advised that current Market Street design patterns, include location, size, and misalignment of granite curb ramps, are in conflict with good design for accessibility, safety, and maintainability.

In conclusion, in order to comply with the ADA, it is not possible to make alterations to the Market Street facility and at the same time retain the existing herringbone brick. It must be replaced with a surface meeting current ADA standards. This replacement will comply with the San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.) that incorporates these standards.

Design Option

The design option will modify the design of the Build Alternative to include widened sidewalks, approximately 37 to 48 feet wide (with a 25-foot pedestrian through zone), in most of the affected areas (Market Street between Octavia Boulevard and a point approximately 300 feet east of the Hayes and Market street intersection). There will be an approximately 8-foot-wide sidewalk area at the following three locations where there will be a proposed loading bay:

- North side of Market Street between 12th Street and the proposed Van Ness Avenue outbound stop location
- North side of Market Street between 11th and 10th streets
- North side of Market Street between 10th Street and proposed Ninth Street curbside transit stop

The design option will retain the existing crosswalk on the eastern portion of 12th Street at Market Street, unlike the Build Alternative. The design option will also provide raised crosswalks at Rose, Brady, and 12th streets and include public art at all four corners of the Van Ness Avenue and Market Street intersection.

Loading Areas

The 23 existing loading bays on Market Street between Octavia Boulevard and Steuart Street (20 for commercial loading, three for both passenger and commercial loading) will be removed and replaced by 22 loading zones, either near or at the same location as the existing loading bays. Most of the loading zones will be located at sidewalk level. The curb within the loading zones will be mountable, allowing loading vehicles to cross through the bikeway and access the loading area. During off-peak hours when a loading zone could be in use, the bikeway will narrow at loading zone locations; during peak hours when loading will not occur, loading zones will be used as additional bikeway space.

New commercial and passenger loading zones will be established where possible on adjacent cross streets and along nearby alleys by converting general on-street parking spaces to commercial loading spaces, white loading passenger zones, or blue accessible parking spaces. Commercial zones will accommodate truck loading and promote more use of the alleyways

for access to the rear of the buildings along Market Street. Nearby alleys could include Angelo's Alley as well as Jessie, Stevenson, and Annie streets. Up to 198 new cross-street and alleyway commercial loading spaces will be created to provide alternative commercial loading options off of Market Street. In addition, up to 46 proposed new passenger loading zones and nine new blue accessible zones will be created on cross streets. In addition, the project will remove one passenger loading zone on the east side of 11th Street.

Design Option

The design option will modify the design of the Build Alternative to restrict three proposed loading zones on the north side of Market Street, between Hayes and 12th streets, to paratransit and taxi use.

Bicycle Facilities

The project will provide physically separated bicycle lanes. A sidewalk-level bikeway will be constructed on Market Street in each direction between the curb lanes and the sidewalk. The new sidewalk-level bikeway will be immediately adjacent to the sidewalk and include buffers on both sides of the lane as well as a distinct paving pattern or material to help identify the designated space for bicyclists. The sidewalk-level bikeways will meet Caltrans' standard for class IV separated bikeways.

The sidewalk-level bikeway will generally be separated from the adjacent curb lane by a 1- to 4-foot-wide buffer between the roadway curb lane and sidewalk-level bikeway. The buffer will include a standard 6-inch curb (providing grade separation) and regulatory signage, fire hydrants, planted areas, and other vertical obstructions to prevent vehicles from pulling into the sidewalk-level bikeway. On the sidewalk side of the sidewalk-level bikeway, furnishings, signage, bicycle racks, and other vertical obstructions will act as buffers between the sidewalk and the sidewalk-level bikeway. This will include a 1- to 3-foot-wide ADA-compliant feature for separating the pedestrian through zone from the bikeway and ensuring that people with limited vision will not accidentally cross into the bikeway.

At curbside transit stops, the new sidewalk-level bikeway will be placed between the transit island and the sidewalk. Pedestrians will have designated places to cross the sidewalk-level bikeway when walking from the transit stop to the sidewalk.

The project will also include construction of new sidewalk-level bicycle parking, protected bicycle lanes on Valencia Street between Market and McCoppin streets, and a new buffered street-level bicycle lane between two vehicular travel lanes on the south side of Market Street, between South Van Ness Avenue and 10th Street. In addition, there will be improved or new bicycle connections to other proposed and existing bicycle facilities at Sansome, Second, McAllister, Seventh, Eighth, 10th, 11th, Page, and Valencia streets.

Bicycle signals will be installed at most intersections to maintain the separation of vehicle traffic and bicycles. Two-stage turn-queue bicycle boxes will allow bicyclists to make two-point left turns from a designated waiting area at the far right corner of an intersection. At some locations, bicycle boxes will allow bicyclists to queue at the front of the vehicle queue during red lights.

Design Option

The design option will modify the design of the Build Alternative to include a sidewalk-level bikeway between 11th and 12th streets. At 11th Street, bicyclists will be directed to make the westbound left turn onto 11th Street by going all the way to Van Ness Avenue, making a U-turn, then making a right turn onto 11th Street. As part of this design option, the northbound 11th Street bicycle lane will serve only bicyclists going to eastbound Market Street.

Transit

The project will modify transit stop spacing. New stop locations will accommodate surface-running streetcars, local bus routes (both rapid and local service), and regional buses. The length and width of existing transit boarding islands will be increased to meet ADA standards. Some existing transit boarding islands will be removed or relocated. Wheelchair ramps will be constructed to serve the F Market & Wharves historic streetcar (F-Line). Access to the proposed transit boarding islands will continue to be provided from marked crosswalks. Replacement stops will be provided with transit information signs as well as advertisements; transit shelters will be included at all transit stops along the corridor.

A new bidirectional track loop (F-loop) will be constructed in the roadway to give the surface-running F-Line streetcar the ability to switch from running westbound (outbound) to running eastbound (inbound) or from running eastbound (inbound) to running westbound (outbound). The F-loop will consist of approximately 1,000 linear feet of track along McAllister Street and Charles J. Brenham Place.

All F-loop movements will be controlled by a traffic signal; therefore, F-loop turns will have dedicated signal phases, which will hold all conflicting traffic while the streetcar completes its movement. The F-loop intersections will have special train signals that will tell F-Line operators which way the track switch is set and whether they have the right-of-way. There will also be bicycle signals and “TRAIN COMING” signs to emphasize F-loop movements and warn other street users about the train.

Design Option

The design option will modify the design of the Build Alternative to integrate transit boarding islands at Van Ness Avenue into the widened sidewalks. The outbound F, 6, and 7 stops will move from east to west of Van Ness Avenue, and the northbound 9/9R stop at 11th and Market streets will be shifted south to incorporate a northbound Muni-only lane on 11th Street.

The design option will also include new F-line track alignments on Market and 11th streets, allowing for increased service flexibility and better Muni operator safety when using the 11th Street track wye[8]. Westbound trains will be able to turn directly into the southbound 11th Street track (westernmost track), and trains in the northbound 11th Street track (easternmost) will be able to turn directly into the eastbound Market Street track. The easternmost tail track will be removed south of the existing track switch to accommodate a northbound 65-foot-long bus boarding island.

[8] A wye is a triangle of railroad track used for turning trains.

Other Elements

Fire hydrants, including components of the historic AWSS, will be relocated to accommodate changes in curb lines; the existing AWSS cisterns below Market Street will be preserved in place.

Stormwater catch basins will be relocated or reconstructed as required by curb movements or the introduction of transit islands. Sewer/stormwater lines will be relocated because of SFPUC facility proximity restrictions for rail. All sewer laterals within the project limits will be replaced and reconnected. SFPUC water lines, Pacific Gas and Electric Company (PG&E) lines, NRG steam lines, AT&T lines, other communication lines, conduits and wiring for streetlights and signals, and structural reinforcement elements of the sub-sidewalk basements will also be relocated to accommodate project improvements. OCS pole locations will be adjusted to accommodate sidewalk widening.

All existing street trees, the majority of which are in the path of construction, will be removed, and new street trees will be planted in a new alignment within the (previously described) furnishing zone. Tree selection and planting will follow best arboricultural practices to increase diversity and avoid disease, which has affected the current monoculture of London plane trees.

The project includes the relocation of a BART/Muni elevator at the Civic Center station on the north side of Market Street, near United Nations Plaza, to the current location of a staircase entrance to the Civic Center station within United Nations Plaza.

The 236 Path of Gold light standards within the project corridor will be partially restored (the tridents), reconstructed (base and poles), and realigned. Specifically, the existing poles will be replaced with larger poles, the tridents will be salvaged and reinstalled, and the clamshell bases will be recast and modified to accommodate the larger poles. The standards will be reinstalled in a consistent alignment to create a visible linear edge to the pedestrian zone. Although some individual standards may need to be located out of alignment with adjacent standards or removed to accommodate conflicts in the furnishing zone or sub-sidewalk basements, no more than 24.6 percent of the 236 standards will be removed or located out of alignment with other standards. This percentage translates to an estimated 58 of the 236 light standards in the project corridor, less than 18 percent of the total number of standards (327) within the entire article 10 landmark. At the currently available level of project design, the project sponsor cannot conclude at this time with certainty exactly how many standards will need to be relocated out of alignment or permanently removed.

All street lighting will be provided by the Path of Gold light standards, which will be located within the furnishing zone. A photometric study will be performed to meet current SFPUC lighting standards for pedestrian and traffic safety. Lighting installed as part of the project will be required to conform to American National Standard Practice for Roadway Lighting (ANSI/IESNA RP-8-00) and the Caltrans Roadway Classification.

2.3.2 Project Elements – "State of Good Repair" Upgrades

Transit

The project will replace almost all components of the F-line streetcar, including the in-street tracks, the OCS, OCS support poles, the underground traction-power duct banks that power the OCS, and both of the power substations that feed the duct.

Track Replacement

The project will replace all track from Octavia to Steuart streets with track that will be fixed directly to a concrete plinth. Track will be realigned by approximately 3 feet at the following locations:

- Drumm Street to Steuart Street (because of curb realignment)
- Davis Street to Fremont Street (known location of BART grates)
- Octavia Street to 12th Street (because of curb realignment)

Overhead Contact System Replacement

The proposed project will also replace existing OCS-only trolley poles with new steel poles along Market Street and cross streets as needed to accommodate the OCS trolley wire alignment; the poles will be relocated to the furnishing zone.

The project will replace all feeder/equalizer/tangent spans along Market Street from Octavia Street to Steuart Street, including approximately 100,000 feet of trolley wire. Trolley wire will largely be replaced within its existing alignment. Additional OCS wires between Eighth and 10th streets will be included to accommodate curb-lane trolleybus operations.

Traction-Power System Replacement

Existing traction-power duct banks consist of continuous runs of electrical conduits that have been encased in cast concrete, forming a rectangular block in cross section that extends the length of Market Street in the project area, generally outside the curbs on the south side and in the public right-of-way under Second and Stevenson streets at depths of 6 to 25 feet below the surface. Existing duct banks will be excavated and removed or abandoned in place. Two new duct banks will be constructed through the project corridor in the same alignment so as not to conflict with other project elements.

Roadway

The entire roadway and roadway base throughout the project area will be removed. The sub-base will be compacted, and a new concrete street base will be placed and topped with an asphalt surface. Utility castings such as manhole covers, catch basins, and similar street iron will be protected and adjusted to meet the new street surface. After resurfacing, pavement markings will be reapplied.

Utilities

The project will relocate or rehabilitate wastewater lines, water lines, AWSS lines, SFPUC power lines, and fiber optic conduits to maintain a state of good repair. Some rehabilitated utility lines will occupy a new joint trench for a number of the "dry" utilities. All "wet" utilities will be the same size as the existing lines; no additional capacity will be provided.

Electrical

There will be a complete upgrade of all the existing signal infrastructure on Market Street between Octavia and Steuart streets, which will include new poles, conduits, accessible pedestrian signal buttons, vehicle/pedestrian/bicycle signals, signal cabinets, and interconnects.

2.4 Construction and Staging

Construction will begin in 2020, with work divided between up to seven separate multiple-block segments of Market Street. Work will continue for at least a six-year period (and, potentially, up to 14 years), including inactive periods. Construction will proceed in both directions along up to two segments simultaneously. Active construction is expected to last a minimum of one year per segment.

Areas of active construction on Market Street will vary in size but always be separated from traffic and pedestrians by a buffer that will include a temporary barrier. All openings in the street and sidewalk will be closed by backfilling and paving or plating over to provide a safe and adequate passageway for bicyclists, motorists, transit, and pedestrians. Adjacent to the construction zone, transit speeds will be reduced. Loading spaces will be relocated away from active construction zones. Depending on local conditions, there may be opportunities to allow loading when a construction zone is inactive.

Construction will typically be restricted to 7 a.m. to 5 p.m. seven days a week. Work hours and days will be adjusted to accommodate transit operations, bike movement, pedestrian needs, and local businesses along the corridor during different stages of construction. Further study of each block and side streets will be performed during the detailed design phase to finalize the work hours.

Some night work and weekend work may be required in areas where land uses are primarily commercial. An example of an activity that may require both nighttime and weekend work is the construction of tracks at intersections. Tracks will be constructed at each intersection over the course of one weekend to minimize potential impacts on transit riders. In addition to day-to-day hourly restrictions, the City's holiday construction moratorium (Thanksgiving to January 1) places additional restrictions on construction work in the public right-of-way. Market Street between Fremont and Eighth streets falls under the moratorium, as does any city block where at least 50 percent of the frontage is devoted to business.

Vehicles and bicycles will be rerouted from Market Street during some stages. For utilities, limited construction may need to take place over multiple stages; any excavation will be plated. Some of the deeper excavations will be required for minor changes to existing stormwater collection infrastructure.

The following construction stages will occur in different orders within different segments:

- Closure of center lanes for track replacement as well as demolition and installation of new center transit islands. Curbside lanes will remain open to public transit. F-Line streetcar service will be maintained as much as possible but will require bus substitutions when travel in the center lane is not possible.
- Closure of curbside lanes for relocation and reconstruction of the curb, along with accompanying removal and replanting of trees; relocation of fire hydrants, light poles, catch basins, and other utilities; and demolition and installation of center transit islands. The center lanes will remain open to public transit.
- Closure of sidewalks for reconstruction; access to buildings and businesses will be maintained with the use of temporary walkways. Curbside lanes and United Nations Plaza will be available for pedestrian detours, while the center lanes will be available to public transit.
- Closure of intersections for demolition, relocation, and installation of utilities that cross Market Street. All pavement work will occur in quadrants (each one-quarter of the intersection) to accommodate cross traffic and transit along Market Street. Construction for each stage and sub-stage will generally proceed in the following order:
    - Mobilization of contractor equipment, facilities, materials, and personnel into construction staging areas
    - Installation of construction area signs, circulation of construction announcements
    - Establishment of work zone and perimeter buffers
    - Installation of temporary street lighting, OCS lines, and traffic signals.
    - Local de-energizing of OCS lines, as needed
    - Execution of removal work, including bus platforms, pavement, streetlights, signals, OCS lines, and interfering underground utilities, to prepare the work zone for construction of new infrastructure
    - Construction of infrastructure within the work zone, including underground utilities, pole foundations, pavement, tracks, tree trenches, curbs, sidewalks, bike lanes, boarding islands, hydrants, streetlights, OCS systems, traffic signals and poles, and streetscape features, followed by lane resurfacing
    - Installation of transit stop amenities and landscaping, signage, lane striping, and lane coloring
    - Demobilization

2.4.1 Construction Staging

All construction and staging will occur within the operational public right-of-way. The mobilization of personnel and materials will require areas for field offices and trailers, parking, material delivery, storage, and handling. These areas will need to be in proximity to active construction areas, ideally no more than 200 feet away. Staging areas will be located on Market Street or adjacent side streets, within 200 feet of active construction areas, and able to move in tandem with the shifting work zone.

Temporarily stockpiled materials will include excavated soil, crushed concrete, reinforcing steel, imported soil, pipe, appurtenances, streetcar tracks, OCS lines and poles, and other building materials that are customary of street and utility construction. Material delivery and removal, as well as onsite handling, will, in some cases, involve platoons of vehicles.

Temporary lighting, OCS lines, and signals will be needed. Temporary poles will most likely have above- grade foundations, such as large reinforced-concrete cylinders. Some temporary poles for the OCS will be timber direct-burial poles; others could be placed within new foundations. The poles will be within the street right-of-way or construction staging areas, depending on the available space.

Construction equipment will include track-mounted vehicles, including, but not limited to, excavators, asphalt cold planers, asphalt pavers, dozers, and earth-compacting rollers. Conventional equipment that can be transported on street-legal rubber-tires will make up the remainder of the construction vehicles.

Demolition of bus platforms, curbs, and sidewalks will require hammers, hydraulic breakers, demolition shears, pulverizers, grapples, brooms, and similar equipment.

2.4.2 Transportation Conditions during Construction

Vehicular traffic on the Market Street corridor will be restricted to public transit vehicles, including paratransit, but may be interrupted periodically. Emergency vehicles will be allowed at all times. At least one transit travel lane will be maintained in each direction on Market Street, with a minimum temporary width of 11 feet.

Transit access will be preserved, but some stops may be temporarily relocated and the number of stops temporarily reduced. Detours along some transit routes (e.g., to Mission Street) may be required for the duration of the construction period, as described in the coordinated construction management plan or focused construction transit plan that will be developed prior to final design and construction. Enhanced transit priority features will be provided on Mission Street during detours.

Pedestrian access throughout the corridor will be preserved, including access to transit stops and land uses along or near the project corridor. However, periodic sidewalk, plaza, or crosswalk closures will occur during sidewalk reconstruction and utility work. Sidewalk improvements will be completed over multiple stages of construction to maintain access. During each stage, pedestrian access to portions of the sidewalks and United Nations Plaza will be limited or narrowed but not completely restricted. Some intersection crosswalks may need to be closed, with pedestrians detoured to the nearest intersection. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain ADA compliance and ensure that pedestrian overcrowding does not occur at busier corridor locations.

Bicycles will be temporarily detoured at some locations, or along the entire corridor, to Mission Street, Howard Street, and/or Folsom Street. Bicycle facility changes will be completed in multiple stages to maintain access where possible.

Commercial loading activities will take place on adjacent side streets and/or during restricted hours along Market Street (e.g., staggered hours for loading and construction). Loading within an active construction zone will not be permitted at any time. Loading areas within active construction zones will be relocated as close to the construction zone as is practical. Temporary loading zones (within a mixed- flow lane adjacent to an inactive construction zone) may be possible in some circumstances.

Parking along adjacent side streets will be subject to restrictions, beyond existing restrictions, to accommodate construction staging. When feasible, temporary alternative access may be provided at a location outside the construction zone or within an acceptable location within the construction zone.

In addition to construction-related effects on transit service along Market Street, transit lines that run perpendicular to Market Street will be subject to temporary changes. In general, bus access along the Market Street corridor and transit lines that cross the corridor will be maintained during construction. However, some bus stops or routes will be changed during the course of construction. Potentially affected transit routes and services include 1AX California A Express, 1BX California B Express, 3 Jackson, 8 Bayshore, 8AX Bayshore A Express, 8BX Bayshore B Express, 10 Townsend, 12 Folsom-Pacific, 19 Polk, 27 Bryant, 30 Stockton, 30X Marina Express, 31AX Balboa A Express, 31BX Balboa B Express, 38AX Geary A Express, 38BX Geary B Express, 41 Union, 45 Union-Stockton, 47 Van Ness, 49 Van Ness-Mission, 81X Caltrain Express, 82X Levi Plaza Express, 83X Mid-Market Express, 90 San Bruno Owl, 91 Third Street-19th Avenue Owl, the PresidiGo Downtown Shuttle, Golden Gate Transit routes, SamTrans routes, and privately operated shuttles.

2.5 No-Build Alternative

The No-Build (No-Action) Alternative consists of those transportation projects that are already planned for construction by or before the 2020 opening year and 2040 design year. Consequently, the No-Build Alternative represents future travel conditions on Market Street without the Build Alternative. Reasonably foreseeable land use projects, plans, and transportation projects are included in the No-Build Alternative analysis, based on inputs from the City. These projects include development projects (e.g., residential, commercial, mixed-use projects), area plans (e.g., Market and Octavia Area Plan, Eastern Neighborhoods Rezoning and Area Plans) that will amend land use designations (e.g., plus zoning, height, bulk, etc.), and transportation/streetscape projects.

3 Section 4(f) Properties

This document discusses potential impacts to 173 Section 4(f) properties, including 10 historic districts, 135 individual historic properties, and 28 recreational properties. These properties and their Section 4(f) determinations are listed below in Table 4. The sole resource for which an impact greater than *de minimis* is proposed is the Market Street Cultural Landscape District, illustrated in Figure 5, p. A-43. The Market Street Cultural Landscape District is located within the Market Street roadway as well as adjacent parcels along Market Street between Embarcadero Plaza and Castro Street in San Francisco, California.

The Market Street Cultural Landscape District comprises a vehicular roadway, adjacent pedestrian sidewalks, and associated elements, which include trees, transit infrastructure, street furniture, and other small-scale features that support Market Street's function as a transportation corridor. The resource comprises related physical characteristics and spatial relationships that change over its course between its limits at Embarcadero Plaza and Castro Street. It occupies approximately 147 acres and exists entirely within the public right-of-way in the city and county of San Francisco.

Table 4. Section 4(f) Properties and Section 4(f) Determinations

Name of Section 4(f) Property	Section 4(f) Determination
NRHP-Listed, NRHP-Eligible, and Assumed NRHP-Eligible Historic Districts	
Market Street Cultural Landscape District	Section 4(f) use
Market Street Masonry Landmark District	No Section 4(f) use
San Francisco Auxiliary Water Supply System	*De minimis* impact
BART District	*De minimis* impact
Civic Center Landmark District (encompassing the Civic Center National Historic Landmark District)	*De minimis* impact
LGBTQ Tenderloin Historic District	*De minimis* impact
Uptown Tenderloin Historic District	No Section 4(f) use
Market Street Theatre and Loft National Register District	No Section 4(f) use
Kearny-Market-Mason-Sutter Conservation District	*De minimis* impact
New Montgomery Mission-2nd Street Conservation District	*De minimis* impact
NRHP-Listed, NRHP-Eligible, and Assumed NRHP-Eligible Individual Historic Properties	
Hotel Andree, 1661–1667 Market Street	No Section 4(f) use
Wilson Brothers Company Building, 1632 Market Street	No Section 4(f) use
8 buildings within the Market Street Masonry Landmark District: • 20 Franklin Street • 1666–1668 Market Street • 1670–1680 Market Street • 64–78 Gough Street • 1649–1655 Market Street • 1693–1695 Market Street • 1687 Market Street • 1657 Market Street	No Section 4(f) use
Lesser Brothers Building, 1629–1637 Market Street	No Section 4(f) use
Civic Center Hotel, 1605 Market Street	No Section 4(f) use
Fillmore West, 10–12 South Van Ness Avenue	*De minimis* impact
17 buildings within the Civic Center Landmark District: • 2 Hyde Street • 79 McAllister Street • 35 Fulton Street • 40 Leavenworth Street • 1170 Market Street • 83–91 McAllister Street • 30 Grove Street	No Section 4(f) use

Name of Section 4(f) Property	Section 4(f) Determination
• 11 Grove Street • 25–29 Grove Street • 37–39 Grove Street • 1240–1242 Market Street • 1244–1254 Market Street • 1256–1266 Market Street • 1272–1276 Market Street • 1278–1298 Market Street • 1200 Market Street • 99 Grove Street	
Western Furniture and Merchandise Mart, 1301–1363 Market Street	No Section 4(f) use
Whitcomb Hotel, 1215–1231 Market Street	No Section 4(f) use
United Nations Plaza	*De minimis* impact
Francesca Theater, 1127 Market Street	No Section 4(f) use
37 buildings within the LGBTQ Tenderloin Historic District: • 982–988 Market Street • 982–988 Market Street • 42 Golden Gate Avenue • 1 Jones Street • 1000–1108 Market Street • 1028–1056 Market Street • 1066 Market Street • 20 Jones Street • 1100–1112 Market Street • 6–26 7th Street • 6–12 6th Street • 1011 Market Street • 1035 Market Street • 25 7th Street • 1089 Market Street • 1083–1087 Market Street • 1073–1081 Market Street • 1067–1071 Market Street • 1063 Market Street • 1059–1061 Market Street • 1053–1055 Market Street • 1049–1051 Market Street • 1041–1045 Market Street • 1035 Market Street • 1023 Market Street • 1017–1019 Market Street • 1007 Market Street • 1025–1029 Market Street • 993 Market Street • 979–989 Market Street • 973 Market Street	No Section 4(f) use

Name of Section 4(f) Property	Section 4(f) Determination
• 1 6th Street • 101–127 Eddy Street • 2–16 Turk Street • 44 McAllister Street • 60 Leavenworth Street • 54–70 McAllister Street	
Golden Triangle light standards	No Section 4(f) use
925 Market Street	No Section 4(f) use
32 buildings within the Kearny-Market-Mason-Sutter Conservation District: • 2 Geary Street • 37–45 Geary Street • 744 Market Street • 47–55 Geary Street • 1–31 Geary Street • 1 Grant Street • 120–150 Cyril Magnin Street • 17–25 Stockton Street • 18 Ellis Street • 750–780 Market Street • 790 Market Street • 800–830 Market Street • 41 Ellis Street • 840–842 Market Street • 844–846 Market Street • 856 Market Street • 870–898 Market Street • 119–139 Ellis Street • 1 Powell Street • 934–936 Market Street • 944–948 Market Street • 83 Eddy Street • 25 Cyril Magnin Street • 938–940 Market Street • 901 Market Street • 825–833 Market Street • 845 Market Street • 801 Market Street • 799 Market Street • 783–785 Market Street • 735 Market Street • 725–731 Market Street	No Section 4(f) use
San Francisco Cable Cars National Historic Landmark	No Section 4(f) use
Samuels Clock	No Section 4(f) use
Kamm Building, 715–719 Market Street	No Section 4(f) use
Call Building, 701–703 Market Street	No Section 4(f) use

Name of Section 4(f) Property	Section 4(f) Determination
Lotta's Fountain	No Section 4(f) use
Chronicle Building, 690 Market Street	No Section 4(f) use
648–660 Market Street	No Section 4(f) use
Admission Day Monument	No Section 4(f) use
44 and 2–8 Montgomery Street	No Section 4(f) use
Hobart Building, 582–590 Market Street	No Section 4(f) use
Finance Building, 576–580 Market Street	No Section 4(f) use
Chancery Building, 562–566 Market Street	No Section 4(f) use
Flatiron Building, 540–548 Market Street	No Section 4(f) use
9 buildings within the New Montgomery-Mission-2nd Street Conservation District: • 601–605 Market Street • 20–30 2nd Street • 609 Market Street • 36 2nd Street • 681–685 Market Street • 643–665 Market Street • 1–29 3rd Street • 625 Market Street • 615 Market Street	No Section 4(f) use
Standard Oil Building/Chevron Towers, 555–575 Market Street	No Section 4(f) use
Crown Zellerbach Complex, One Bush Street	*De minimis* impact
Postal Telegraph Building, 2–22 Battery Street	No Section 4(f) use
Mechanics Monument	No Section 4(f) use
Pacific Gas & Electric General Office Building and Annex, 245 Market Street	No Section 4(f) use
Matson Building and Annex, 215 Market Street	No Section 4(f) use
Hyatt Regency, 22 Drumm Street	No Section 4(f) use
Southern Pacific Building, 1 Market Street	No Section 4(f) use
Parks and Recreational Resources	
Mark Twain Plaza	*De minimis* impact
Mechanics Monument Plaza	*De minimis* impact
Robert Frost Plaza	*De minimis* impact
Embarcadero Plaza	*De minimis* impact
United Nations Plaza	*De minimis* impact
Debose Avenue Bike Path	No Section 4(f) use
Koshland Park	No Section 4(f) use
Page and Laguna Mini Park	No Section 4(f) use
SoMa West Dog Park	No Section 4(f) use
SoMa West Skate Park	No Section 4(f) use
Patricia's Green in Hayes Valley	No Section 4(f) use
Joseph L. Alioto Performing Arts Piazza	No Section 4(f) use
Helen Diller Civic Center Playgrounds	No Section 4(f) use

Name of Section 4(f) Property	Section 4(f) Determination
Howard and Langton Mini Park	No Section 4(f) use
Turk and Hyde Mini Park	No Section 4(f) use
Father Alfred E. Boeddeker Park	No Section 4(f) use
Hallidie Plaza	No Section 4(f) use
Union Square	No Section 4(f) use
Yerba Buena Gardens	No Section 4(f) use
Jessie Square	No Section 4(f) use
St. Mary's Square	No Section 4(f) use
Transit Center Park	No Section 4(f) use
Maritime Plaza	No Section 4(f) use
Sue Bierman Park (formerly Ferry Park)	No Section 4(f) use
Harry Bridges Plaza/Ferry Building Square	No Section 4(f) use
Bay Trail	No Section 4(f) use
Rincon Park	No Section 4(f) use
Ferry Plaza	No Section 4(f) use

Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
Map Elements: Roadway Work (Contract Number: 2752J)
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

Market Street Cultural Landscape District (MR-20)*
Project Corridor

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Miles

Figure 5
Market Street Cultural Landscape District (Sheet 1 of 11)

Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
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Market Street Cultural Landscape District (MR-20)*
Project Corridor

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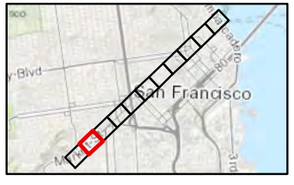
Figure 5
Market Street Cultural Landscape District (Sheet 2 of 11)



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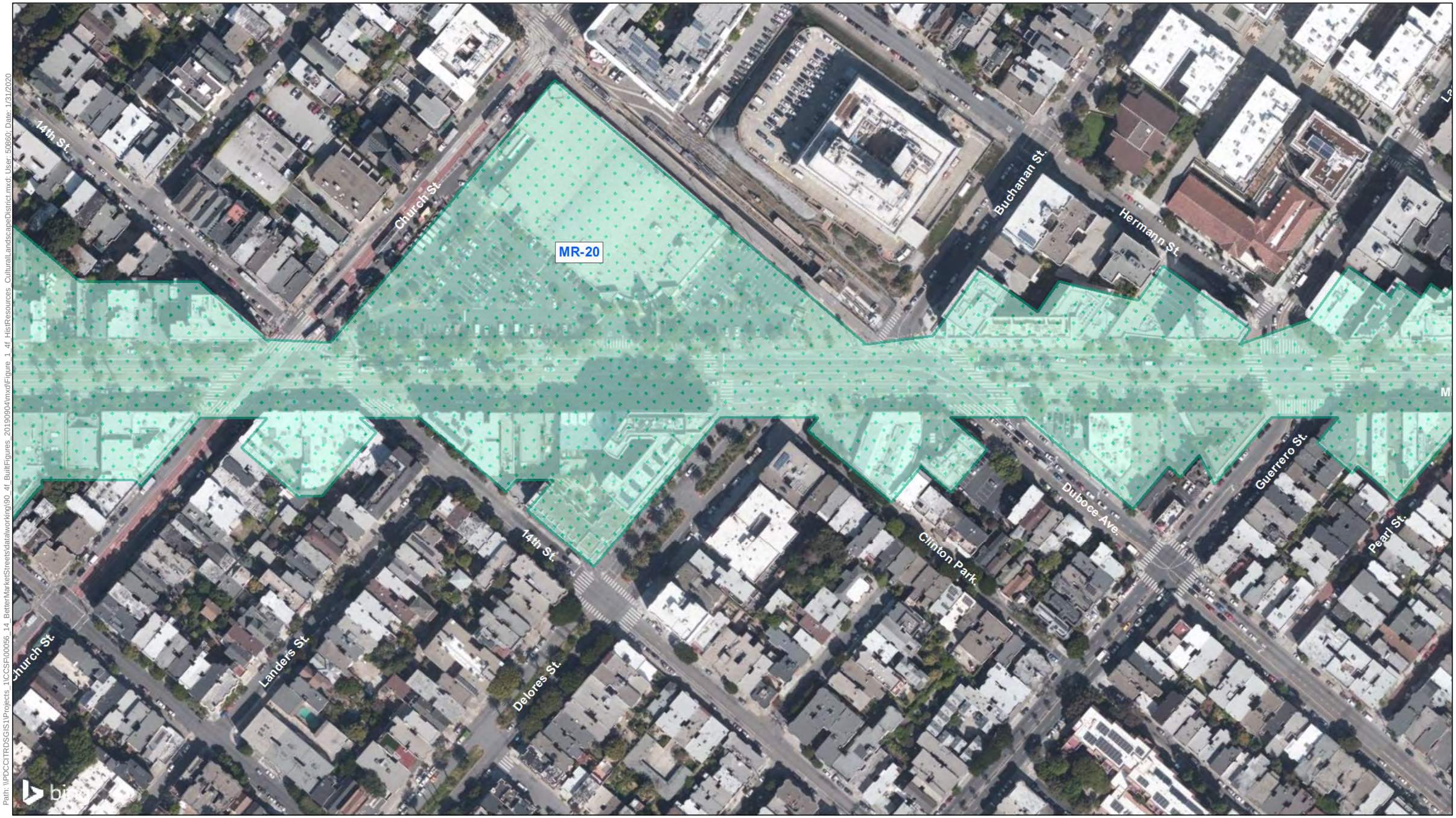

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Map Elements: Roadway Work (Contract Number: 2752J)
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Federal Project Number: STPL-5934(180)

Market Street Cultural Landscape District (MR-20)*
Project Corridor

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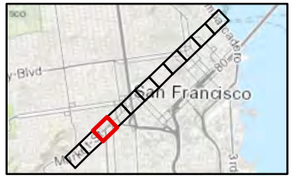
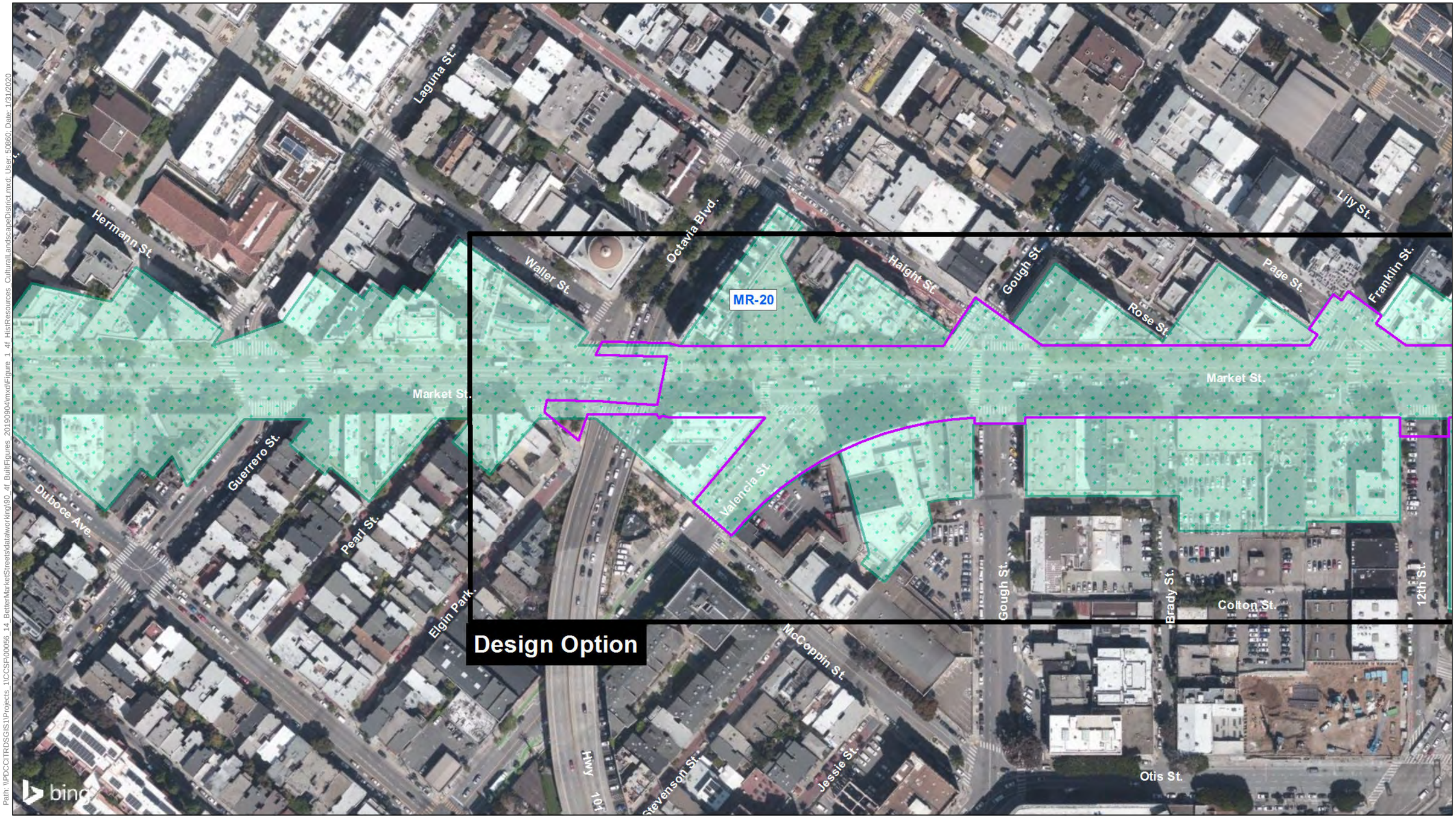
Figure 5
Market Street Cultural Landscape District (Sheet 3 of 11)





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Map Elements: Roadway Work (Contract Number: 2752J)
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

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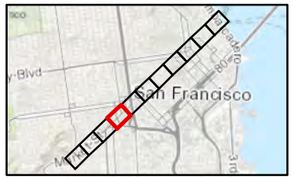
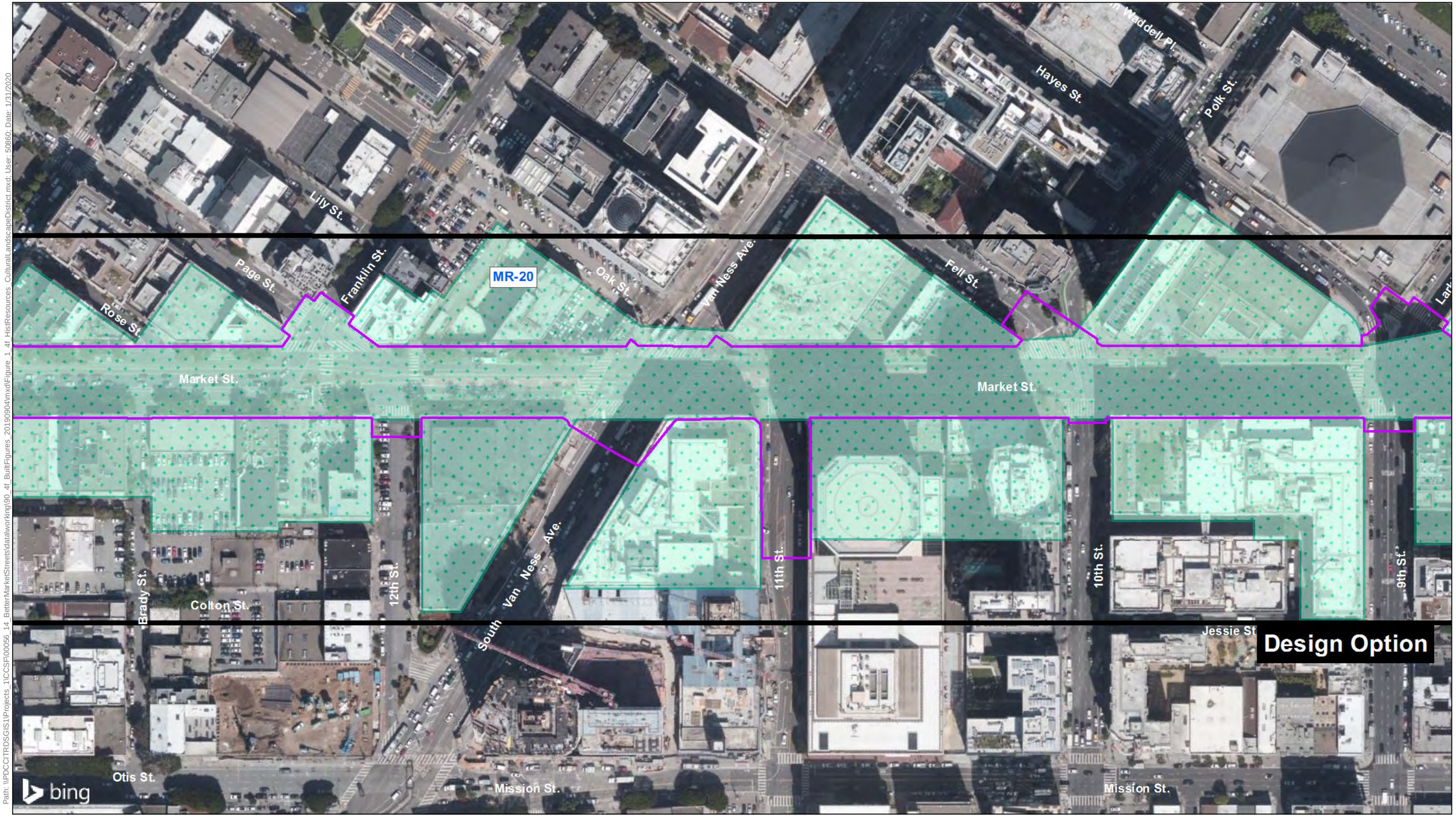
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 4 of 11)





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Map Elements: Roadway Work (Contract Number: 2752J)
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Federal Project Number: STPL-5934(180)

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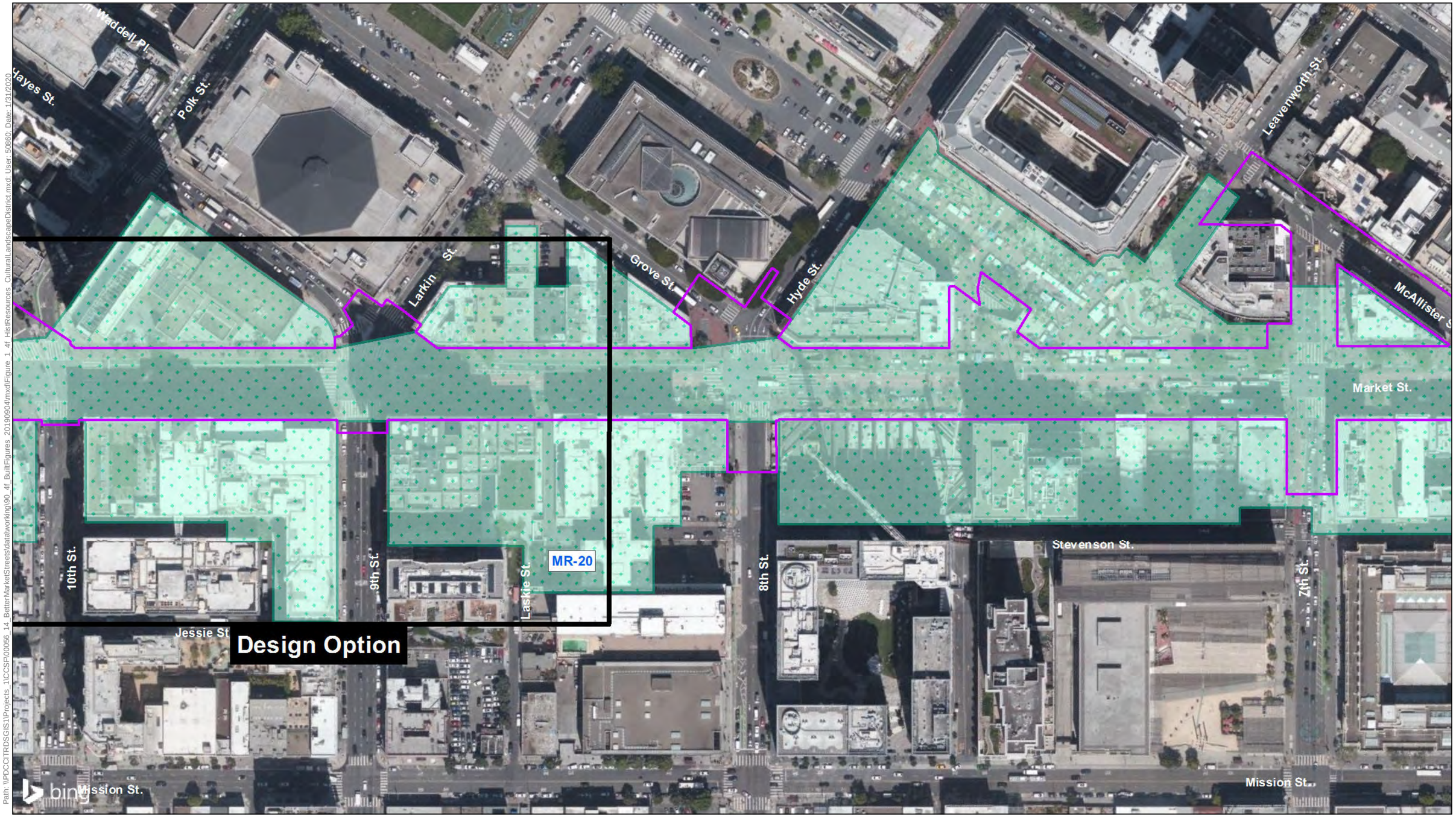
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 5 of 11)



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Federal Project Number: STPL-5934(180)

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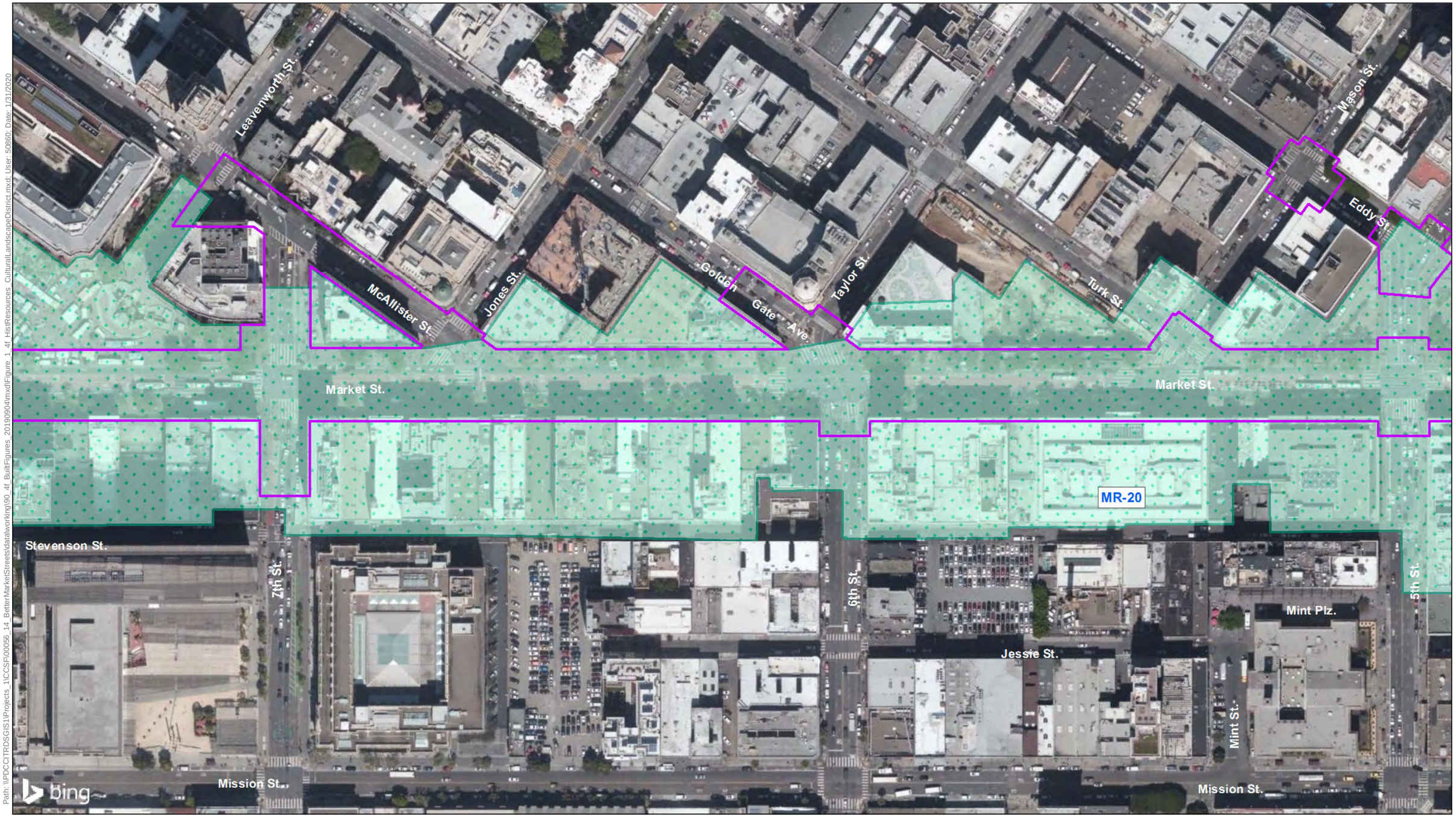
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 6 of 11)



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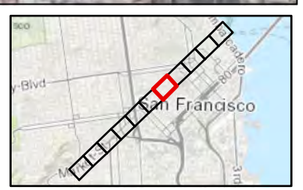
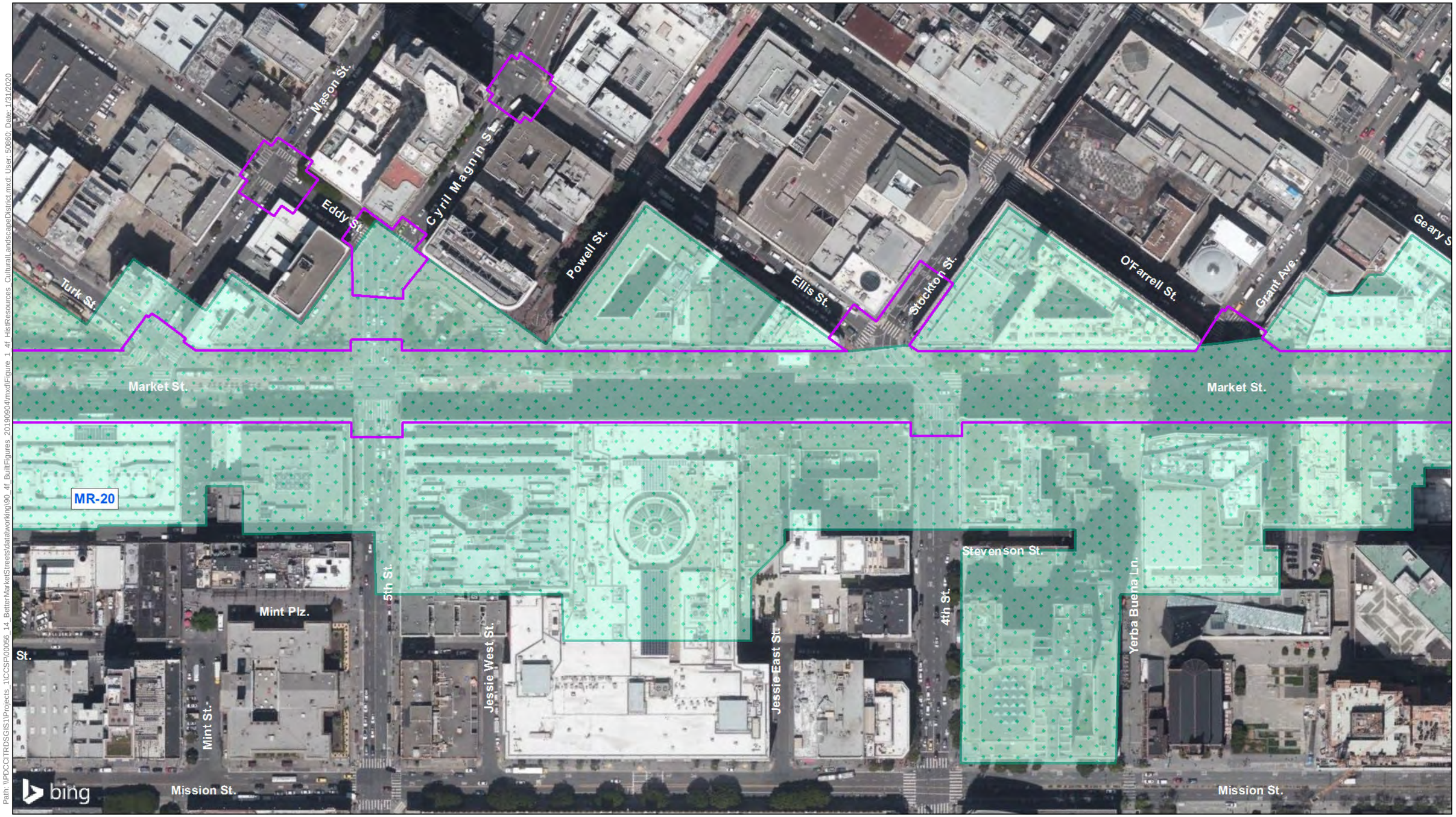
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 7 of 11)





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Map Elements: Roadway Work (Contract Number: 2752J)
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

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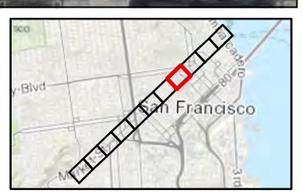
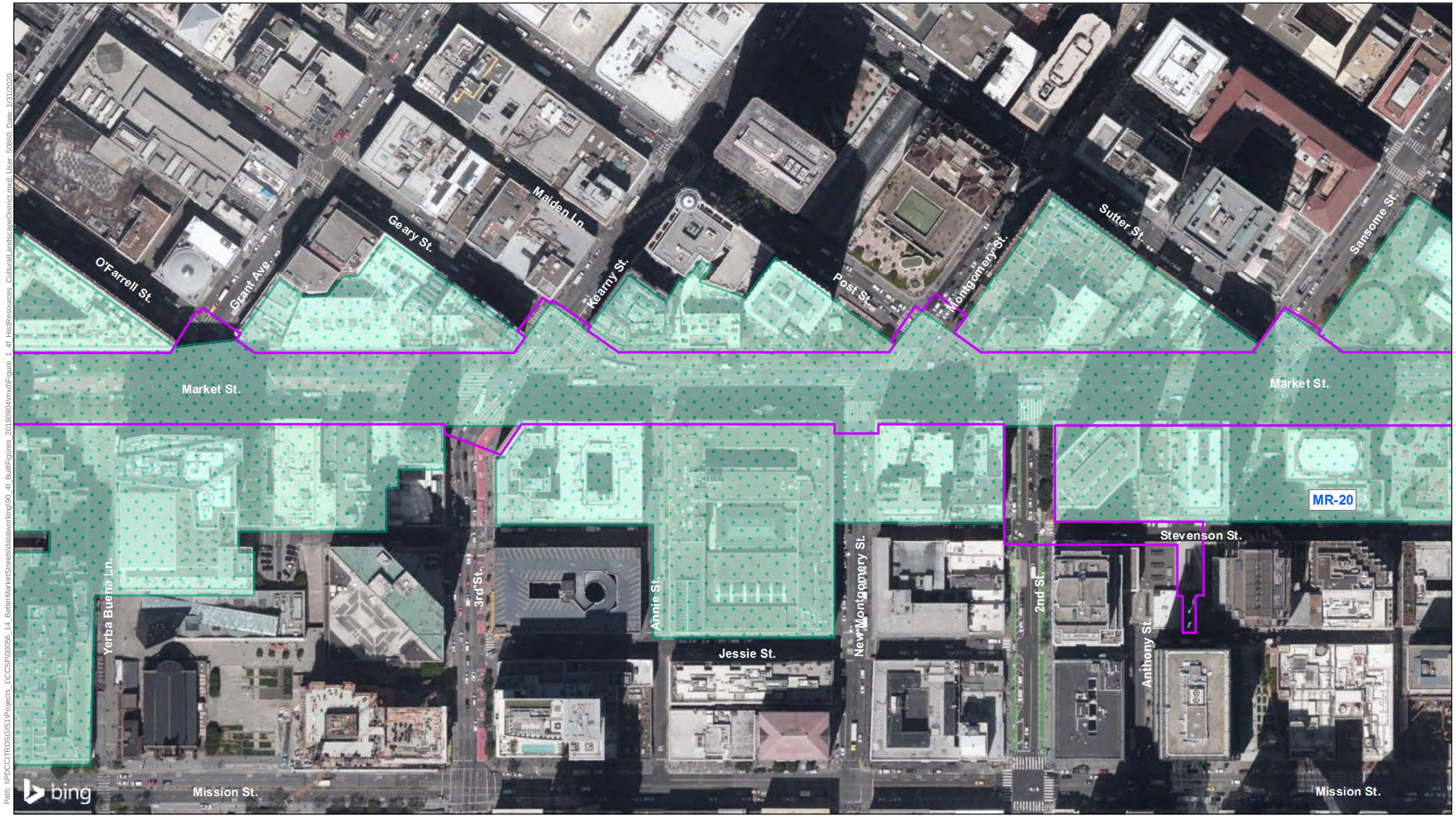
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 8 of 11)





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Map Elements: Roadway Work (Contract Number: 2752J)
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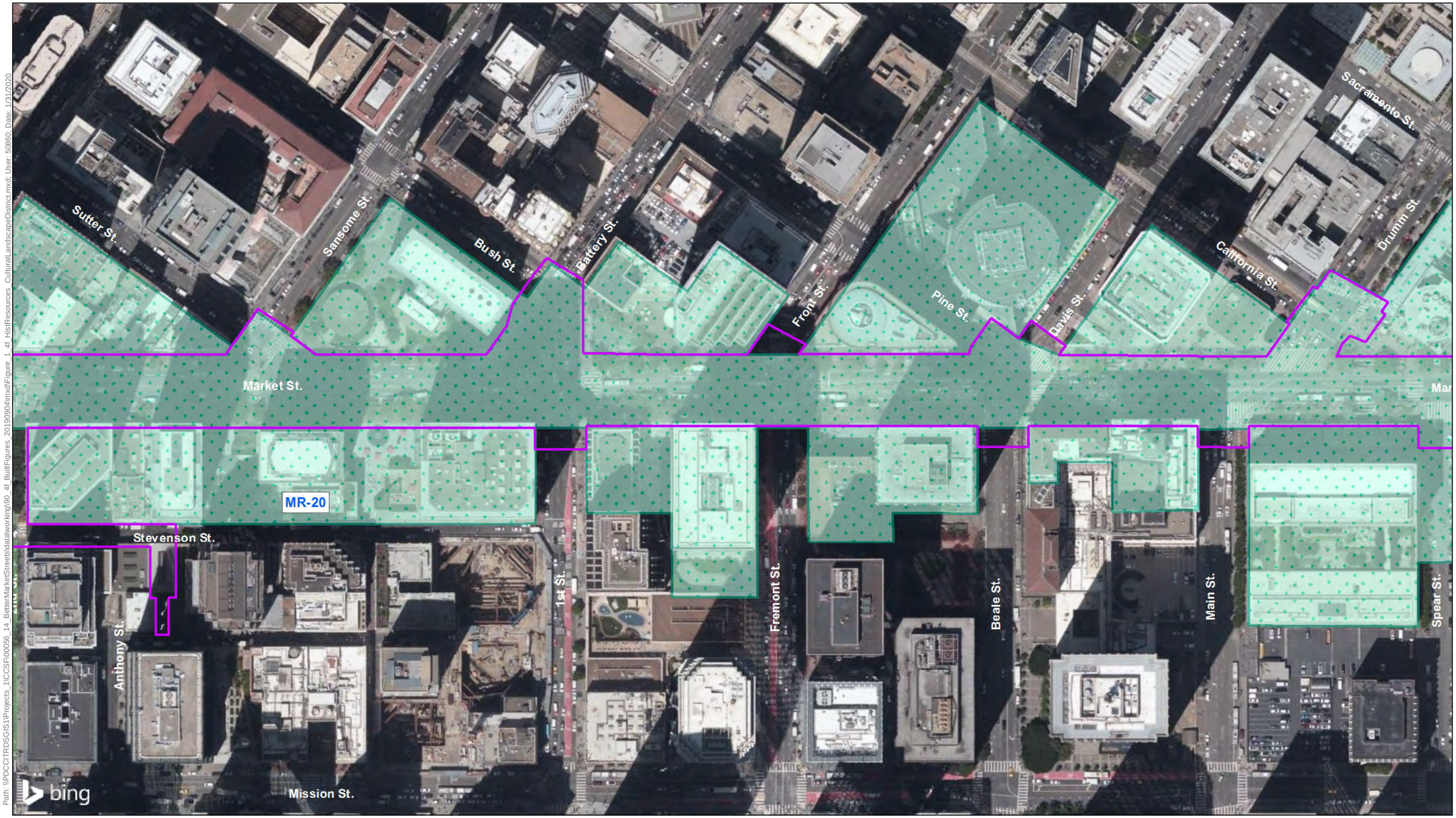
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 9 of 11)



Better Market Street Project

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Map Elements: Roadway Work (Contract Number: 2752J)
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

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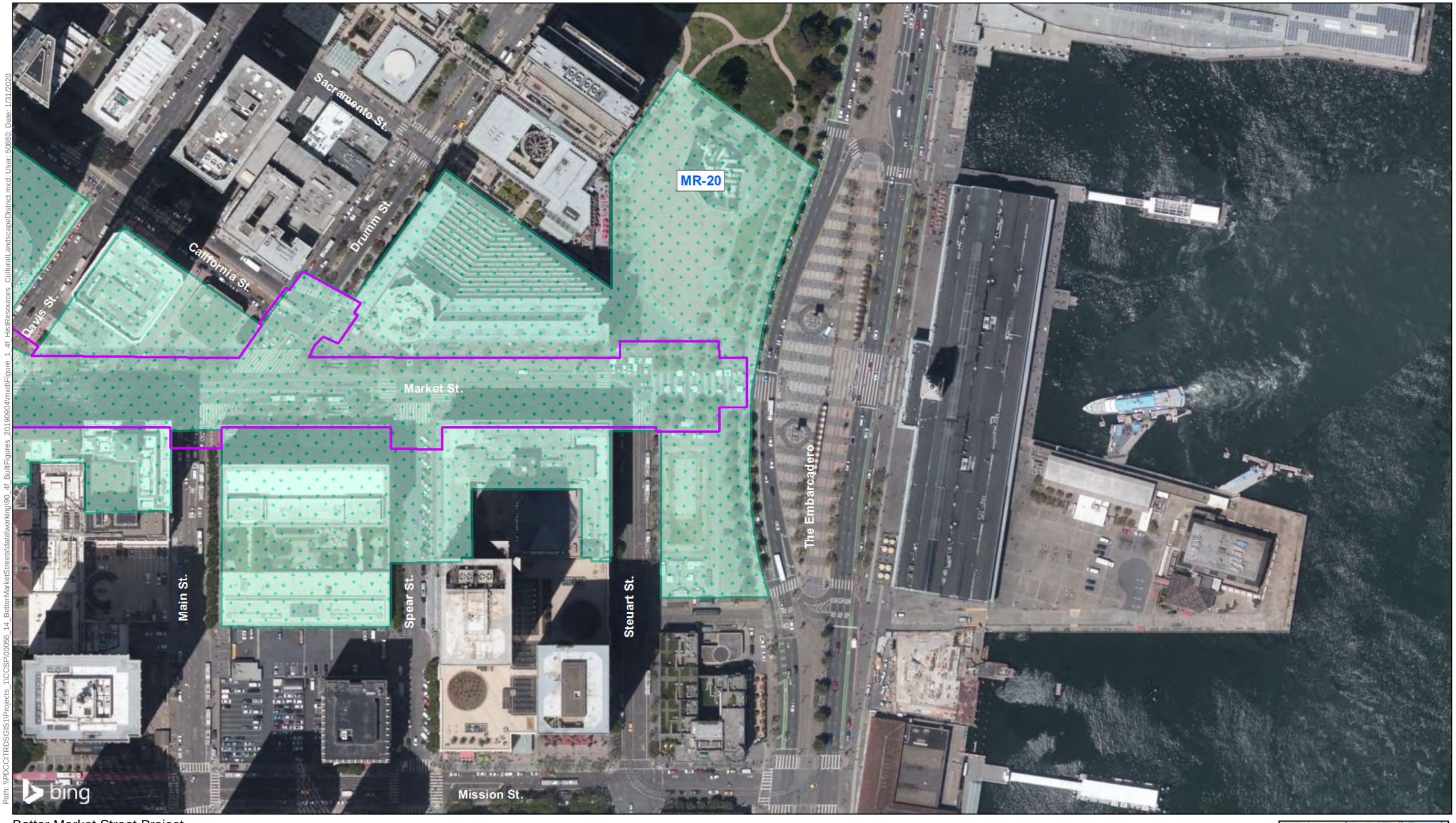
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 10 of 11)

Path: \\PDCCITRDSGIS1\Projects_1\CCSF\00056_14_BetterMarketStreets\data\working\90_4f_BuiltFigures_20190904\mxd\Figure_1_4f_HistResources_CulturalLandscapeDistrict.mxd; User: 50860; Date: 1/31/2020



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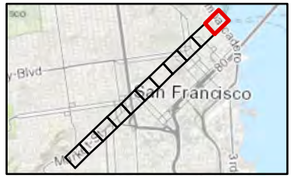
Market Street Cultural Landscape District (MR-20)*
Project Corridor

Figure 5
Market Street Cultural Landscape District (Sheet 11 of 11)



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3.1 Attributes and Function of the Section 4(f) Property

The Market Street Cultural Landscape District (district) is a major transportation facility and transit thoroughfare. It has traditionally been the major access route from the rest of the city to the San Francisco central business district (CBD), and the commercial retail uses lining Market Street in the vicinity of the intersection with Powell Street, which connects to Union Square, for transit and motor vehicles. Regionally, it also historically provided access by being a major local route in proximity to the U.S. 101 and I-280, and I-80, which along with SR-1 are the regional-access routes that serve San Francisco. The district is the site of all downtown MUNI metro and Bay Area Rapid Transit (BART) stations, and within the district, there are 23 bus routes, the F-line surface streetcars, and 40 bus and streetcar stops to serve them. As such, the district serves as a major link to areas of commerce, employment and housing. It provides bicycle access to the CBD by a combination of Class II, III, and IV bicycle facilities. The pedestrian facilities provide connectivity to commerce, employment and housing, in addition to multiple public agency programs, services and activities that rely on the pedestrian network along the Market Street Corridor for access. Approximate numbers of users are provided in the Purpose and Need statement, above.

The Market Street Cultural Landscape District has been evaluated as eligible for listing in the National Register of Historic Places (NRHP) under Criteria A and C.[9] The district, which was evaluated for this project, is nationally significant under NRHP Criterion A for its historic role as San Francisco's main circulation artery and facilitator of urban development, based on its association with the early urban and economic growth of San Francisco, as well as its historic role as a venue for civic engagement in San Francisco, based on its association with public demonstrations that elevated issues of LGBTQ rights to national attention beginning in the 1960s through 1979 (ICF 2016). The district is significant under NRHP Criterion C for its association with the Market Street Redevelopment Plan, designed by master architects John Carl Warnecke and Mario J. Ciampi and master landscape architect Lawrence Halprin. The Market Street Cultural Landscape District retains contributing elements through the following landscape characteristics: natural systems and features, spatial organization, cluster arrangements, circulation, vegetation, topography, buildings and structures, views and vistas, constructed water features, and small-scale features. These are presented in Table 5, below.

[9] The Market Street Cultural Landscape District has significance under NRHP Criterion A for its role as San Francisco's Main Circulation Artery and Facilitator of Urban Development (significance area 1) and for its role as a Venue for Civic Engagement in San Francisco (significance area 2). In addition, the Market Street Cultural Landscape District also has significance under NRHP Criterion C for its association with the work of master architects Mario J. Ciampi and John Carl Warnecke and master landscape architect Lawrence Halprin (significance area 3). The Market Street Cultural Landscape District retains sufficient historical integrity to convey these three areas of significance and, in the case of significances 2 and 3 (which have periods of significance that include end dates of less than 50 years), meet the NRHP Criteria Consideration G threshold. Thus, the Market Street Cultural Landscape District meets the criteria for listing in the NRHP for all three of its areas of significance.

Table 5. Contributing Features of the Market Street Cultural Landscape District

Contributing Feature	Area(s) of Significance
Natural Systems and Features	
Sunlight channeled through northern diagonal street grid into triangular plazas	NRHP Criterion C
Spatial Organization	
Verticality of streetscape (including buildings adjacent to the Market Street corridor)	NRHP Criterion A
Alignment as axis	NRHP Criterion A
Grid alignment	NRHP Criterion A
Linear plan	NRHP Criterion A
Alignment of 120-foot-wide street, diagonally from east to west	NRHP Criterion C
Pedestrian-oriented separation of foot, vehicle, and rail traffic	NRHP Criterion C
Large plazas (Embarcadero Plaza, Hallidie Plaza, UN Plaza)	NRHP Criterion C
Small plazas (Robert Frost Plaza, Mechanics Monument Plaza, One Post Plaza, Mark Twain Plaza)	NRHP Criterion C
Cluster Arrangements	
Presence of multi-modal transportation systems	NRHP Criterion A
Plaza arrangement along Market Street	NRHP Criteria A and C
North-south intersections	NRHP Criterion A
Repeating pattern of BART/Muni subway entrances along length of Market Street	NRHP Criterion C
Repeating pattern of street signage (square and circular)	NRHP Criterion C
Repeating pattern of traffic lights and traffic signage	NRHP Criterion C
Arrangement of street trees in double and single rows down sidewalks	NRHP Criterion C
Circulation	
Sidewalks	NRHP Criterion A
Roadway	NRHP Criterion A
Rails, including California Street cable car turnaround	NRHP Criterion A
Electric catenary wire system	NRHP Criterion A
Red brick paving in herringbone pattern that distinguishes pedestrian from vehicular space	NRHP Criterion C
Granite curbs	NRHP Criterion C
Tree allées (double and single rows)	NRHP Criterion C
Vertical circulation features (elevator, escalator, and stairs) of BART/Muni stations (Civic Center, Embarcadero, Montgomery, and Powell) and Muni-only station (Van Ness)	NRHP Criterion C
Vegetation	
Street trees	NRHP Criterion C
Topography	
Grade	NRHP Criterion A

Contributing Feature	Area(s) of Significance
Buildings and Structures	
Landmark buildings	NRHP Criterion A
BART/Muni station street entrances (Embarcadero Station, Montgomery Station, Powell Station, Civic Center Station)	NRHP Criterion C
Van Ness Muni station street entrance	NRHP Criterion C
Views and Vistas	
Line of sight from east to west	NRHP Criterion A
Line of sight from west to east	NRHP Criterion A
View of Market Street from Twin Peaks	NRHP Criterion A
Broad view of streetscape	NRHP Criterion A
Vista of City Hall from UN Plaza and Market Street	NRHP Criteria A and C
Embarcadero Plaza open space	NRHP Criterion A
Broad view of Market Street width	NRHP Criterion C
Constructed Water Features	
Lotta's Fountain	NRHP Criteria A and C
Small-Scale Features	
Replica Path of Gold light standards	NRHP Criteria A and C
AWSS fire hydrants	NRHP Criteria A and C
Samuels Clock	NRHP Criteria A and C
Mechanics Monument	NRHP Criteria A and C
California Admission Day Monument	NRHP Criteria A and C
Emergency call boxes	NRHP Criteria A and C
Traffic control boxes	NRHP Criterion C
Granite bollards with chain links	NRHP Criterion C
Bronze BART/Muni street-level elevators	NRHP Criterion C
Bronze four-sided clocks	NRHP Criterion C
Street signage	NRHP Criterion C
Semaphore-style traffic signage and traffic lights	NRHP Criterion C
Bronze tree grates	NRHP Criterion C

The non-contributing elements of the Market Street Cultural Landscape District include features that were installed following the district's periods of significance, including Muni high-low loading platforms, bicycle parking of a variety of styles, bollards in a variety of styles, bike lanes and pavement markings in some portions of the roadway, waste receptacles in a variety of styles, advertising billboards, wayfinding signage, newspaper vending machines, the Liberty Bell Slot Machine monument, vendor kiosks, public restroom facilities, BART/Muni elevator structures, transit shelters, flower stands, newsstands, vending machines, and BART/Muni station entrance canopies.

Other planned transportation facilities in the project area which could result in streetscape and transportation system improvements similar to the Build Alternative include the Van Ness Bus Rapid Transit Project/Van Ness Improvement Project, Geary Rapid Project/Geary Boulevard Improvement Project, Active Beale Street Project, and Vision Zero, amongst others.

3.2 Unusual Characteristics of the Section 4(f) Property

The most prominent unusual characteristic of the district is that it is a transportation facility and transit corridor undergoing uninterrupted, continuous use and that several of the design characteristics that underlie the district's historic status also constitute the design deficiencies that the proposed project will address. The widening of the sidewalk as part of the Market Street Redevelopment Plan has condensed all vehicular traffic, including rail, buses, and cyclists, into four travel lanes. This has left no space for consistent, dedicated bicycle facilities and has increased the conflict between the various transportation modes. This apportioning of public space is a direct result of the design decisions imposed on Market Street by the Market Street Redevelopment Plan. Character-defining features of the Market Street Redevelopment Plan streetscape, notably the brick sidewalk in a herringbone bond, are also barriers to mobility to the disabled to access on Market Street.

There are no clauses affecting ownership (including lease, easement, covenants, restrictions, or conditions, including forfeiture) applicable to the Section 4(f) resource.

3.3 Consultation with the SHPO

Consultation with the SHPO is under way. A Historic Resource Evaluation Report (HRER) was completed for this project (ICF 2020b), which evaluated the Market Street Cultural Landscape District for the National Register of Historic Places. The HRER was submitted to SHPO for concurrence on the determination of eligibility. On April 23, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations for 21 resources and requested edits to the evaluations of two others, including splitting one evaluation into two. On May 6, 2020, Caltrans sent edited determinations of eligibility to SHPO. On May 22, 2020, SHPO concurred with Caltrans' NRHP eligibility determinations of three resources. Therefore, the Market Street Cultural Landscape District is considered a Section 4(f) property.

4 Use of the Section 4(f) Property

This section discusses the concept of "use" in relation to the Market Street Cultural Landscape District. Per 23 CFR 774.17, a Section 4(f) "use" occurs when:

1. Land is permanently incorporated into a transportation facility;
2. There is a temporary occupancy of land that is adverse in terms of the Section 4(f) statute's preservation purposes; or
3. There is a constructive use of a Section 4(f) property.

When Section 4(f) applies to historic sites, it relies on analysis carried out under Section 106.

Section 4(f) of the Department of Transportation Act and Section 106 of the National Historic Preservation Act (NHPA) both require federal agencies to consider a project's effect on cultural resources. The Section 106 process is the method by which historic properties are identified, project effects on historic properties are determined, and measures to avoid, minimize, or mitigate adverse effects on historic properties are developed. Section 4(f) uses the results of the

Section 106 process to analyze whether the project will result in a use of a historic property under Section 4(f). The most important difference between the two statutes is the way in which each measures impacts on cultural resources. Section 106 is concerned with adverse effects, while Section 4(f) is concerned with use of protected properties. This distinction is important for the proposed project because implementation of the project will result in changes to multiple cultural resources in the area of potential effects (APE) but proposes an adverse effect on only one resource, the Market Street Cultural Landscape District, by changing the characteristics that qualify it for listing on the NRHP.

As the Market Street Cultural Landscape District includes land affected by the project which is permanently incorporated into a transportation facility, there is a Section 4(f) "use." FHWA has a long-standing policy for applying Section 4(f) in historic districts, namely that Section 4(f) applies to those properties that are considered contributing to the eligibility of the historic district to the NRHP, as well as any individually eligible property within the district.[10] Further discussion on what contributes to the eligibility of the Market Street Cultural Landscape District is provided in Section 3.1, above.

As listed in Section 3, above, the project also proposes 14 *de minimis* impact determinations on resources protected under Section 4(f), and that there are 159 resources where there is no Section 4(f) use. Per 23 CFR 774.17, a *de minimis* impact is where no historic property is affected by the project or where the project will have "no adverse effect" on the historic property in question. For parks, recreation areas, and wildlife and waterfowl refuges, a *de minimis* impact is one that will not adversely affect the features, attributes, or activities qualifying the property for protection under Section 4(f). When there is a *de minimis* impact finding, no individual 4(f) evaluation is required.

The 14 *de minimis* impacts identified in Section 3, above, contribute to the analysis contained within this Appendix. However, because the Market Street Cultural Landscape District is the only 4(f) resource for which an individual 4(f) evaluation is required, the reasoning for the *de minimis* impact or no use determinations is provided separately in Appendix B.

4.1 Market Street Cultural Landscape District

The project corridor runs along a portion of Market Street within the Market Street Cultural Landscape District, encompassing 35.2 acres of the Market Street roadway and extending approximately 2.2 miles in length (Figure 5, p. A-43). The proposed project will not involve acquisition of any property because construction will occur within the public right-of-way and ownership will not change.

All project features are proposed to be constructed in the public right-of-way and will not affect any contributing buildings within the Market Street Cultural Landscape District (Table 6). However, aspects of the project will demolish or alter the following contributing streetscape elements of the cultural landscape district. Additional details on the project's effects on these elements are described below.

[10] This guidance is provided under Question 2B of the FHWA's Section 4(f) Policy Paper (Federal Highway Administration 2012).

Table 6. Contributing Features of the Market Street Cultural Landscape District Altered by the Project

Contributing Feature	Area(s) of Significance
Spatial Organization	
Small plazas (Robert Frost Plaza, Mechanics Monument Plaza, One Post Plaza, Mark Twain Plaza)	NRHP Criterion C
Cluster Arrangements	
Repeating pattern of street signage (square and circular)	NRHP Criterion C
Repeating pattern of traffic lights and traffic signage	NRHP Criterion C
Arrangement of street trees in double and single rows down sidewalks	NRHP Criterion C
Circulation	
Red brick paving in herringbone pattern that distinguishes pedestrian from vehicular space	NRHP Criterion C
Granite curbs	NRHP Criterion C
Elevator at BART/Muni Civic Center station	NRHP Criterion C
Vegetation	
Street trees	NRHP Criterion C
Small-Scale Features	
Replica Path of Gold light standards	NRHP Criteria A and C
AWSS fire hydrants	NRHP Criteria A and C
Granite bollards with chain links	NRHP Criterion C
Street signage	NRHP Criterion C
Semaphore-style traffic signage and traffic lights	NRHP Criterion C
Bronze tree grates	NRHP Criterion C

The project will include sidewalk demolition and replacement within the small plazas (Robert Frost Plaza, Mechanics Monument Plaza, One Post Plaza, Mark Twain Plaza), and replace any lighting and furnishings. The project will preserve the monument associated with Mechanics Monument Plaza in place and will not alter the physical dimensions of the small plazas.

The project will include demolition and replacement of all existing paving materials within the public right-of-way; the project does not include replacement of existing paving materials within large plazas adjacent to Market Street. The project will widen the sidewalk area and completely replace existing surface pavement and curbing. Existing red brick paving in herringbone patterns will be replaced with unit pavers, according to the City's standard paving material palette and consistent with ADA standards and the San Francisco Downtown Streetscape Plan. (For more information on the requirements that make removal of the brick necessary, see the section titled *Americans with Disabilities Act.*) Although the new pavement will differentiate the pedestrian sidewalk area from the vehicular space, paver sizes, materials, and finishes may differ in various locations within the sidewalk area. For example, a paver used in the pedestrian through zone may be different from what is used in the furnishing zone/Streetlife Zone. The project will include detectable warnings in the paving between the sidewalk through zone and the proposed bikeway to prevent people with limited vision from accidentally crossing into the bikeway.

Changes in paving for sidewalks and small plazas will also result in a lack of uniformity across the entire range of design components for the Market Street Redevelopment Plan, given that existing original paving for the large plazas (Embarcadero Plaza, Hallidie Plaza, United Nations Plaza) will not be altered as part of the project. In addition, a raised sidewalk-level bikeway will be constructed immediately adjacent to the sidewalk and include buffers on both sides of the bikeway as well as a distinct paving pattern or material to help identify the designated space for bicyclists. This will change the setting of the sidewalk, which is now immediately adjacent to the roadway and separated by the granite curb.

The project will include removal of London plane trees (*Platanus acerifolia*) that were installed as part of the Market Street Redevelopment Plan. Because the existing trees have experienced an approximately 60 percent mortality rate, the project will install replacement trees of an alternative type. When the London plane trees were selected for the Market Street Redevelopment Plan, they were chosen for scale and canopy size (40 feet tall, with a spread of 30 feet) relative to the planned sidewalk width and height of the Path of Gold light standards, as well as quick rate of growth to maturity. The deciduous species was perceived as preferable because the canopy will shade pedestrians from the sun in summer and allow sunlight through the bare branches when the tree was leafless in the winter. In addition, the lowest tree branches grow about 12 feet from the base of the trunk and will not obscure views of storefronts from the street.

Trees will be replaced or relocated in areas where sidewalks will be reconfigured to accommodate wider and longer transit boarding islands and the new sidewalk-level bikeway. The tree selection will not be a single species, as was the case with the historic design, and that not all of the trees in the new planting palette will be consistent in height, canopy size, canopy shape, leaf size, color, etc. Trees will be selected from the following list of genera: Ginkgo (selections), Lophostemon (*L. confertus*, Brisbane box), Magnolia (selections of *M. grandiflora*, southern magnolia), *Pittosporum* (*P. undulatum*, Victorian box), *Platanus* (plane trees, sycamores, and selected hybrids), *Quercus* (evergreen "live oak" species), and *Ulmus* (*U. parviflora* selections and hybrids).

The proposed street tree alignment will be a single-row arrangement, unlike the Market Street Redevelopment Plan design, which included double rows of trees in some locations along the corridor. Some street trees are currently missing in locations throughout the streetscape. In some cases, only single rows are present where double rows were originally designed and installed. In other locations, no trees are present where single rows were originally designed and installed. In places where the original design featured a single row of street trees, the proposed cluster arrangement will be consistent with the historic design. However, in places where the historic design included double rows of streets, the project will not be consistent with the historic cluster arrangement. In multiple locations along the corridor where the project includes reduced sidewalk width, street trees will not be included because of the lack of clearance to adjacent building façades.

The project will either retain or relocate the existing BART/Muni elevator at the Civic Center station on the north side of Market Street near United Nations Plaza. This elevator has already been substantially altered and no longer retains its bronze exterior. However, the location of the extant elevator contributes to the significance of the Market Street Cultural Landscape

District. The potential relocation site is within an existing staircase and escalator area in United Nations Plaza, approximately 80 feet to the west. The escalator and stairs associated with this character-defining feature will not be altered by the relocation of the elevator at Civic Center station (see below).

The project will remove the existing granite bollards with chain links, which are in the path of planned bicycle and streetscape improvements.

The project will remove all of the square and circular pole-mounted street signs associated with the Market Street Redevelopment Plan design and replace them with new pole-mounted street signs, consistent with contemporary traffic safety standards.

The project will remove all of the square and circular regulatory, street name, and guide signs that were designed specifically for Market Street. This change will also include removal of the traffic lights and semaphore-design signal assemblies, which are unique to Market Street, where the signs and signals are mounted. The project will replace these features with new traffic signs, signals, and mounting structures, consistent with contemporary traffic safety standards.

The project will remove all of the existing bronze tree grates associated with the Market Street Redevelopment Plan design. Consistent with contemporary horticultural standards, no new tree grates will be introduced as part of the project.

The 236 replica Path of Gold light standards that intersect the project corridor will be removed, partially restored (the tridents and globes), reconstructed (base and poles), and realigned. Specifically, the existing replica poles will be replaced with larger poles; the tridents will be salvaged, restored, and reinstalled with new interior lighting systems; and the clamshell bases will be recast and modified to accommodate the larger poles. The standards will be reinstalled in a new alignment to maintain the visible linear edge along the pedestrian zone.[11]

Additionally, the character-defining AWSS will be altered by project activities. These features include portions of the underground AWSS pipes, which will be relocated or replaced within the project corridor to maintain a state of good repair or match curb movements. In addition, the majority of AWSS fire hydrants within the project corridor will be shifted to accommodate proposed traffic lanes, a pedestrian through zone, and other project elements. Utility covers on the three AWSS cisterns within the project corridor will be retained or replaced in kind.

Caltrans proposes a finding of adverse effect under Section 106, because the project will adversely affect the Market Street Cultural Landscape Historic District, as the district will no longer be able to convey its National Register significance under Criterion C (ICF 2020a). However, the Market Street Cultural Landscape Historic District will continue to convey its significance under Criterion A of the National Register; and as such will continue to be eligible for the National Register following the completion of the project.

[11] The 236 replica Path of Gold light standards, which will experience change as a result of the project, are contributing elements to the Market Street Cultural Landscape District. However, these replica light standards are geographically separate from the 92 original Path of Gold light standards, which are eligible for listing in the NRHP but are not contributing elements to the district because they were installed in their current locations following the district's period of significance. The project does not propose to alter the individually NRHP-eligible original Path of Gold light standards, which are located outside the project APE.

As there is a proposed finding of adverse effect under Section 106, there cannot be a *de minimis* impact finding under Section 4(f) for the Market Street Cultural Landscape Historic District and so an individual 4(f) evaluation is required.

5 Avoidance Alternatives

Section 4(f) requires the selection of an alternative that completely avoids the use of Section 4(f) properties if that alternative is deemed feasible and prudent. A "feasible and prudent" avoidance alternative is one that "avoids using Section 4(f) property and does not cause other severe problems of a magnitude that substantially outweigh the importance of protecting the Section 4(f) property." (23 CFR 774.17). An avoidance alternative is not feasible if it "cannot be built as a matter of sound engineering judgment." (*Ibid.*) An alternative is not prudent if: (1) It compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need; (2) It results in unacceptable safety or operational problems; (3) After reasonable mitigation, it still causes: (A) Severe social, economic, or environmental impacts; (B) Severe disruption to established communities; (C) Severe disproportionate impacts to minority or low income populations; or (D) Severe impacts to environmental resources protected under other Federal statutes; (4) It results in additional construction, maintenance, or operational costs of an extraordinary magnitude; (5) It causes other unique problems or unusual factors; or (6) It involves multiple factors listed above, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude. (*Ibid.*)

This section discusses a total of 4 avoidance alternatives. These alternatives include the No-Build Alternative, an Accelerated Repair and Maintenance Alternative, a Mission Street with Bus Lanes Alternative, and a Mission Street with Cycle Tracks Alternative. These alternatives originated from two sources, early design concepts prepared in collaboration with numerous members of the public and stakeholders throughout the city of San Francisco and the environmental review process conducted pursuant to the California Environmental Quality Act (CEQA), which led to preparation of the *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019). These alternatives were the result of more than a decade of consultation with stakeholders and the public. A more complete description of the public engagement process is provided in Section 1.7.3, *Alternatives Considered but Eliminated from Consideration*, in Chapter 1 of the draft environmental assessment prepared for the Better Market Street project.

Seventeen design concepts were developed during the early part of the formal public engagement process, beginning in 2011, and evaluated by the interagency team at that time (San Francisco Public Works, SFMTA, the San Francisco Planning Department, SFCTA, and SFPUC), based on their consistency with the proposed project's goals and compatibility with community-identified design priorities. Most of these design concepts were determined to be either infeasible or incompatible with the project purpose and need. Three of the design concepts developed through the early formal engagement process were refined and carried forward for environmental analysis as alternatives in the *Better Market Street Initial Study* (San Francisco Planning Department 2016). Following preparation of the *Better Market Street*

Initial Study (San Francisco Planning Department 2016), the three alternatives evaluated in that document were dismissed from further consideration because they were determined to not meet the project purpose and need. Various components of those three alternatives were refined to develop the one proposed project that was evaluated in the *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019).

In addition to the proposed project, the *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019) considered five other build alternatives. One of these, discussed below as the Accelerated Repair and Maintenance Alternative, would minimize impacts on the Market Street Cultural Landscape Historic District by reducing the scope of proposed project such that several priority 1 character-defining features of the Market Street Cultural Landscape District would remain intact. The four other build alternatives evaluated in the *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019) are not considered avoidance alternatives because they would affect Section 4(f) resources and therefore are discussed in Section 6, *Other Project Alternatives*.

In addition to the Accelerated Repair and Maintenance Alternative, the 17 early design concepts were re-evaluated in light of the need to identify potential feasible and prudent avoidance alternatives. This re-evaluation resulted in the identification of the Mission Street with Bus Lanes Alternative and the Mission Street with Cycle Tracks Alternative as potential avoidance alternatives. The following sections explain the factors considered in the analysis of the four avoidance alternatives evaluated in this document and the basis on which they were eliminated.

5.1 No-Build Alternative

Under the No-Build Alternative, generally, the roadway configuration; access for private vehicles; surface transit, such as Muni service; streetscapes; commercial and passenger loading; vehicular parking; and utilities would remain in their current condition. Limited physical changes would be made on Market Street (e.g., regularly scheduled or emergency repairs, electrification of the two track switches on Market Street at 11th Street, replacement/repair of BART/Muni ventilation grates, additional concrete protection to bike lanes, refreshing existing crosswalk and other pavement markings, minor signal timing changes to improve vehicle progression, other minor physical changes to respond to maintenance or operational needs). The No-Build Alternative also includes other planned land-use projects, plans, and transportation projects. These projects include development projects (e.g., residential, commercial, mixed-use projects), area plans (e.g., Market and Octavia Area Plan, Eastern Neighborhoods Rezoning and Area Plans) that would amend land use designations (e.g., plus zoning, height, bulk, etc.), and transportation/streetscape projects. Transportation projects that would overlap some portion of the project corridor include:

- Muni Forward
- Van Ness Improvement Project
- Geary Rapid Project
- Electrification of the two existing track switches on Market Street at 11th Street
- Replacement/repair of BART/Muni ventilation grates

- Addition of concrete protection to bike lanes
- Refreshing of existing crosswalk and other pavement markings
- Minor signal timing changes to improve vehicle progression

Because such activities are routinely implemented on city streets, the No-Build Alternative could be constructed and operated from a technical point of view. While some of the improvements associated with the No-Build Alternative could impact Section 4(f)-protected properties, no FHWA funds are anticipated to be used to fund such improvements therefore the provisions of Section 4(f) do not apply.

The principal purpose of the project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists and pedestrians. The No-Build Alternative would not relieve existing transit capacity constraints on Market Street because the planned and emergency repairs and replacements under this alternative would not be sufficient to address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. In addition, this alternative would not provide a fully separated bicycle route along the Market Street corridor and bicycle access would be the same as under existing conditions. Therefore, the efficiency of the corridor for bicyclists would not be increased. Based on the above, the No-Build Alternative would not meet the principal purpose of the project.

An ancillary purpose of the project is to bring elements of city infrastructure in the Market Street corridor that are reaching the ends of their operational design lives into a state of good repair, and to improve the accessibility of the corridor and quality of its streetscape environment. The No-Build Alternative would not include the large-scale corridor-wide repairs proposed under the Build Alternative for aging infrastructure on Market Street, and this alternative would not address existing accessibility issues or quality of its streetscape environment. Rather, the No-Build Alternative would only include regularly scheduled or emergency repairs. Therefore, the No-Build Alternative would not meet the ancillary purpose of the project.

One of the needs of the project is related to safety, as Market Street is located on a high-injury network and has a higher than statewide average rate of injuries for an urban four-lane undivided road. The No-Build Alternative would not provide a fully separated bicycle route and would not address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. In addition, the alternative would not address other existing roadway deficiencies that contribute to the higher-than-average collision rate on Market Street. As a result, the No-Build Alternative would not address this project need.

One of the needs of the project related to roadway deficiencies is that existing non-standard brick sidewalks that do not comply with the ADA with respect to slip resistance, surface smoothness, and surface visual uniformity can present substantial challenges to low-vision and mobility impaired pedestrians. As described in the section titled *Americans with Disabilities Act*, the existing red brick paving on Market Street sidewalks does not meet federal standards regarding traction or joints for pedestrian access routes, which cause

vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes.[12]. Furthermore, existing joints between bricks on Market Street sidewalks can be wide enough to catch the tip of a cane and thus be dangerous for those with walking aids, and the brick creates tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Lastly, many sidewalk crossings on Market Street lack ADA-compliant curb ramps. The No-Build Alternative would retain existing red brick sidewalks along Market Street and therefore would not address this project need. Furthermore, another need of the project related to roadway deficiencies is that for transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA compliant. The No-Build Alternative would not address current ADA requirements for boarding island width for the boarding islands on Market Street and so would not address this project need.

The above analysis indicates that the No-Build Alternative compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need.

The No-Build Alternative would also result in unacceptable safety and operational problems as follows:

- Under the No-Build Alternative, transit, taxis, commercial vehicles, and bicyclists would continue to utilize shared lanes within the project corridor, potentially posing hazardous conditions for all modes of transportation. Specifically, high demand for commercial and taxi loading areas would continue, resulting in pinch points. Congestion from limited opportunities for vehicles to pass in center lanes would continue, particularly when vehicles are queued while making right turns. Curbside lane blockages at right-turn areas or commercial loading areas would continue to lead to conflicts between traffic and loading vehicles. Pinch zones will also occur where transit boarding islands encroach on the flow of traffic, resulting in vehicles weaving in bus lanes. While the No-Build Alternative could include the future addition of limited concrete protection for bike lanes, this protection would only partially address the conflicts between bicycles and vehicles.
- Under the No-Build Alternative, the width of Market Street would not change. Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks, leading to conflicts between vehicle traffic and pedestrians.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks that do not comply with the ADA present safety concerns. The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and

[12] Conclusions in this discussion are drawn from the U.S. Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/ background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks?highlight=WyJ2aWJyYXRpb24iLCJ2aWJyYXRlIiwidmlcmF0aW5nIiwidmlcmF0b3IiLCJ2aWJyYXRpb 25zIiwidmlcmF0ZXMiLCJ3aGVlbGNoYWlyIiwid2hlZWxjaGFpcnMiLCJ3aGVlbGNoYWlyJ3MiLCJ3aGVlbGNoYWlyJyJd, accessed December 12, 2018.

maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters. The No-Build Alternative would not replace the non-ADA-compliant sidewalk surface. Accordingly, this alternative would not improve safety for low-vision and mobility-impaired users of the corridor.

- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. Therefore, boarding islands, which are in the middle of vehicle traffic, can become overloaded with users that exceed the boarding islands' safe capacity.

By allowing traffic congestion to continue, not addressing bicyclist/vehicle conflicts, not narrowing Market Street pedestrian crossings, and allowing sidewalk conditions that are not ADA compliant to continue, the No-Build Alternative would facilitate a continuation of the Market Street corridor as a high-injury network, and its higher than statewide average rate of injuries would very likely continue. Therefore, the No-Build Alternative results in unacceptable safety and operational problems.

The anticipated cost to implement this alternative, additional to costs of ongoing maintenance and an allowance for emergency repairs, is $0. Therefore, this alternative does not result in additional construction, maintenance, or operational costs of an extraordinary magnitude.

The No-Build Alternative would not, after reasonable mitigation, cause severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income population; or severe impacts to environmental resources protected under other Federal statutes.

The No-Build Alternative does not cause other unique problems or unusual factors.

The No-Build Alternative does not involve multiple of the above factors that, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude. As discussed above, this alternative is not prudent because it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need and results in unacceptable safety and operational problems.

As described above, the No-Build Alternative would not meet the project purpose or need to make the Market Street corridor safer and more efficient for all modes of transportation. Further, this alternative would not meet the ancillary project purpose to bring elements of the city infrastructure on Market Street to a state of good repair and to improve the accessibility of the corridor and quality of its streetscape environment. Therefore, for the reasons discussed above, the No-Build Alternative is not prudent, as it compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need. Further, the No-Build Alternative would result in unacceptable safety and operational problems by allowing existing vehicle congestion, bicycle/vehicle conflicts, excessive pedestrian crossing width, and lack of ADA compliance on Market Street sidewalks to continue.

5.2 Accelerated Repair and Maintenance Alternative

The Accelerated Repair and Maintenance Alternative[13] would include all the activities under the No-Build Alternative as well as some features of the Build Alternative. Specifically, the Accelerated Repair and Maintenance Alternative would include, but is not limited to, the following maintenance and operational activities:

- Replacing existing trees with new trees to preserve the *Platanus* monoculture, although healthy trees in locations that do not conflict with the design of the alternative would be retained
- Utility relocation or rehabilitation activities that can be accommodated beneath the existing roadway and thus avoid excavation into the sidewalk
- Revising time restrictions on loading zones
- Extension of the Muni-only lanes

The Accelerated Repair and Maintenance Alternative would not include most of the elements of the Build Alternative. The following elements associated with the Build Alternative are not included in this alternative:

- Changes to curb alignments
- Intersection reconfiguration to minimize pedestrian crossing distances, accommodate the sidewalk-level bikeway, or relocate and modify traffic islands
- Signal timing changes, control modifications, and signal relocations
- Replacement of existing sidewalks with paving materials consistent with federal accessibility requirements
- Construction of pedestrian furnishing zones
- Removal and replacement of existing loading bays on Market Street and establishment of new commercial and passenger loading zones on adjacent cross streets
- Construction of physically separated bicycle lanes
- Modifications to transit stop spacing
- Construction of a new bidirectional F-loop
- Relocation of AWSS fire hydrants and stormwater catch basins
- Relocation of a BART/Muni elevator at the Civic Center station

[13] The activities described for the Accelerated Repair and Maintenance Alternative, considered together, essentially comprise the "Full Preservation Alternative" that the City of San Francisco included for local procedural reasons in its California Environmental Quality Act Environmental Impact Report (San Francisco Planning Department 2019). The local procedural reasons are included in the following resolution: San Francisco Planning Department, "Historic Preservation Commission Resolution No. 0746: Adoption Of A Policy Statement To Clarify Historic Preservation Commission Expectations For The Development And Evaluation Of Preservation Alternatives In Environmental Impact Reports For The Purposes Of The California Environmental Quality Act." March 18, 2015. Accessed January 3, 2020, from http://sfmea.sfplanning.org/HPC%20EIR%20Pres%20Alts%20Reso%20746.pdf.

- Partial restoration, reconstruction, and realignment of the Path of Gold light standards
- State-of-good-repair upgrades to replace components of the F-line streetcar (tracks, OCS, OCS support poles, and underground traction-power duct banks)
- Roadway and roadway subbase replacement
- Relocation or rehabilitation of wastewater lines, water lines, AWSS lines, SFPUC power lines, and fiber optic conduits to maintain a state of good repair
- Upgrade of all the existing signal infrastructure

The Accelerated Repair and Maintenance Alternative includes all currently required repair and maintenance for facilities in and under the roadway, which would be carried out as a single project, but avoiding any alteration of the sidewalks. The Accelerated Repair and Maintenance Alternative would not result in any alterations to plazas along the project corridor. Necessary incremental modification of sidewalks, tree wells and grates, and similar features would still be carried out as needed, but as maintenance activities separate from the Accelerated Repair and Maintenance Alternative. Compared to the No-Build Alternative, the Accelerated Repair and Maintenance Alternative would carry out the repairs within a more compressed time frame with more planned scheduling and siting of work. As with the No-Build Alternative, based on historical funding streams, improvements associated with the Accelerated Repair and Maintenance Alternative are not anticipated to be federally funded, thus the provisions of Section 4(f) do not apply to this alternative.

Any construction that constitutes an alteration for purposes of the ADA in the Market Street corridor would require the removal of the greater part of the historic material (e.g., sidewalk surfaces and granite curbs) that in turn contribute to the district's significance as a designed landscape associated with the Market Street Redevelopment Plan.

Because this alternative includes the same actions as the No-Build Alternative, the Accelerated Repair and Maintenance Alternative could be constructed and operated from a technical point of view. The Accelerated Repair and Maintenance Alternative is therefore feasible. However, for the reasons outlined below, this alternative is not considered prudent.

The Accelerated Repair and Maintenance Alternative was designed to avoid most impacts on the Market Street Cultural Landscape District. Therefore, this alternative would omit many project-related alterations to the physical features of Market Street. Accordingly, transit stop spacing and service, bicycle facilities, and commercial and passenger loading facilities would remain similar to existing conditions.

The principal purpose of the project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists and pedestrians. The Accelerated Repair and Maintenance Alternative would not relieve existing transit capacity constraints on Market Street because transit operations would be generally similar to existing conditions. This alternative would include the same extension of the Muni-only lanes as the proposed project; however, this change would not be sufficient to address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. For example, this alternative would not include construction of physically separated sidewalk-level bicycle lanes, which are necessary to encourage bicyclists to avoid the vehicle travel lanes, and thus would not avoid conflicts between cyclists and transit,

paratransit, taxis, and commercial vehicles operating within the project corridor. In addition, this alternative would not include changes to loading zones to avoid conflicts between vehicles entering/exiting loading zones and cyclists. This alternative would also not include the intersection reconfiguration changes necessary to reduce pedestrian crossing distances, which, in turn, would not reduce conflicts between pedestrians and transit, paratransit, taxis, and commercial vehicles operating within the project corridor. Lastly, because this alternative would not provide a fully separated bicycle route along the Market Street corridor and bicycle access would be the same as under existing conditions, the efficiency of the corridor for bicyclists would not be increased. Based on the above, the Accelerated Repair and Maintenance Alternative would not meet the principal purpose of the project.

An ancillary purpose of the project is to bring elements of city infrastructure in the Market Street corridor that are reaching the ends of their operational design lives into a state of good repair. The Accelerated Repair and Maintenance Alternative would partially replace infrastructure that is nearing the end of its useful life on this section of Market Street. Specifically, this alternative would only allow replacement of utilities that are below the roadway portion of Market Street but would not replace curbs, sidewalk areas, or the Path of Gold light standards. Therefore, this alternative would not fully meet the ancillary purpose of the project.

One of the needs of the project is related to safety, as Market Street is located on a high-injury network and has a higher than statewide average rate of injuries for an urban four-lane undivided road. As discussed above, this alternative would not provide a fully separated bicycle route along the Market Street corridor and would not address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. This alternative also does not address existing roadway deficiencies, including poorly defined left-turn movements for bicyclists at some intersections, which leads to confusion about where and how to cross; a lack of intersection waiting space for bicyclists, which leads to unsafe conditions when waiting to turn; and rails for Muni streetcars and ventilation grates for the BART system, which can pose hazards for bicyclists. These existing roadway deficiencies contribute to the higher-than-average collision rate on Market Street.

Based on the above, the Accelerated Repair and Maintenance Alternative would not address this project need.

One of the needs of the project related to roadway deficiencies is that existing non-standard brick sidewalks that do not comply with the ADA with respect to slip resistance, surface smoothness, and surface visual uniformity can present substantial challenges to low-vision and mobility impaired pedestrians. As described in the section titled *Americans with Disabilities Act*, the existing brick paving on Market Street sidewalks does not meet federal standards regarding traction or joints for pedestrian access routes, which cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes.[14] Furthermore, existing joints between bricks on Market Street sidewalks can be wide

[14] Conclusions in this discussion are drawn from the U.S. Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/ background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks?highlight=WyJ2aWJyYXRpb24iLCJ2aWJyYXRlIiwidmlcmF0aW5nIiwidmlcmF0b3IiLCJ2aWJyYXRpb 25zIiwidmlcmF0ZXMiLCJ3aGVlbGNoYWlyIiwid2hlZWxjaGFpcnMiLCJ3aGVlbGNoYWlyJ3MiLCJ3aGVlbGNoYWlyJyJd, accessed December 12, 2018.

enough to catch the tip of a cane and thus be dangerous for those with walking aids, and the brick creates tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Lastly, many sidewalk crossings on Market Street lack ADA-compliant curb ramps. The Accelerated Repair and Maintenance Alternative would retain existing red brick sidewalks and therefore would not address this project need.

Another need of the project related to roadway deficiencies is that for transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA compliant. This alternative would retain all curbside boarding stops and maintain center boarding islands as they exist today and this alternative would not address this project need.

The above analysis indicates that the Accelerated Repair and Maintenance Alternative compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need.

The Accelerated Repair and Maintenance Alternative would also result in unacceptable safety and operational problems.

- Under the Accelerated Repair and Maintenance Alternative, transit, taxis, commercial vehicles, and bicyclists would continue to utilize shared lanes within the project corridor, potentially posing hazardous conditions for all modes of transportation. While this alternative would include the same extension of the Muni-only lanes as the proposed project, this change would not be sufficient to address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. Specifically, high demand for commercial and taxi loading areas would continue, resulting in pinch points. Congestion from limited opportunities for vehicles to pass in center lanes would continue, particularly when vehicles are queued while making right turns. Curbside lane blockages at right-turn areas or commercial loading areas would continue to lead to conflicts between traffic and loading vehicles. Pinch zones would also occur where transit boarding islands encroach on the flow of traffic, resulting in vehicles weaving in bus lanes.
- Under the Accelerated Repair and Maintenance Alternative, the width of Market Street would not change. Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks, leading to conflicts between vehicle traffic and pedestrians.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks that do not comply with the ADA present safety concerns. The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters. The Accelerated Repair and Maintenance Alternative would not replace the non-ADA-compliant sidewalk surface. Accordingly, this alternative would not improve safety for low-vision and mobility-impaired users of the corridor.
- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. Therefore, boarding islands, which are in the middle of vehicle traffic, can become overloaded with users that exceed the boarding islands' safe capacity.

By allowing traffic congestion to continue, not addressing bicyclist/vehicle conflicts, not narrowing the Market Street pedestrian crossings, and allowing sidewalk conditions that are not ADA compliant to continue, the Accelerated Repair and Maintenance Alternative would facilitate the continuation of the Market Street corridor as a high-injury network, and its higher than statewide average rate of injuries for an urban four-lane undivided road would likely continue. Therefore, the Accelerated Repair and Maintenance Alternative results in unacceptable safety and operational problems.

The anticipated cost to implement this alternative, additional to costs of ongoing maintenance and an allowance for emergency repairs, is $0. The anticipated cost for all currently required maintenance and repair of the roadway and facilities within and beneath the roadway, if completed as a single project (exclusive of maintenance and repair of sidewalks and other Criterion C contributory features), is approximately $20 million to $26 million. Therefore, this alternative does not result in additional construction, maintenance, or operational costs of an extraordinary magnitude.

The Accelerated Repair and Maintenance Alternative would not, after reasonable mitigation, result in severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income population; or severe impacts to environmental resources protected under other Federal statutes.

The Accelerated Repair and Maintenance Alternative does not cause other unique problems or unusual factors. The Accelerated Repair and Maintenance Alternative does not involve multiple of the above factors that while individually minor, cumulatively cause problems or impacts of extraordinary magnitude. As discussed above, this alternative is not prudent because it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need and results in unacceptable safety and operational problems.

The Accelerated Repair and Maintenance Alternative would avoid impacts on Section 4(f)-protected resources. However, it would not meet project purpose to make the Market Street corridor safer and more efficient for all modes of transportation. Further, this alternative would not meet the ancillary project purpose to bring elements of the city infrastructure on Market Street to a state of good repair and to improve the accessibility of the corridor and quality of its streetscape environment. Therefore, for the reasons discussed above, the Accelerated Repair and Maintenance Alternative is not prudent, as it compromises the project to a degree that it is unreasonable to proceed with the project in light of its stated purpose and need. Further, the Accelerated Repair and Maintenance Alternative would result in unacceptable safety and operational problems by allowing existing vehicle congestion, bicycle/vehicle conflicts, excessive pedestrian crossing width, and lack of ADA compliance on Market Street sidewalks to continue.

5.3 Mission Street with Bus Lanes Alternative

The only way to build a project intended to improve safety and efficiency for transportation in the area of Market Street without triggering the need for an ADA upgrade on Market Street, and affecting the Market Street Cultural Landscape District by so doing, is to avoid Market Street altogether by moving the project to the closest major arterial street. The closest major arterial

street is Mission Street, one block south of Market Street. The right-of-way on Mission Street is more constricted than that of Market Street, so there is not enough space both for dedicated transit lanes and for a protected bicycle facility. With 52 feet of existing roadway width, and narrow existing 9.5-foot-wide travel lanes, reapportionment and the removal of all parking still would result in cycle lanes being a maximum of 4 feet wide. For this reason, either transit improvements or bicycle improvements would be possible, but not both.

Unlike the Build Alternative, which would be constructed on Market Street, the Mission Street with Bus Lanes Alternative would be constructed on Mission Street. A Mission Street with Bus Lanes Alternative would construct two 24-hour bus lanes, either center-running (Figure 6) or side-running (Figure 7). Bikes would share the travel lanes or shoulders. Center-running bus lanes would allow for new boarding islands serving these lanes to be constructed and to introduce queue jumps that would allow buses to get ahead of other vehicles at stop lights. For both lane configurations, signal priority would be given to transit, and existing bus zones would be extended, select stops would be consolidated, and a new boarding island at Transbay Transit Center (inbound) would be provided. Parking restrictions would be required: curbside parking only from 7 p.m. to 7 a.m. for side-running lanes, or no parking 24 hours a day between Fremont and Sixth for center-running lanes. No circulation improvements would be provided as there would be insufficient space for turn pockets.

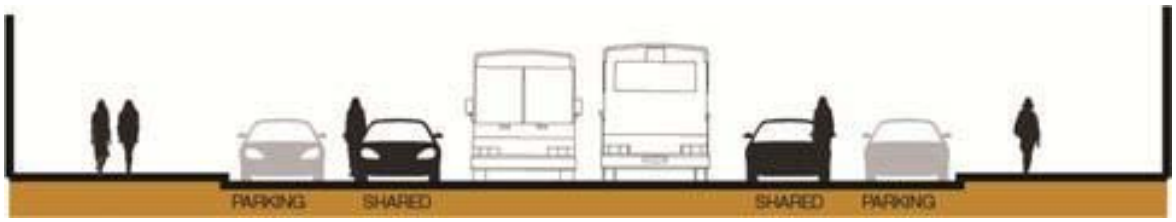

Figure 6. Mission Street Alternative with Center-running Bus Lanes. Bus lanes would be 13 feet wide, the outer lanes would be 13 feet, 3 inches wide. The illustration shows the condition outside of the Sixth Street to Fremont Street corridor (within which where there would be no space for parking).

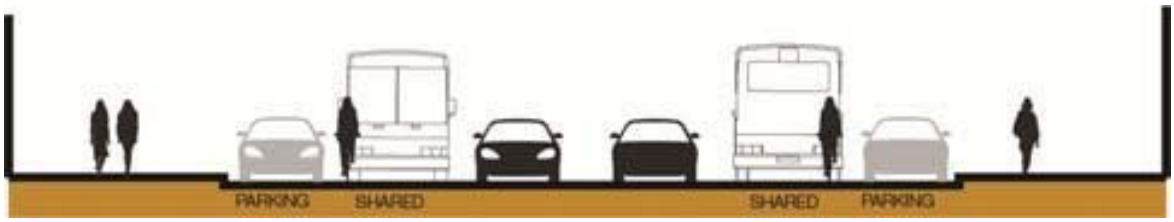

Figure 7. Mission Street Alternative with Side-running Bus Lane. Inner traffic lanes would be 9 feet wide; outer transit lanes with parking would be 17 feet, 3 inches wide.

With respect to avoidance of resources protected by Section 4(f), there are four historic districts on Mission Street between South Van Ness Avenue and Steuart Street, three of which are outside the built environment Area of Potential Effects (APE) of the Build Alternative. The historic district within the APE (New Montgomery-Mission-2nd Street Conservation District) is locally designated and has been assumed NRHP eligible for the purpose assessing the impacts

of the Build Alternative, but has not been formally evaluated for NRHP eligibility. The remaining districts have been locally designated or found eligible for listing in the California Register of Historical Resources (CRHR), but have not been previously evaluated or found eligible for inclusion in the NRHP. However, for the purposes of assessing the potential impacts of the Mission Street Alternatives, it is anticipated that these four historic districts would formally meet the NRHP eligibility criteria. It is also anticipated that the SHPO would concur with the existing designations stating that all four of these historic districts are comprised solely of contributing features that are outside of the right-of-way, shown in Table 7. Therefore, it is expected that there would be no Section 4(f) use to any of these four historic districts. In regard to potential individual historic properties, the density of historic properties along Mission Street, which have not yet been evaluated, is anticipated to be roughly equivalent to the density of historic properties along Market Street. Unlike Market Street, however, Mission Street is not known to contain individual historic properties such as monuments in the right-of-way, therefore there would be no Section 4(f) use to individual historic properties.

Table 7. Historic Districts Potentially Affected by the Mission Street Alternatives

District Name	Designation Status	No. of Contributing Features in Right-of-Way
Mint-Mission Conservation District [1]	Locally designated	0
Western SoMa Light Industrial and Residential Historic District[1]	CRHR-Eligible	0
Sixth Street Lodginghouse District[1]	CRHR-Eligible	0
New Montgomery-Mission-2nd Street Conservation District[1]	Locally designated	0

[1] These districts are locally designated or have been found eligible for listing in the California Register of Historical Resources. They have not been previously evaluated for inclusion in the National Register of Historic Places but, for the purposes of assessing impacts of the Mission Street alternatives, they are anticipated to meet the NRHP eligibility criteria at the local level of significance. Furthermore, it is anticipated that SHPO would concur that none of these districts will have contributing features within the right-of-way.

The Mission Street with Bus Lanes Alternative would reapportion only the right-of-way and remove and introduce structures and materials common to urban commercial streets, such as light poles, traffic signals, and similar, which would not be expected to interfere with views of any contributing structures composing the district or otherwise result in some form of constructive use. The continuous incremental alteration of the Market Street transportation facility and contributing features through repair and maintenance would continue.

The dimensions of Mission Street would make it infeasible to construct the Mission Street with Bus Lanes Alternative and comply with SFMTA's guidance related to lane widths for bus lanes and vehicle lanes. In addition, Mission Street provides loading zones that offset the loading demands on Market Street and nearby side streets; substantial amounts of loading zones on Mission Street would need to be removed under this alternative to comply with SFMTA's lane width guidance. There are also more residential uses and vehicle traffic on Mission Street compared to Market Street, which would require shorter construction hours and, thus, a longer construction schedule. Any ground disturbance associated with the Mission Street with Bus

Lanes Alternative would be required to avoid the existing subsurface traction power system. The locations of much of the utilities along Mission Street are unknown and substantial interagency coordination with the various utilities would need to be completed.

The principal purpose of the proposed project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists and pedestrians. Currently, Mission Street serves to provide backup transit capacity for Market, particularly in the event of parades, protests, and other times at which the transit facility on Market Street is inaccessible. This alternative would formalize the use of this backup capacity. It is reasonable to assume that this would have a positive effect on the collision rate on Mission Street, which experiences a high rate of side-swipe collisions due to the narrow lanes and resultant close proximity of on-street parking, but there would be no positive effect on bicycle and pedestrian traffic on Market Street.

The Mission Street with Bus Lanes Alternative would not relieve existing transit capacity constraints on Market Street because transit operations would remain as under existing conditions. Therefore, existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles, including transit, in shared lanes on Market Street would not be addressed. In addition, the Mission Street with Bus Lanes Alternative would not provide a fully separated bicycle route at all, either along the Market Street corridor or on Mission Street. Therefore, the efficiency of the corridor for bicyclists would not be increased. Based on the above, the Mission Street with Bus Lanes Alternative would not meet the principal purpose of the project.

An ancillary purpose of the project is to bring elements of city infrastructure in the corridor that are reaching the ends of their operational design lives into a state of good repair. The Mission Street with Bus Lanes Alternative would not include planned repairs for aging infrastructure on Market Street and this alternative would not meet the ancillary purpose of the project.

One of the project needs is related to safety. Market Street is part of a high-injury network. The rate of injuries is higher than the statewide average for an urban four-lane undivided road. As discussed above, the Mission Street with Bus Lanes Alternative would not provide a fully separated bicycle route or address existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. In addition, the design concept would not address other existing roadway deficiencies that contribute to the higher-than-average collision rate on Market Street. Based on the above, this alternative would not address this project need.

One of the needs of the project related to roadway deficiencies is that existing non-standard brick sidewalks that do not comply with the ADA with respect to slip resistance, surface smoothness, and surface visual uniformity can present substantial challenges to low-vision and mobility impaired pedestrians. As described in the section titled *Americans with Disabilities Act*, the brick paving on Market Street sidewalks does not meet federal standards regarding traction or joints for pedestrian access routes, which cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who use canes.[15]

[15] Conclusions in this discussion are drawn from the U.S. Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/ background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks?highlight=WyJ2aWJyYXRpb24iLCJ2aWJyYXRlIiwidmlcmF0aW5nIiwidmlcmF0b3IiLCJ2aWJyYXRpb 25zIiwidmlcmF0ZXMiLCJ3aGVlbGNoYWlyIiwid2hlZWxjaGFpcnMiLCJ3aGVlbGNoYWlyJ3MiLCJ3aGVlbGNoYWlyJyJd, accessed December 12, 2018.

Furthermore, existing joints between bricks on Market Street sidewalks can be wide enough to catch the tip of a cane and thus be dangerous for those with walking aids, and the brick creates tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Lastly, many sidewalk crossings on Market Street lack ADA-compliant curb ramps. The Mission Street with Bus Lanes Alternative would retain existing red brick sidewalks in a herringbone pattern along Market Street; therefore, this alternative would not address this project need.

Another need of the project related to roadway deficiencies is that, for transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA compliant. Design Concept XIV would not address current ADA requirements for boarding island width for boarding islands on Market Street; the Mission Street with Bus Lanes Alternative would not address this project need.

The above analysis indicates that the Mission Street with Bus Lanes Alternative compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need.

The Mission Street with Bus Lanes Alternative would also result in unacceptable safety and operational problems.

- While the Mission Street with Bus Lanes Alternative will result in less transit on Market Street than under current conditions, some transit will remain on Market Street and will utilize shared lanes on Market Street, along with taxis, commercial vehicles, and bicyclists. Therefore, conflicts between transit, taxis, commercial vehicles, and bicyclists will continue in the Market Street corridor, potentially posing hazardous conditions for all modes of transportation. Specifically, high demand for commercial and taxi loading areas will continue, resulting in pinch points. Congestion from limited opportunities for vehicles to pass in center lanes will continue, particularly when vehicles are queued while making right turns. Curbside lane blockages at right-turn areas or commercial loading areas will continue to lead to conflicts between traffic and loading vehicles. Pinch zones will also occur where transit boarding islands encroach on the flow of traffic, resulting in vehicles weaving in bus lanes.
- Under the Mission Street with Bus Lanes Alternative, the width of Market Street will not change. Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks, leading to conflicts between vehicle traffic and pedestrians.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks that do not comply with the Americans with Disabilities Act (ADA) present safety concerns. The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters. The Mission Street with Bus Lanes Alternative would not replace the non-ADA-compliant sidewalk surface. Accordingly, this alternative would not improve safety for low-vision and mobility-impaired users of the corridor.

- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. Therefore, boarding islands, which are in the middle of vehicle traffic, can become overloaded with users that exceed the boarding islands' safe capacity.

By allowing traffic congestion to continue, not addressing bicyclist/vehicle conflicts, not narrowing the Market Street pedestrian crossings, and allowing sidewalk conditions that are not ADA compliant to continue, the Mission Street with Bus Lanes Alternative would facilitate the continuation of the Market Street corridor as a high-injury network, and its higher than statewide average rate of injuries for an urban four-lane undivided road will likely continue. Therefore, the No-Build Alternative results in unacceptable safety and operational problems.

The Mission Street with Bus Lanes Alternative would not, after reasonable mitigation, result in severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income population; or severe impacts to environmental resources protected under other Federal statutes.

The anticipated cost to implement this alternative is approximately $30 million. This alternative does not result in additional construction, maintenance, or operational costs of an extraordinary magnitude.

This alternative does not cause other unique problems or unusual factors.

The Mission Street with Bus Lanes Alternative does not involve multiple of the above factors that while individually minor, cumulatively cause problems or impacts of extraordinary magnitude. As discussed above, this alternative is not prudent because it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need and results in unacceptable safety and operational problems.

The Mission Street with Bus Lanes Alternative would not meet the project purpose to make the Market Street corridor safer and more efficient for all modes of transportation. Further, this alternative would not meet the ancillary project purpose to bring elements of the city infrastructure on Market Street to a state of good repair and improve the accessibility of the corridor and quality of its streetscape environment. In conclusion, the Mission Street with Bus Lanes Alternative is not prudent because it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need. Further, the Mission Street with Bus Lanes Alternative would result in unacceptable safety and operational problems by allowing vehicle congestion, bicycle/vehicle conflicts, excessive pedestrian crossing width, and lack of ADA compliance to continue.

5.4 Mission Street with Cycle Tracks Alternative

Similar to the Mission Street with Bus Lanes Alternative, the Mission Street with Cycle Tracks Alternative would be constructed on Mission Street because the only way to build a project intended to improve safety and efficiency for transportation in the area of Market Street without affecting the Market Street Cultural Landscape District is to avoid Market Street altogether. The right-of-way on Mission Street is more constricted than that of Market Street, so there is not enough space both for dedicated transit lanes and for a protected bicycle facility. For this reason, either transit improvements or bicycle improvements would be possible, but not both.

A Mission Street with Cycle Tracks Alternative would include no bus lanes, and would reduce transit capacity on Mission Street in order to provide adequate space to construct the cycle tracks (Figure 8 and Figure 9). As a consequence, existing transit lines – the Muni 14-Mission line, Golden Gate Transit buses, and SamTrans lines would be moved to Market Street. Either two 6.0- to 8.0-foot-wide bikeways on each side of Mission Street, with 2.0- to 5.0-foot painted buffers, or one 12.0- to 16.0-foot-wide bikeway on the north side of Mission Street would be constructed. Two-stage left-turn bike boxes would be constructed to connect bike lanes to bike routes on cross-streets. Floating parking (that is, located between the bikeway and vehicle traffic) would be provided on one side of the street. Traffic signals would be timed to prioritize bicycle progression along Mission Street. The absence of transit lanes allows for the introduction of left turns (turn pockets) from Mission at some locations. This would make circulation more efficient, as less circling would be needed. This would require new signals at these locations.

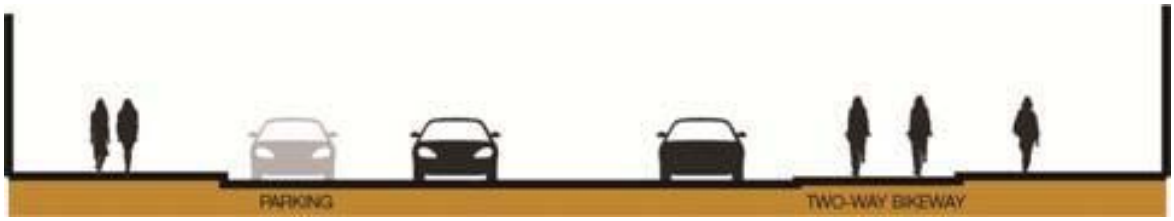

Figure 8. Mission Street Bikeway with Two-way Cycle Track on One Side. Parking strips are 8 feet wide, travel lanes for vehicles are 12 feet wide, and the bikeway is 16 feet wide with a 4.5-foot buffer.

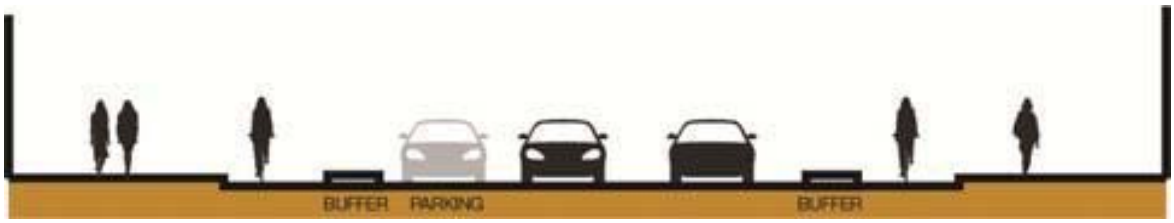

Figure 9. Mission Street Bikeway with One-way Cycle Track on Each Side. Bikeways are 6 feet wide, buffers are 4.5 feet wide, floating parking strip is 8 feet wide, and travel lanes are 12 feet wide.

The dimensions of Mission Street would make it infeasible to construct the Mission Street with Cycle Tracks Alternative and comply with SFMTA's guidance related to lane widths for bus lanes and vehicle lanes. In addition, Mission Street provides loading zones that offset the loading demands on Market Street and nearby side streets; substantial amounts of loading zones on Mission Street would need to be removed under this alternative to comply with SFMTA's lane width guidance. There are also more residential uses and vehicle traffic on Mission Street compared to Market Street, which would require shorter construction hours and, thus, a longer construction schedule. Any ground disturbance associated with the Mission Street with Cycle Tracks Alternative would be required to avoid the existing subsurface traction power system. In addition, the proposed cycle tracks under this alternative would require construction of concrete boarding islands, which could encounter underground utilities. The locations of much of the utilities along Mission Street are unknown and substantial interagency coordination with the various utilities would need to be completed.

The principal purpose of the proposed project is to make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists and pedestrians. The purpose of the Mission Street with Cycle Tracks Alternative is to resolve the conflict of having to share the crowded Market Street transit facility with bicycles by providing and promoting an alternative, protected (and so safer) route. This can reasonably be assumed to reduce the Market Street collision rate. However, there would be no means of requiring cyclists to use Mission Street, so there would be no guarantee that cycle traffic would migrate to the new facility and so bring down the collision rate.

The Mission Street with Cycle Tracks Alternative would not relieve existing transit capacity constraints on Market Street because some transit service (14-Mission, all Golden Gate Transit and all SamTrans bus routes) would shift from Mission Street to Market Street, thus increasing the number of transit vehicles operating on Market Street and therefore potentially increasing the number of conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. The shift of transit service from Mission Street to Market Street would also result in more crowding on the existing undersized boarding platforms on Market Street. In addition, the Mission Street with Cycle Tracks Alternative would not provide a fully separated bicycle route along the Market Street corridor. Therefore, the efficiency of the corridor for bicyclists would not be increased. Based on the above, this alternative would not meet the principal purpose of the project.

An ancillary purpose of the project is to bring elements of city infrastructure in the Market Street corridor that are reaching the ends of their operational design lives into a state of good repair. The Mission Street with Cycle Tracks Alternative would not include planned repairs for aging infrastructure on Market Street, and this alternative would not meet the ancillary purpose of the project.

One of the needs of the project is related to safety, as Market Street is located on a high-injury network and has a higher than statewide average rate of injuries for an urban four-lane undivided road. The Mission Street with Cycle Tracks Alternative would not provide a fully separated bicycle route along the Market Street corridor and would not address the existing conflicts that occur between pedestrians, bicyclists, and different types of vehicles in shared lanes on Market Street. In addition, the Mission Street with Cycle Tracks Alternative would not address other existing roadway deficiencies that contribute to the higher-than-average collision rate such on Market Street. Based on the above, this alternative would not address this project need.

One of the needs of the project related to roadway deficiencies is that existing non-standard brick sidewalks that do not comply with the ADA with respect to slip resistance, surface smoothness, and surface visual uniformity can present substantial challenges to low-vision and mobility impaired pedestrians. As described in the section titled *Americans with Disabilities Act*, the existing brick paving on Market Street sidewalks does not meet federal standards regarding traction or joints for pedestrian access routes, which cause vibration for some people who use wheelchairs as well as visually impaired persons and individuals with mobility impairments who

use canes.[16] Furthermore, existing joints between bricks on Market Street sidewalks can be wide enough to catch the tip of a cane and thus be dangerous for those with walking aids, and the brick creates tripping issues for people with visual impairments as well as pedestrians with mobility impairments. Lastly, many sidewalk crossings on Market Street lack ADA-compliant curb ramps. The Mission Street with Cycle Tracks Alternative would retain existing red brick sidewalks along Market Street in a herringbone pattern and therefore this alternative would not address this project need.

Another need of the project related to roadway deficiencies is that for transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA compliant. The Mission Street with Cycle Tracks Alternative would not address current ADA requirements for boarding island width for the boarding islands on Market Street and this alternative would not address this project need.

The above analysis indicates that the Mission Street with Cycle Tracks Alternative compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need.

This alternative also presents safety and operational problems by not addressing deficiencies. The Mission Street with Cycle Tracks Alternative would result in unacceptable safety and operational problems.

- Under the Mission Street with Cycle Tracks Alternative, transit, taxis, and commercial vehicles would continue to co-exist in the corridor, potentially posing hazardous conditions for all modes of transportation. Specifically, high demand for commercial and taxi loading areas will continue, resulting in pinch points. Congestion from limited opportunities for vehicles to pass in center lanes would continue, particularly when vehicles are queued while making right turns. Curbside lane blockages at right-turn areas or commercial loading areas would continue to lead to conflicts between traffic and loading vehicles. Pinch zones would also occur where transit boarding islands encroach on the flow of traffic, resulting in vehicles weaving in bus lanes. In addition, while the bulk of the bicycle traffic would move to Mission Street, some bicycle traffic is expected to remain on Market Street because it is the principal corridor through this part of the city.
- Under the Mission Street with Cycle Tracks Alternative, the width of Market Street would not change. Market Street's considerable width requires extended time for pedestrians to navigate across crosswalks, leading to conflicts between vehicle traffic and pedestrians.
- For low-vision and mobility-impaired pedestrians, existing non-standard brick sidewalks that do not comply with the ADA present safety concerns. The frequency with which joints in the surface occur tends to cause the front end of a wheelchair to vibrate or bounce, which can cause pain or muscle spasms, possibly leading to a loss of control and

[16] Conclusions in this discussion are drawn from the U.S. Access Board's Guidelines and Standards, Advisory Committee Report, n.d., https://www.access-board.gov/guidelines-and-standards/streets-sidewalks/public-rights-of-way/ background/access-advisory-committee-final-report/x02-new-construction-minimum-requirements-x02-1-public-sidewalks?highlight=WyJ2aWJyYXRpb24iLCJ2aWJyYXRlIiwidmlicmF0aW5nIiwidmlicmF0b3IiLCJ2aWJyYXRpb 25zIiwidmlicmF0ZXMiLCJ3aGVlbGNoYWlyIiwid2hlZWxjaGFpcnMiLCJ3aGVlbGNoYWlyJ3MiLCJ3aGVlbGNoYWlyJyJd, accessed December 12, 2018.

maneuvering ability. In addition, brick has a tendency to buckle, which can create changes in level and tripping hazards for people with visual impairments as well as ambulatory pedestrians with mobility impairments, and which can also catch wheelchair casters. The Mission Street with Cycle Tracks Alternative would not replace the non-ADA-compliant sidewalk surface. Accordingly, this alternative would not improve safety for low-vision and mobility-impaired users of the corridor.

- For transit users, boarding islands have limited capacity (i.e., narrow width) and are not ADA-compliant. Therefore, boarding islands, which are in the middle of vehicle traffic, can become overloaded with users that exceed the boarding islands' safe capacity.

By allowing traffic congestion to continue, not narrowing the Market Street pedestrian crossings, allowing conditions that are not ADA compliant to continue, and not completely addressing bicyclist/vehicle conflicts, the Mission Street with Cycle Tracks Alternative would allow the Market Street corridor to remain a high-injury network, and its higher than statewide average rate of injuries for an urban four-lane undivided road would likely continue. Therefore, the Mission Street with Cycle Tracks Alternative results in unacceptable safety and operational problems.

The Mission Street with Cycle Tracks Alternative would not, after reasonable mitigation, result in severe social, economic, or environmental impacts; severe disruption to established communities; severe disproportionate impacts to minority or low income population; or severe impacts to environmental resources protected under other Federal statutes.

The anticipated cost to implement this alternative is approximately $27 million. This alternative does not result in additional construction, maintenance, or operational costs of an extraordinary magnitude.

The Mission Street with Cycle Tracks Alternative does not cause other unique problems or unusual factors.

This alternative does not involve multiple of the above factors that, that while individually minor, cumulatively cause unique problems or impacts of extraordinary magnitude. As discussed above, this alternative is not prudent because it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need and results in unacceptable safety and operational problems. The Mission Street with Cycle Tracks Alternative would not meet project purpose to make the Market Street corridor safer and more efficient for all modes of transportation. Further, this alternative would not meet the ancillary project purpose to bring elements of the city infrastructure on Market Street to a state of good repair and improve the accessibility of the corridor and quality of its streetscape environment. In conclusion, the Mission Street with Cycle Tracks Alternative is not prudent, as it compromises the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need. Further, the Mission Street with Cycle Tracks Alternative would result in unacceptable safety and operational problems by allowing vehicle congestion, bicycle/vehicle conflicts, excessive pedestrian crossing width, and lack of ADA compliance to continue.

5.5 Summary of Avoidance Alternatives

Table 8 summarizes the avoidance alternatives, and whether such alternatives are prudent as defined in 23 CFR 774.17.

As Table 8 shows, all four avoidance alternatives would avoid Section 4(f) resources, but are not prudent because they would compromise the project to a degree that it is unreasonable to proceed with the project in light of the project purpose and need and would result in unacceptable safety and operational problems.

6 Other Project Alternatives

The alternatives that follow originated in two reports prepared pursuant to the California Environmental Quality Act (CEQA): the *Better Market Street Initial Study* (San Francisco Planning Department 2016) and the *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019). The alternatives included in these CEQA reports were the result of more than a decade of consultation with stakeholders and the public. A more complete description of this process can be found in Section 1.7.3, *Alternatives Considered but Eliminated from Consideration*, in Chapter 1 of the environmental assessment. All of the alternatives described in this section would require physical modification of Market Street constituting an "alteration" for the purposes of the ADA. Any construction that constitutes an alteration for purposes of the ADA in the Market Street corridor would require the removal of the greater part of the historic material (e.g., sidewalk surfaces and granite curbs) that in turn contribute to the Market Street Landscape District's significance as a designed landscape associated with the Market Street Redevelopment Plan. Therefore, these alternatives would not avoid use of Section 4(f) resources, and accordingly do not constitute avoidance alternatives.

6.1 Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative

The Complete Street and Transit Priority Improvements Alternative and the Complete Street and Moderate Transit Priority Improvements Alternative differ from each other in operational changes, specifically changes to private vehicle access and commercial and passenger loading.[17] From the standpoint of construction, the two alternatives are the same. Both alternatives include changes in roadway configuration; transit stop spacing, service, and characteristics; bicycle facilities; and sidewalk width and streetscapes; removal or relocation of street trees; partial renovation of Path of Gold light standards; and replacement and relocation of existing sewer lines and water lines, fire hydrants, AWSS lines, including AWSS fire hydrants, and electrical and other infrastructure. Both alternatives include two design options for bicycle paths.

[17] The Complete Street and Transit Priority Improvements Alternative and the Complete Street and Moderate Transit Priority Improvements Alternative are essentially the same as Alternatives 1 and 2, respectively, that the City of San Francisco included in its *Better Market Street Initial Study* (San Francisco Planning Department 2016).

Table 8. Summary of Avoidance Alternatives Analysis

Factor	No-Build Alternative	Accelerated Repair and Maintenance Alternative	Mission Street with Bus Lanes Alternative	Mission Street with Cycle Tracks Alternative
Avoidance of Section 4(f) Resources?	Yes - Avoids Section 4(f) Resources	Yes - Avoids Section 4(f) Resources	Yes - Avoids Section 4(f) Resources	Yes - Avoids Section 4(f) Resources
Does it compromise the project to a degree that it is unreasonable to proceed with, in light of its stated purpose and need?	Yes	Yes	Yes	Yes
Does it result in unacceptable safety or operational problems?	Yes	Yes	Yes	Yes
After reasonable mitigation, does it still cause severe impacts[18] or severe disruption to established communities?	No	No	No	No
Does it result in additional construction, maintenance, or operational costs of an extraordinary magnitude?	No	No (Cost is $20–26 million)	No (Cost is $30 million)	No (Cost is $27 million)
Does it cause other unique problems or unusual factors?	No	No	No	No
Does it involve multiple factors that cumulatively cause unique problems or impacts of extraordinary magnitude?	No	No	No	No

[18] Severe impacts are defined as 1) Severe social, economic or environmental impacts; 2) Severe disproportionate impacts to minority or low income populations; or 3) Severe impacts to environmental resources protected under other Federal statutes (23 CFR 774.17)

The first design option would include a dedicated street-level bicycle facility on Market Street, and at locations where a dedicated facility does not currently exist, the existing shared lane painted with sharrows would be widened to 15 feet where feasible. Under the second design option, a new, approximately 5- to 9-foot-wide raised cycle track would be constructed on Market Street in each direction between the curb lanes and sidewalk. The new raised cycle track would be slightly raised above the adjacent curb lanes and could have different paving patterns or material to help identify the designated space for bicycles. At curbside transit stops, the new raised cycle track would be placed between a curbside transit boarding island and the sidewalk. A new protected cycle track also would be constructed on Valencia Street between Market and McCoppin streets.

The majority of transportation and streetscape improvements associated with the Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative would be implemented within the operational public right-of-way. Some of these improvements, such as roadway configuration, transit stop spacing, and transit stop characteristics, would be an alteration as defined under the ADA (see section titled *Americans with Disabilities Act*), requiring upgrades of contributing features of the district to comply with ADA requirements. These include replacing sidewalk surfaces and some granite curbs with materials that are ADA compliant. This change to the Market Street Cultural Landscape District would be a use under Section 4(f), similar to that described for the Build Alternative.

6.2 Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative

The Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative would have the same changes on Market Street as the Complete Street and Transit Priority Improvements Alternative with the first design option to construct a dedicated street-level bicycle facility on Market Street.[19] However, this alternative would also include construction of a protected bicycle path on Mission Street.

This alternative would implement the same improvements on Market Street as the Build Alternative including changes in roadway configuration; transit stop spacing, service, and characteristics; sidewalk width and streetscapes; removal or relocation of street trees; partial renovation of Path of Gold light standards; and replacement and relocation of existing sewer lines and water lines, fire hydrants, AWSS lines, including AWSS fire hydrants, and electrical and other infrastructure. As a result, this alternative would also result in a Section 4(f) use of the Market Street Cultural Landscape District by altering the same contributing streetscape features necessary for ADA compliance.

[19] The Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative is essentially the same as Alternative 3 that the City of San Francisco included in its *Better Market Street Initial Study* (San Francisco Planning Department 2016).

6.3 Market Street Partial Build Alternative-1

The Market Street Partial Build Alternative-1[20] differs from the Build Alternative in the tree species proposed to replace the existing *Platanus* monoculture and the choice of paving and paving pattern to replace the existing sidewalk paving materials that are non-ADA compliant. Specifically, this alternative would replace the existing *Platanus* monoculture with trees of three to five genera that would have similar canopy shape and height as the existing *Platanus*. In addition, this alternative would completely replace the existing red brick in a herringbone pattern in order to better meet safety and mobility objectives of the proposed project while lessening the aesthetic change in color and pattern of the sidewalk materials. The color of the paving material for this alternative would be as close as possible to the existing red brick, consistent with Order 200369's stipulations on color. This alternative would also seek to implement the same uniformity of existing sidewalk paving material as exists to the maximum allowable extent of the order, including its exception process.

The Market Street Partial Build Alternative-1 would implement other improvements that are proposed as part of the Build Alternative including: changing lane and intersection configurations as well as some signal timing, control, and locations; constructing furnishing zones and bulb-outs; changing pedestrian crossing distances, and replacing some portions of granite curb; replacing loading areas; constructing physically separated bicycle lanes; modifying transit stop spacing, constructing a new bidirectional track loop, and upgrading transit stops for ADA compliance; relocating fire hydrants, including components of the historic AWSS, relocating or reconstructing stormwater catch basins, replacing street trees, relocating a BART/Muni elevator near United Nations Plaza, and partially restoring Path of Gold light standards within the project corridor.

Any physical modification of Market Street required to meet the project purpose and need would require removal of the greater part of the historic material, for example, sidewalk surfaces and granite curbs, that in turn contribute to the Market Street Cultural Landscape District's significance as a designed landscape associated with the Market Street Redevelopment Plan. Thus, Market Street Partial Build Alternative-1 would not avoid the use of Section 4(f) resources.

6.4 Market Street Partial Build Alternative-2

The Market Street Partial Build Alternative-2[21] differs from the Build Alternative in the geographic extent of modifications. Specifically, in blocks of Market Street where no modifications to center boarding islands or curbside transit stops are needed, those blocks would generally retain streetscapes similar to existing conditions, with no changes to modify the facility for ADA compliance. In contrast, blocks of Market Street where modifications to

[20] The Market Street Partial Build Alternative-1 is essentially the same as the "Partial Preservation Alternative 1" that the City of San Francisco included for local procedural reasons in its *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019).

[21] The Market Street Partial Build Alternative-2 is essentially the same as the "Partial Preservation Alternative 2" that the City of San Francisco included for local procedural reasons in its *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019).

center boarding island and/or curbside transit stops are needed would see streetscape improvements similar to the Build Alternative, including modifications for ADA compliance, as discussed in the section titled *Americans with Disabilities Act*.

For those blocks where there would be no changes to curbside or center boarding island stops, the loading locations would remain the same as existing conditions, however, the proposed project's time restrictions would apply to these existing loading zones. For all other blocks, including side street locations where parking would be removed, the loading locations and time restrictions would be the same as the Build Alternative. Bicycle access would be the same as under existing conditions for the blocks where no transit stop changes are proposed, which comprise Class II facilities (bicycle lanes) west of Eighth Street and Class III facilities (bicycle route markings in a mixed-flow lane) east of Eighth Street. Notably, these facilities would continue to operate alongside curbside bus stops. At locations where transit stop changes are proposed, a Class IV facility would be built at sidewalk level.

Market Street Partial Build Alternative-2 would not include utility relocation or rehabilitation activities associated with the Build Alternative in blocks that would retain the existing brick material because those activities generally require excavation into the sidewalk.[22] Utility relocation or rehabilitation activities that could be conducted within the blocks that would have the sidewalk material replaced or could be located entirely within the roadway right-of-way may occur under this alternative, including portions of some wastewater lines, water lines, and Muni traction power duct banks.[23] It can be assumed/expected that, over time, existing infrastructure that is not upgraded as part of this alternative would continue to decay past its useful life, potentially resulting in the need for future ad hoc/emergency repairs and/or replacements. Such repairs and replacements would be expected to require as-needed removal and reconstruction of existing red brick sidewalk material. In addition, existing tree wells would be replanted with new trees to preserve the *Platanus* monoculture, selecting from one of two varieties[24] similar in character to the trees that would be removed but with greater disease tolerance.

Because the Market Street Partial Build Alternative-2 involves many of the same transportation improvements as the Build Alternative, which in turn would result in changes to the streetscape in those blocks where the improvements are constructed, this alternative would result in impacts on contributing features of the Market Street Cultural Landscape District. These impacts would result from required upgrades to make these portions of the facility ADA compliant and result in a Section 4(f) use of the district.

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[22] Excavation beneath the sidewalk would require removal of the existing brick material which would likely damage some or most of the existing bricks that would need to be removed to access the areas to be excavated. In addition, the activity of removing the existing bricks triggers compliance with ADA standards, which in turn require replacement of enough material to maintain a pedestrian through corridor of at least ten feet in width. Therefore, this alternative does not include any utility work that would need to occur beneath the sidewalks on blocks that would not have any changes to curbside or boarding island stops.

[23] Because the entire corridor would not be opened to utility replacement, the Market Street Partial Build Alternative-2 would likely need to forego any utility upsizing, but instead repair/replace existing infrastructure on affected blocks.

[24] These two varieties are 1) *Platanus* x *acerfolia Bloodgood* "Columbia" and 2) *Platanus x acerfolia* "Liberty."

6.5 Core Elements Alternative

The Core Elements Alternative would implement the same roadway configuration, transit facilities and operations, and pedestrian and bicycle facilities as the Build Alternative.[25] However, this alternative would not implement the following "state of good repair" infrastructure upgrades:

- Relocation/rehabilitation of SFMTA signals
- Full upgrade of all existing signal infrastructure on Market between Octavia Boulevard and Steuart Street
- Full track replacement
- Replacement of traction power system duct banks
- Roadway and roadway subbase replacement
- Relocation/rehabilitation of the following:
    - Fiber optic conduits
    - Wastewater facilities (sewer lines, manholes, catch basins)
    - Water facilities (water lines, low-pressure fire hydrants)
    - AWSS line/cisterns/hydrants
    - Muni traction power duct banks
    - Electrical lines serving traffic signals/streetlights
    - SFPUC power lines
    - Fire alarm call boxes

This alternative also includes the following transportation elements, which would necessitate ADA-compliant upgrades for sidewalk brick and granite curbs during construction (see the section titled *Americans with Disabilities Act*):

- Roadway configuration (e.g., curb extensions for bulb-out construction to minimize crossing distances, curb pull-back for sidewalk-level bikeway coordination, relocation or modification of existing traffic islands, addition of small islands for sidewalk-level bikeway protection, raised crosswalks at alleyways, updated curb radii to accommodate bus movements, updated curb ramps, and major intersection reconfigurations)
- Surface transit facilities (Muni-only lanes, stop spacing and service, stop characteristics, track and OCS locations, overhead catenaries and trolley poles, other surface infrastructure, and minor realignments of existing F-line tracks)

[25] The Core Elements Alternative is essentially the same as the Core Elements Alternative that the City of San Francisco included for local procedural reasons in its *Better Market Street Draft Environmental Impact Report* (San Francisco Planning Department 2019).

- Bicycle facilities (constructing physically separated bicycle lanes)
- Pedestrian facilities (removing and replacing of all sidewalks in the project corridor)
- Path of Gold (partial restoration, reconstruction, and realignment)

The above changes would result in alterations in those blocks where the improvements are constructed, and therefore this alternative would result in impacts on contributing features of the Market Street Cultural Landscape District. These impacts would result from required upgrades to make these portions of the facility ADA compliant and would result in a Section 4(f) use of the district.

7 Measures to Minimize Harm

Per 23 CFR 774.3, an individual Section 4(f) evaluation must include all possible planning to minimize harm to the 4(f) property. 23 CFR 774.17 states that all possible planning means that all reasonable measures identified in the Section 4(f) evaluation to minimize harm or mitigate for adverse impacts and effects must be included in the project.

With regard to all possible planning for historic sites, 23 CFR 774.17 specifically identifies the measures which serve to preserve the historic activities, features, or attributes of the site as those agreed by the Administration and the official(s) with jurisdiction over the Section 4(f) resource in accordance with the consultation process under 36 CFR part 800.

The official with jurisdiction over the Market Street Cultural Landscape District is the State Historic Preservation Officer (SHPO). At the time of the Draft Section 4(f) Evaluation, Section 106 consultation with SHPO on the project's effects, and Section 106 consultation on the mitigation measures for the proposed adverse effect on the Market Street Cultural Landscape District have not been concluded.

Table 9, below, indicates a preliminary set of measures which will inform the consultation with SHPO. In accordance with Section 106, Caltrans and San Francisco Public Works will consult with stakeholders as well as SHPO on the mitigation for the proposed adverse effect, and the final set of mitigation measures will be memorialized in a Memorandum of Agreement (MOA) between Caltrans and SHPO along with other interested parties as necessary. The mitigation measures in the MOA will be included in the Final 4(f) Evaluation.

Per 23 CFR 774.17, in evaluating the reasonableness of measures to minimize harm, Caltrans will consider the preservation purpose of the 4(f) statute, along with:

- The views of the official(s) with jurisdiction over the Section 4(f) property;
- Whether the cost of the measures is a reasonable public expenditure in light of the adverse impacts of the project on the Section 4(f) property and the benefits of the measure to the property;
- Any impacts or benefits of the measures to communities or environmental resources outside of the Section 4(f) property.

Table 9. Measures to Minimize Harm

Resource	Impact	Measures to Minimize Harm[1]
Market Street Cultural Landscape District	Demolition of character-defining features that convey historic significance	**AMM-CUL-3: Prepare and Submit a Historic Preservation Treatment Plan:** Prepare a Historic Preservation Treatment Plan for the following contributing elements of the Market Street Cultural Landscape District: Embarcadero Plaza, Hallidie Plaza, and United Nations Plaza. **AMM-CUL-4: Develop and Implement Community-led Programs:** Public Works will administer a selection of three community-led public programs to celebrate and commemorate the history of Market Street.

8 Least Overall Harm Analysis

When there is no feasible and prudent avoidance alternative to using Section 4(f) resources, the Lead Agency must approve the alternative that causes the least overall harm to Section 4(f) resources, taking into consideration the preservation purpose of the statute. To ascertain which alternative that uses Section 4(f) properties would cause the overall least harm under 23 CFR 774.3(c)(1), the following seven factors will be considered:

- Ability to mitigate adverse impacts on each Section 4(f) property (including any measures that result in benefits to the property)
- Relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection
- Relative significance of each Section 4(f) property
- Views of the official(s) with jurisdiction over each Section 4(f) property
- Degree to which each alternative meets the Purpose and Need for the project
- After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f)
- Substantial differences in costs among the project alternatives

The first four factors relate to the net harm that each project alternative would cause to the Section 4(f) property, and the remaining three factors take into account concerns with the project alternatives that are not specific to Section 4(f).

In order to determine the alternative that has least overall harm, a balancing test is undertaken. The draft Section 4(f) evaluation discloses the various impacts to the different Section 4(f) properties, thereby initiating the balancing process, and contains a preliminary assessment of how the alternatives compare to one another. This initiation of the balancing process and preliminary assessment is contained in Table 10 below. However, the full analysis and identification of the alternative that has the overall least harm is not documented until the final Section 4(f) evaluation. In other words, this happens after the draft 4(f) evaluation has been circulated for public comment and the views of the officials with jurisdiction over each 4(f) property have been obtained.

9 Coordination with Agencies Having Jurisdiction

SHPO is the official with jurisdiction for all Section 4(f) historic properties affected by the project. Six resources in the project area were identified as listed on the NRHP, an additional nine resources were identified as eligible for the NRHP, and 14 as not eligible. A letter was sent to the SHPO on March 9, 2020, to confirm the eligibility determinations of the properties in the APE. On April 22, 2020, and May 22, 2020, the SHPO concurred with the determinations, confirming that the evaluated properties are or are not eligible for the NRHP. Furthermore, 131 resources are assumed eligible for listing in the NRHP for the purposes of the project.

The following agencies serve as an official with jurisdiction over parks and recreational resources within the project corridor: San Francisco Public Works, San Francisco Recreation and Parks Department, San Francisco Municipal Transportation Agency, Office of Community Investment and Infrastructure, Transbay Joint Powers Authority, Port of San Francisco, Association of Bay Area Governments and the Metropolitan Transportation Commission. The National Park Service (NPS) serves as an additional official with jurisdiction for any Section 4(f) property that is also designated a National Historic Landmark (NHL). Two NHLs are among the Section 4(f) properties identified for the current project: the Civic Center National Historic Landmark District (which is encompassed within the boundary of the locally designated Civic Center Landmark District) and the San Francisco Cable Cars National Historic Landmark.

Further coordination with the officials with jurisdiction following the public comment period will be reported in the final 4(f) evaluation.

Table 10. Least Harm Analysis

Factor	Build Alternative	Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative	Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative	Market Street Partial Build Alternative-1	Market Street Partial Build Alternative-2	Core Elements Alternative
Ability to mitigate adverse impacts on each Section 4(f) property (including any measures that result in benefits to the property)	The ability of the Build Alternative to mitigate adverse impacts is low. The Build Alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4, p. A-38); therefore, there would be no other adverse effects under Section 4(f) to mitigate. The Build Alternative would not result in any measures that would result in benefits to Section 4(f) properties.	The ability of the Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative to mitigate adverse impacts is low. The alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4); therefore, there would be no other adverse effects under Section 4(f) to mitigate. This alternative would not result in any measures that would result in benefits to Section 4(f) properties.	The ability of the Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative to mitigate adverse impacts is low. The alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4); therefore, there would be no other adverse effects under Section 4(f) to mitigate. This alternative would not result in any measures that would result in benefits to Section 4(f) properties.	The ability of the Market Street Partial Build Alternative-1 to mitigate adverse impacts is low. The alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4); therefore, there would be no other adverse effects under Section 4(f) to mitigate. This alternative would not result in any measures that would result in benefits to Section 4(f) properties.	The ability of the Market Street Partial Build Alternative-2 to mitigate adverse impacts is low. The alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4); therefore, there would be no other adverse effects under Section 4(f) to mitigate. This alternative would not result in any measures that would result in benefits to Section 4(f) properties.	The ability of the Core Elements Alternative to mitigate adverse impacts is low. The alternative would eliminate the Market Street Cultural Landscape District's eligibility under Criterion C by removing the bulk of the physical features contributing under that criterion. Recordation is proposed to preserve a permanent record of the resources that would be destroyed. All other impacts on Section 4(f) properties would be *de minimis* (see Table 4); therefore, there would be no other adverse effects under Section 4(f) to mitigate. This alternative would not result in any measures that would result in benefits to Section 4(f) properties.
Relative severity of the remaining harm, after mitigation, to the protected activities, attributes, or features that qualify each Section 4(f) property for protection	Moderate overall. The harm to the features that qualify the Market Street Cultural Landscape District under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).	Same as the Build Alternative: Moderate overall severity. The harm to the features that qualify the Market Street Cultural Landscape District facility under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).	Same as the Build Alternative: Moderate overall severity. The harm to the features that qualify the Market Street Cultural Landscape District facility under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).	Same as the Build Alternative: Moderate overall severity. The harm to the features that qualify the Market Street Cultural Landscape District facility under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).	Same as the Build Alternative: Moderate overall severity. The harm to the features that qualify the Market Street Cultural Landscape District facility under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).	Same as the Build Alternative: Moderate overall severity. The harm to the features that qualify the Market Street Cultural Landscape District facility under Criterion C would be severe, but the facility would still qualify for Section 4(f) protection under Criterion A, as the features contributing it would remain unaffected. Section 4(f) protection for these would remain in place. All other Section 4(f) impacts would be *de minimis*, resulting in no remaining harm (see Table 4).

Factor	**Build Alternative**	**Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative**	**Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative**	**Market Street Partial Build Alternative-1**	**Market Street Partial Build Alternative-2**	**Core Elements Alternative**
Relative significance of each Section 4(f) property	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties altered by the Build Alternative include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties expected to be altered by the Market Street Alternatives include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would be expected to experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties expected to be altered by the Market Street Alternatives include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would be expected to experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties expected to be altered by the Market Street Alternatives include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would be expected to experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties expected to be altered by the Market Street Alternatives include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would be expected to experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.	The Market Street Cultural Landscape District is nationally significant for two of its three areas of significance. Additional nationally significant Section 4(f) properties expected to be altered by the Market Street Alternatives include the Civic Center Landmark District, LGBTQ Tenderloin Historic District, San Francisco Cable Cars National Historic Landmark, and United Nations Plaza (which is nationally significant for one of its two areas of significance). One Section 4(f) property significant at the state level and 13 Section 4(f) properties significant at the local level would be expected to experience a Section 4(f) use. However, the only Section 4(f) property affected by any alternative above a *de minimis* level of impact is the Market Street Cultural Landscape District, so no relative valuation can be performed.
Views of the official(s) with jurisdiction over each Section 4(f) property	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.	SHPO concurred with the NRHP eligibility determinations on April 22, 2020 and May 22, 2020, but their views on effects findings are yet to be determined. Coordination with the NPS and officials with jurisdiction over parks and recreation resources is pending.

Factor	Build Alternative	Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative	Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative	Market Street Partial Build Alternative-1	Market Street Partial Build Alternative-2	Core Elements Alternative
Degree to which each alternative meets the Purpose and Need for the project	The Build Alternative fully meets the project purpose and need because it will: make Market Street safer and more efficient for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities, and the addition of new dedicated bicycle facilities; it will replace infrastructure reaching the end of its operational design life; it will improve the accessibility of the corridor through replacement of existing pavement materials that do not meet ADA standards and upgrades to boarding islands; and it will improve the quality of the Market Street streetscape environment through the use of new pavement materials, new street trees, and other streetscape furnishings.	The Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative partially meets the project purpose and need because they would: partially reduce conflicts between transit, paratransit, taxis, commercial vehicles, bicyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities, and the addition of new bicycle facilities; they would replace infrastructure reaching the end of its operational design life; they would improve the accessibility of the corridor through replacement of existing pavement materials that do not meet ADA standards and upgrades to boarding islands; and they would improve the quality of the Market Street streetscape environment through the use of new pavement materials, new street trees, and other streetscape furnishings. However, these alternatives fail to meet the project purpose and need fully because they would result in the construction of bicycle facilities that would pose safety conflicts with transit, paratransit, taxis, and commercial vehicles either as a result of continued use of shared lanes or through conflicts between bicycle lanes and loading zones.	The Complete Street and Transit Priority Improvements Alternative and Complete Street on Market plus Bicycle Facility Improvements on Mission Alternative partially meets the project purpose and need because it would: partially reduce conflicts between transit, paratransit, taxis, commercial vehicles, bicyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities, and the addition of new bicycle facilities; it would replace infrastructure reaching the end of its operational design life; it would improve the accessibility of the corridor through replacement of existing pavement materials that do not meet ADA standards and upgrades to boarding islands; and it would improve the quality of the Market Street streetscape environment through the use of new pavement materials, new street trees, and other streetscape furnishings. However, this alternative fails to meet the project purpose and need fully because it would result in the construction of bicycle facilities that would pose safety conflicts with transit, paratransit, taxis, and commercial vehicles either as a result of continued use of shared lanes or through conflicts between bicycle lanes and loading zones; and it would cause a substantial delay to several Muni routes thereby negating the project purpose to increase the efficiency of different transportation modes.	The Market Street Partial Build Alternative-1 partially meets the project purpose and need because it would: make Market Street safer for all modes of transportation by reducing conflicts between transit, paratransit, taxis, commercial vehicles, cyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities, and the addition of new bicycle facilities; it would replace infrastructure reaching the end of its operational design life; and it would partially improve the accessibility of the corridor through upgrades of existing boarding islands to meet ADA standards. However, this alternative would not fully meet the ancillary project purpose of improving the accessibility of the corridor because it would replace existing sidewalk with materials that seek to replicate the color and pattern of the existing sidewalk materials, which would make it difficult for people with vision disabilities to identify and navigate the various sidewalk zones.	The Market Street Partial Build Alternative2 partially meets the project purpose and need because it would: partially reduce conflicts between transit, taxis, commercial vehicles, cyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities and the addition of new bicycle facilities on select blocks; replace infrastructure reaching the end of its operational design life on some blocks; it would improve the accessibility of the corridor through replacement of existing pavement materials that do not meet ADA standards and upgrades to boarding islands on some blocks; and it would improve the quality of the Market Street streetscape environment through the use of new pavement materials, new street trees, and other streetscape furnishings on some blocks. However, this alternative fails to meet the project purpose and need fully because it would not construct a bicycle facility on all blocks in the corridor and thus would not avoid existing conflicts with transit, paratransit, taxis, and commercial vehicles; it would not replace infrastructure the full length of the corridor; and it would not replace existing pavement materials and upgrade boarding islands the full length of the corridor to meet ADA standards.	The Core Elements Alternative partially meets the project purpose and need because it would: reduce conflicts between transit, taxis, commercial vehicles, cyclists, and pedestrians through changes to the roadway configuration and pedestrian facilities, and the addition of new bicycle facilities; it would improve the accessibility of the corridor through replacement of existing pavement materials that do not meet ADA standards and upgrades to boarding islands; and it would improve the quality of the Market Street streetscape environment by planting new street trees, and installing streetscape furnishings. However, this alternative fails to replace infrastructure reaching the end of its operational design life.

Factor	Build Alternative	Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative	Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative	Market Street Partial Build Alternative-1	Market Street Partial Build Alternative-2	Core Elements Alternative
After reasonable mitigation, the magnitude of any adverse impacts on resources not protected by Section 4(f)	The Build Alternative would result in construction-period impacts related to parks and recreational facilities, community impacts, traffic and transportation, visual quality/aesthetics, cultural resources, water quality and storm runoff, air quality, noise and vibration. Operation of the Build Alternative would result in beneficial effects on parks and recreational facilities, community character and cohesion, traffic and transportation, visual quality/aesthetics, and air quality.	The magnitude of the impacts of the Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative would roughly be the same as the Build Alternative. This alternative would involve the sequential closure and reconstruction of major arterial streets and similar impacts of construction over similar lengths of Market Street.	The magnitude of the impacts of the Complete Street and Transit Priority Improvements Alternative and Complete Street and Moderate Transit Priority Improvements Alternative would roughly be the same as the Build Alternative. This alternative would involve the sequential closure and reconstruction of major arterial streets and similar impacts of construction over similar lengths of Market Street. In addition, major construction activities and roadway closures would be required on Mission Street.	The magnitude of the impacts of the Market Street Partial Build Alternative-1 would roughly be the same as the Build Alternative. This alternative would involve the sequential closure and reconstruction of major arterial streets and similar impacts of construction over similar lengths of Market Street.	The magnitude of the impacts of the Market Street Partial Build Alternative-2 would roughly be the same as the Build Alternative. This alternative would involve the sequential closure and reconstruction of major arterial streets and similar impacts of construction over similar lengths of Market Street.	The magnitude of the impacts of the Core Elements Alternative would be slightly less than the Build Alternative due to fewer infrastructure and utility upgrades. This alternative would involve the sequential closure and reconstruction of major arterial streets and similar impacts of construction over similar lengths of Market Street.
Substantial differences in costs among the project alternatives	$603.7 million	$535 million Complete Street and Moderate Transit Priority Improvements Alternative	$560 million for the Complete Street and Transit Priority Improvements on Market plus Bicycle Facility Improvements on Mission Alternative	$200 million	$160 million	$160 million

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Appendix B

Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations

Appendix B

Section 4(f) *De Minimis* and No Use Determinations

Appendix B discusses cultural and recreational resources where project implementation will result in *de minimis* impacts (Section 1) or no use (Section 2) under Section 4(f). In both sections, cultural resources are discussed first and parks and recreational facilities discussions follow.

1 Section 4(f) *De Minimis* Determinations

This section discusses *de minimis* impact determinations under Section 4(f). Section 6009(a) of SAFETEA-LU amended Section 4(f) legislation at 23 United States Code (USC) 138 and 49 USC 303 to simplify the processing and approval of projects that have only *de minimis* impacts on lands protected by Section 4(f). This amendment provides that once the U.S. Department of Transportation determines that a transportation use of Section 4(f) property, after consideration of any impact avoidance, minimization, and mitigation or enhancement measures, results in a *de minimis* impact on that property, an analysis of avoidance alternatives is not required and the Section 4(f) evaluation process is complete. FHWA's final rule on Section 4(f) de minimis findings is codified in 23 Code of Federal Regulations (CFR) 774.3 and CFR 774.17.

Responsibility for compliance with Section 4(f) has been assigned to the California Department of Transportation (Caltrans) pursuant to 23 USC 326 and 327, including *de minimis* impact determinations, as well as coordination with those agencies that have jurisdiction over a Section 4(f) resource that may be affected by a project action.

1.1 Historic Properties

The study area for historic properties is referred to as the Area of Potential Effects (APE). The APE was established to include all potential direct and indirect effects on cultural resources that may result from the project. An APE was delineated for the built environment and one was delineated for archaeological resources. Historic properties in the APE, including archaeological resources, where no use will occur are discussed in Section 2.1.

One hundred and forty-five NRHP-listed, NRHP-eligible, or assumed eligible built historic properties are located within the built environment APE. Six built properties located in the built environment APE are already listed in the NRHP, and eight built properties within the built environment APE were evaluated in the current study as appearing to meet the NRHP eligibility criteria. Pursuant to Section 106 PA Stipulation VIII.C.4, Caltrans assumed 131 additional built properties as eligible for listing in the NRHP for the purposes of this project. Ten of these NRHP-listed, NRHP-eligible, and assumed eligible built properties are historic districts, and 135 are individual resources (ICF 2020a).

FHWA guidance for determining use under Section 4(f) differs subtly for historic districts that are NRHP-listed and NRHP-eligible with concurrence from the State Historic Preservation Officer (SHPO), and historic districts that are assumed eligible for NRHP listing for the purposes of a single project and have not received SHPO concurrence. In all cases, Section 4(f) takes into consideration changes to contributing elements of a historic district. If the historic district is NRHP-listed or -eligible with SHPO concurrence, its contributing elements generally have been identified as part of

the NRHP listing process or SHPO review of the NRHP eligibility determination. Because the process for assuming an historic district as eligible for NRHP listing under the Section 106 PA does not necessarily involve the identification of the district's contributing elements, however, then elements within the boundaries are assumed to be contributing elements of the district "unless they are determined by FHWA in consultation with the SHPO/THPO not to contribute" (FHWA 2012).

All 145 NRHP-listed, NRHP-eligible, or assumed eligible built historic properties within the built environment APE qualify for protection under Section 4(f). The Market Street Cultural Landscape District, an NRHP-eligible landscape district, is evaluated under Section 4(f) in Appendix A because the project would have an adverse effect on the district under Section 106 and accordingly a use under Section 4(f). The use of this resource requires an individual Section 4(f) evaluation and which is provided in Appendix A. This Appendix B addresses the remaining 144 NRHP-listed, -eligible, or assumed eligible built properties within the built environment APE. Of these, 9 are proposed to have a *de minimis* use under the proposed project, because the project would result in changes to contributing elements of these historic resources. These include 3 individual properties and 6 historic districts. The remaining 135 built properties, inclusive of 132 individual properties and 3 historic districts, do not contain contributing elements that would be changed as a result of the project and are analyzed only for their potential to experience a constructive use.

Table 1 lists the 9 properties in the built-environment APE that are protected by Section 4(f) and that are proposed to have a *de minimis* impact. The subsections following Table 1 provide a description of the proposed changes to the properties and their existing setting, along with an explanation for why a finding of *de minimis* is appropriate for each property. The locations of all the built properties that qualify for protection under Section 4(f) are shown in Figure 1 (overview and sheets 1–8).

Table 1. Historic Properties with Proposed *De Minimis* Impact Determinations

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
NRHP-Eligible and Assumed NRHP-Eligible Historic Districts		
MR-29	San Francisco Auxiliary Water Supply System (AWSS), roadways throughout the city and county of San Francisco	**Period of Significance:** 1908 to 1913 **Evaluation Criteria:** A and C
MR-36	BART District, San Francisco, the East Bay, and portions of the San Francisco Peninsula	**Period of Significance:** 1972 **Evaluation Criteria:** A and C
MR-11	Civic Center Landmark District, bounded by Golden Gate Avenue to the north, Franklin Street to the west, Market Street to the south, and Jones Street to the east, SF, CA (Note: A portion of this district is already listed in the NRHP and as an NHL; a larger land area is eligible for the purposes of this report.)	**Period of Significance:** 1896 to 1975 **Evaluation Criteria:** A and C
MR-26	Kearny-Market-Mason-Sutter Conservation District, bounded by Bush Street to the north, Kearny Street to the east, Market Street to the south, and Taylor Street to the west, SF, CA	**Period of Significance:** 1906 to 1930 **Evaluation Criterion:** C
MR-17	LGBTQ Tenderloin Historic District, bounded by Geary Street to the north, Taylor Street to the east, Market Street to the south, and Larkin Street to the west, SF, CA	**Period of Significance:** 1933 to 1990 **Evaluation Criterion:** A

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
MR-44	New Montgomery Mission-2nd Street Conservation District, bounded by Market Street to the north, Second Street to the east, Howard Street to the south, and Third Street to the west, SF, CA	**Period of Significance:** 1906 to 1933 **Evaluation Criterion:** C
NRHP-Eligible and Assumed NRHP-Eligible Individual Historic Properties		
MR-45	Crown Zellerbach Complex, One Bush Street, SF, CA	**Period of Significance:** 1959 **Evaluation Criterion:** C
MR-16	United Nations Plaza, San Francisco City Center, in the block bounded by Market, Hyde, McAllister, and Seventh streets, SF, CA	**Period of Significance:** 1977 to 1978 and 1985 to 1995 **Evaluation Criteria:** A and C
MR-9	Fillmore West, 10–12 South Van Ness Avenue, SF, CA	**Period of Significance:** 1968 to 1971 **Evaluation Criteria:** A and B

Notes:
A = Association with "events that have made a significant contribution to the broad patterns of our history."
B = Association with "the lives of persons significant in our past."
C = Resources "that embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master; possess high artistic values; or represent a significant and distinguishable entity whose components may lack individual distinction."
D = Resources "that have yielded, or may be likely to yield, information important to history or prehistory."

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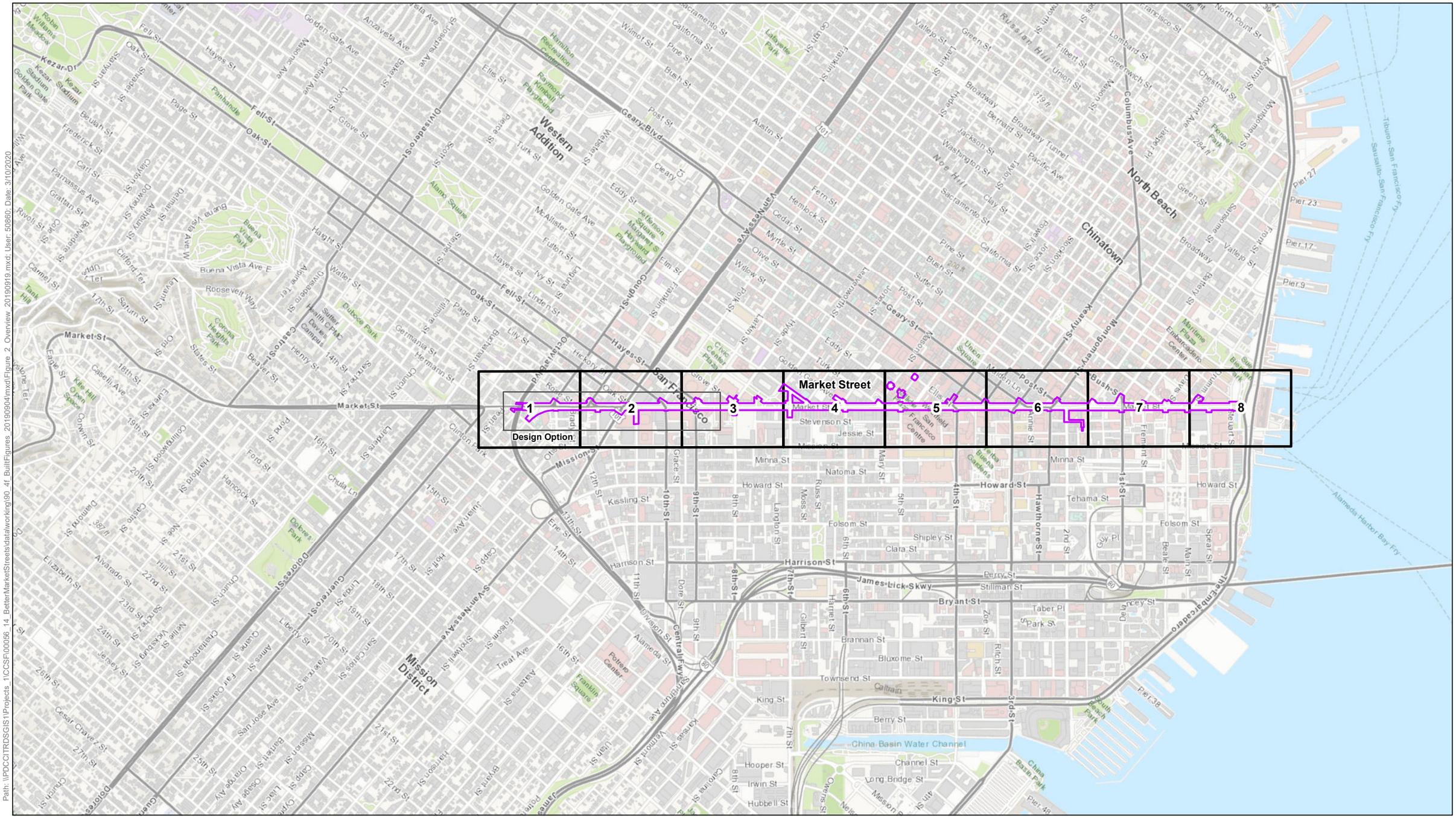

Better Market Street Project

Source: World Topographic Map, ESRI et al. 2019
San Francisco Public Works, January 2018.

Project Corridor

Map Book Sheet

Figure 1 Overview
Section 4(f) Historic Properties

Federal Project Number: STPL-5934(180)

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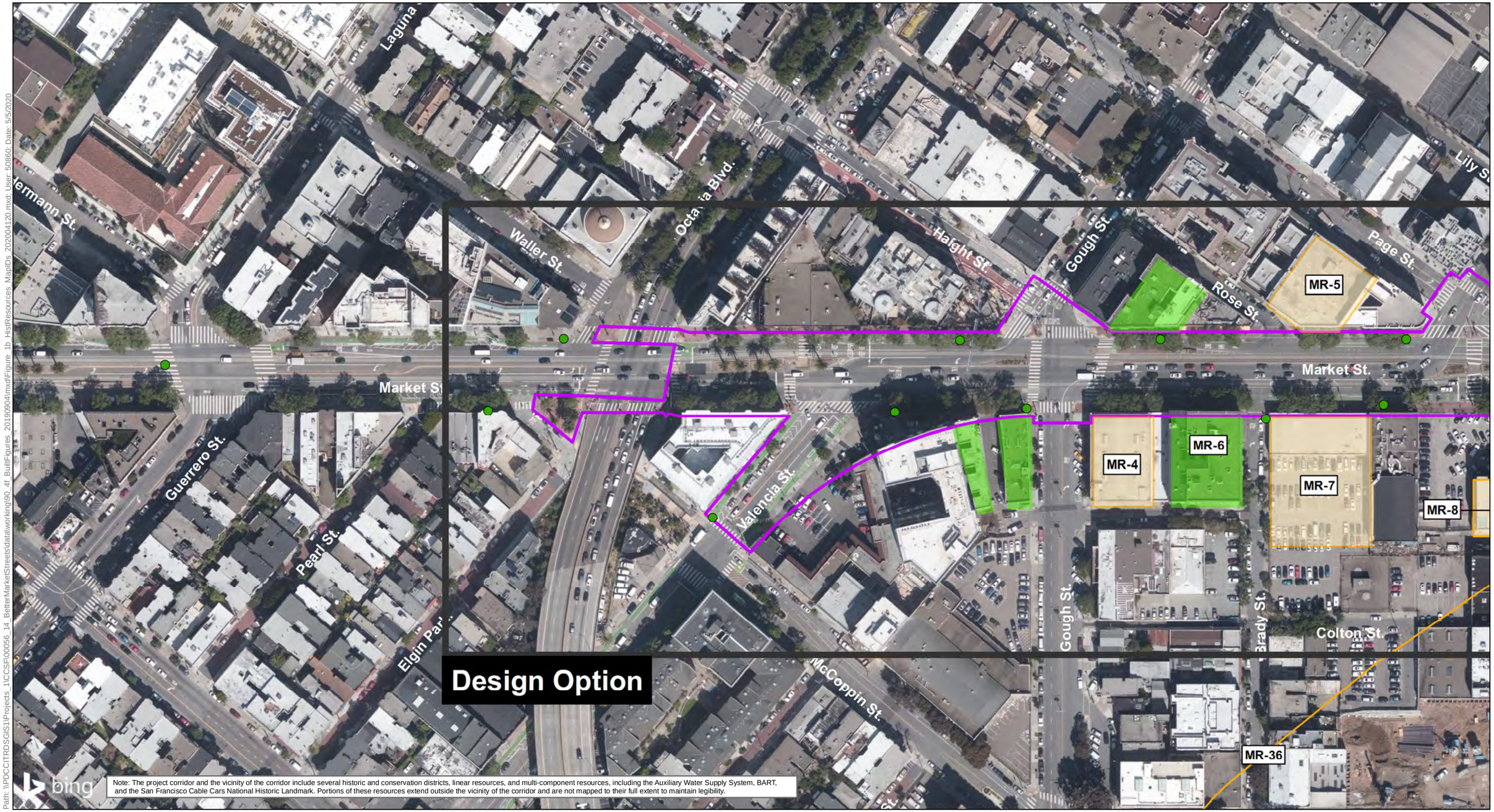

Note: The project corridor and the vicinity of the corridor include several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the vicinity of the corridor and are not mapped to their full extent to maintain legibility.

Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Figure 1
Section 4(f) Historic Properties
(Sheet 1 of 8)

Federal Project Number: STPL-5934(180)

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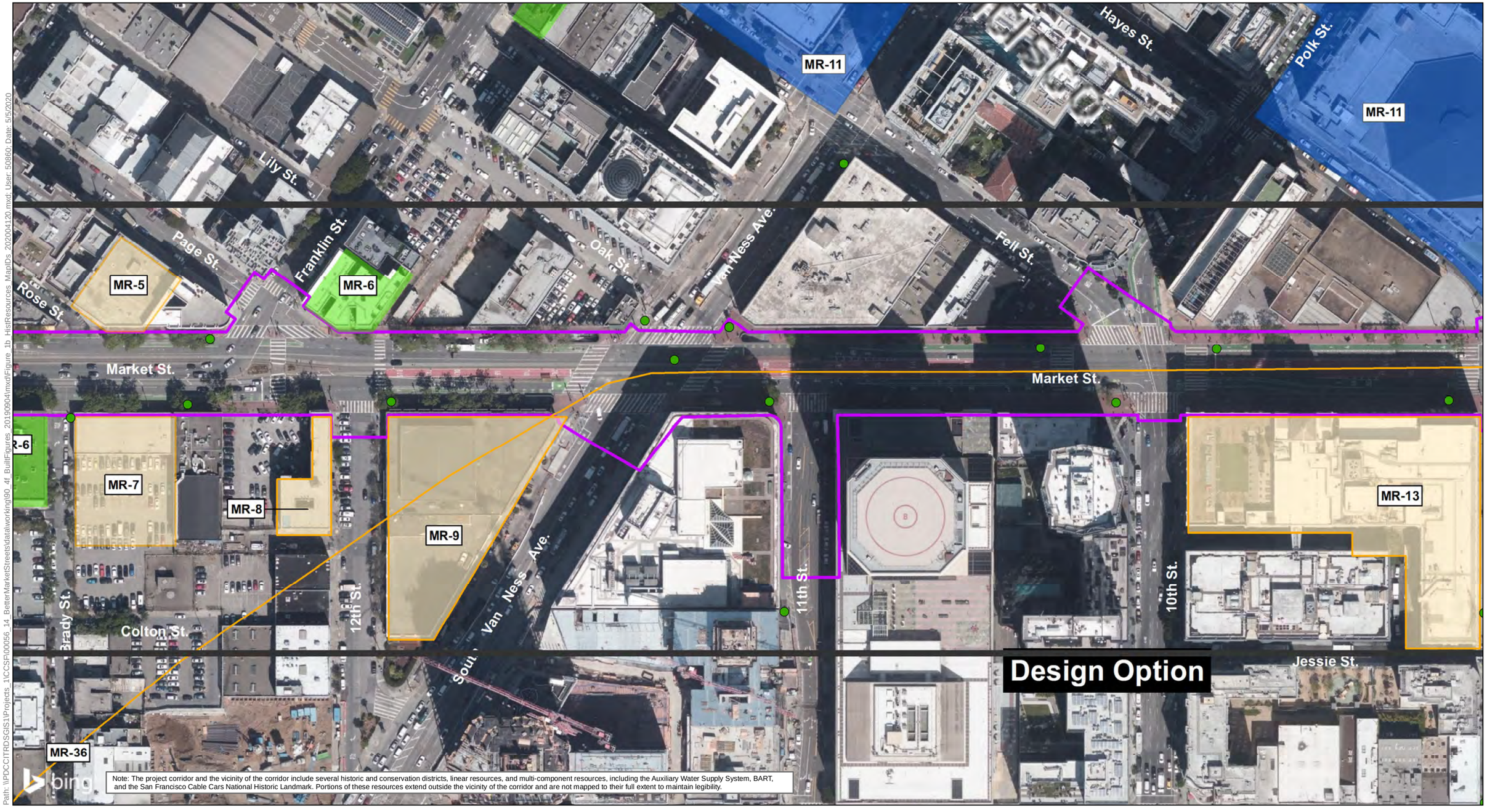
- Project Corridor
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- Hotel Andree (MR-4)
- Wilson Brothers Company Building (MR-5)
- Lesser Brothers Building (MR-7)
- Civic Center Hotel (MR-8)
- Market Street Masonry Landmark District (MR-6)



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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Figure 1
Section 4(f) Historic Properties
(Sheet 2 of 8)

Federal Project Number: STPL-5934(180)

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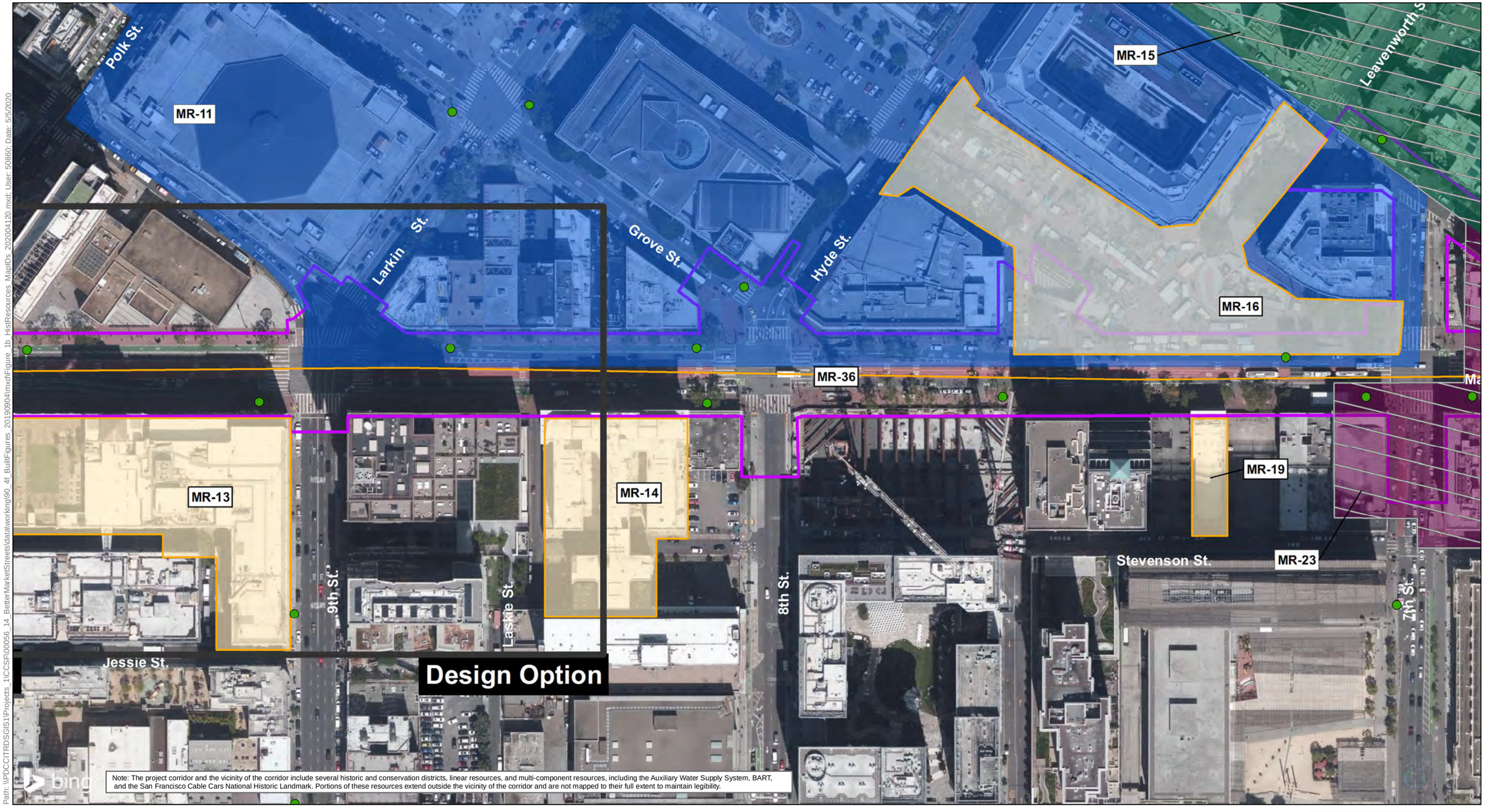
Miles

- Project Corridor
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- Fillmore West (MR-9)
- Wilson Brothers Company Building (MR-5)
- Lesser Brothers Building (MR-7)
- Civic Center Hotel (MR-8)
- Western Furniture and Merchandise Mart (MR-13)
- Market Street Masonry Landmark District (MR-6)
- Civic Center Landmark District (MR-11)



Note: The project corridor and the vicinity of the corridor include several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the vicinity of the corridor and are not mapped to their full extent to maintain legibility.

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Better Market Street Project

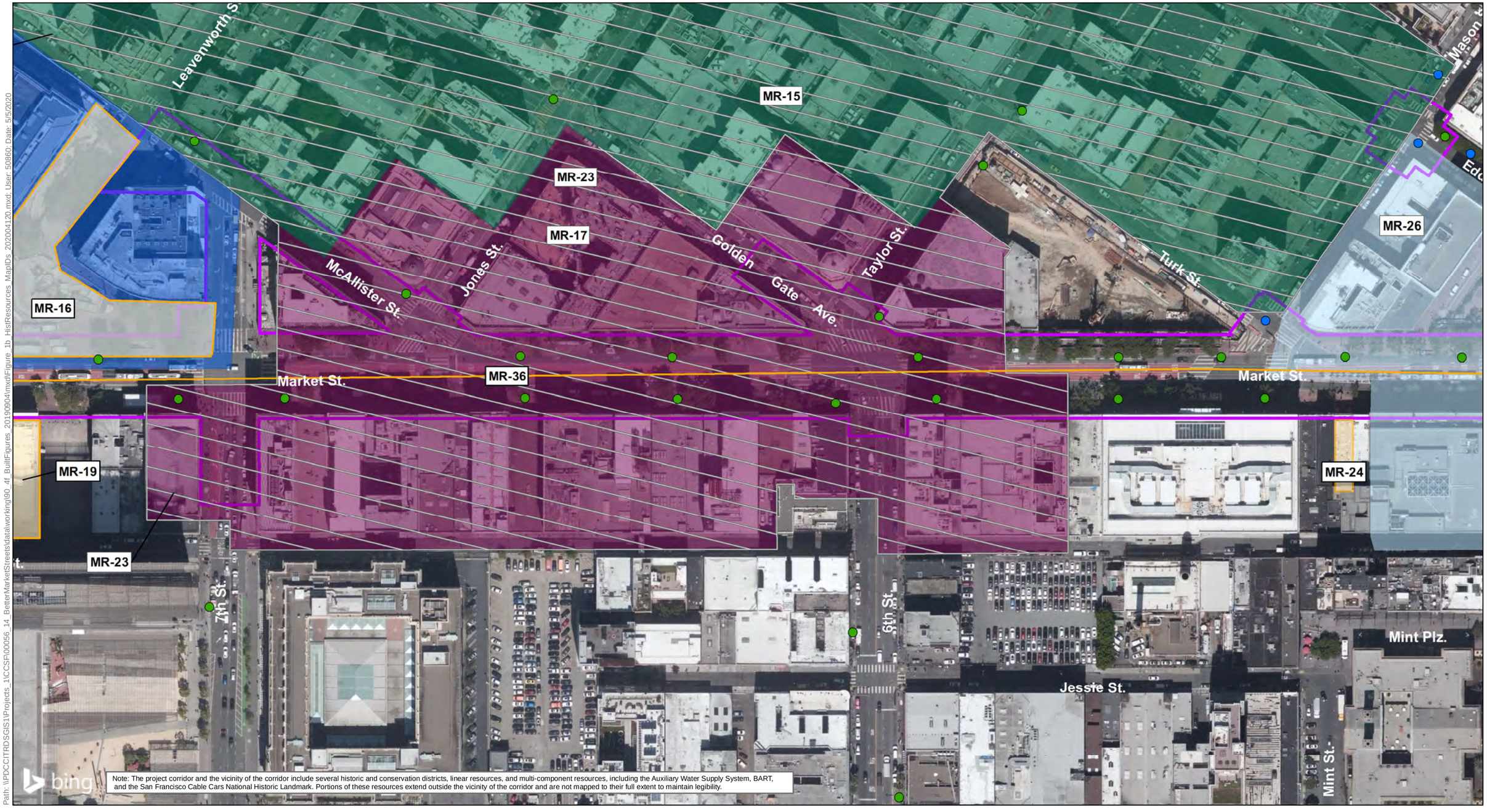
Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Figure 1
Section 4(f) Historic Properties
(Sheet 3 of 8)

Federal Project Number: STPL-5934(180)

0 0.025 0.05
Miles

- Project Corridor
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- Francesca Theater (MR-19)
- United Nations Plaza (historic property with recreational uses) (MR-16)
- Western Furniture and Merchandise Mart (MR-13)
- Whitcomb Hotel (MR-14)
- Civic Center Landmark District (MR-11)
- LGBTQ Tenderloin Historic District (MR-17)
- Uptown Tenderloin National Register Historic District (MR-15)
- Market Street Theatre and Loft National Register District (MR-23)



Note: The project corridor and the vicinity of the corridor include several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the vicinity of the corridor and are not mapped to their full extent to maintain legibility.

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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Figure 1
Section 4(f) Historic Properties
(Sheet 4 of 8)

Federal Project Number: STPL-5934(180)

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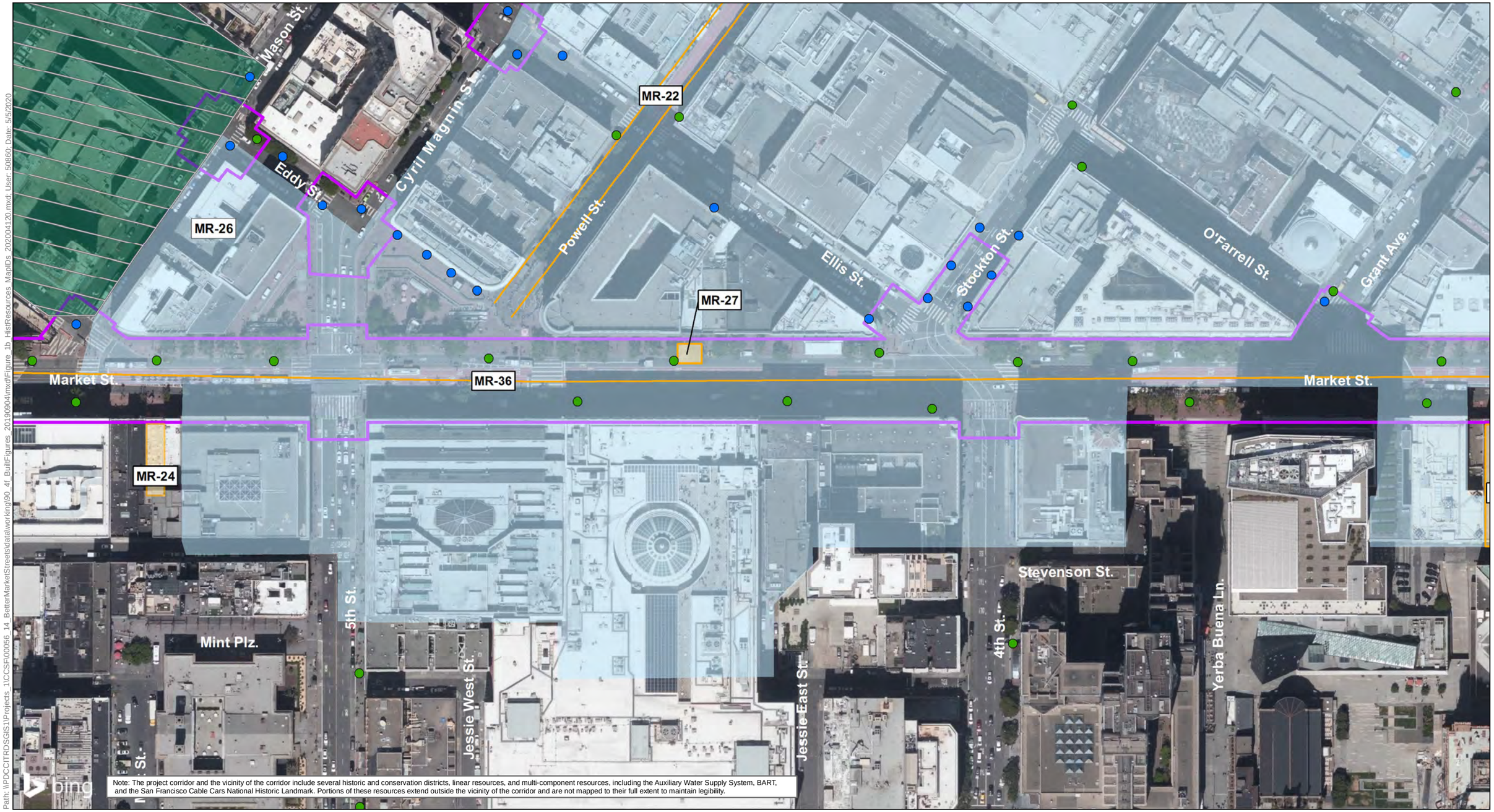
Miles

- Project Corridor
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- 925 Market Street (MR-24)
- Francesca Theater (MR-19)
- United Nations Plaza (historic property with recreational uses) (MR-16)
- Civic Center Landmark District (MR-11)
- LGBTQ Tenderloin Historic District (MR-17)
- Uptown Tenderloin National Register Historic District (MR-15)
- Market Street Theatre and Loft National Register District (MR-23)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)



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Better Market Street Project

Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

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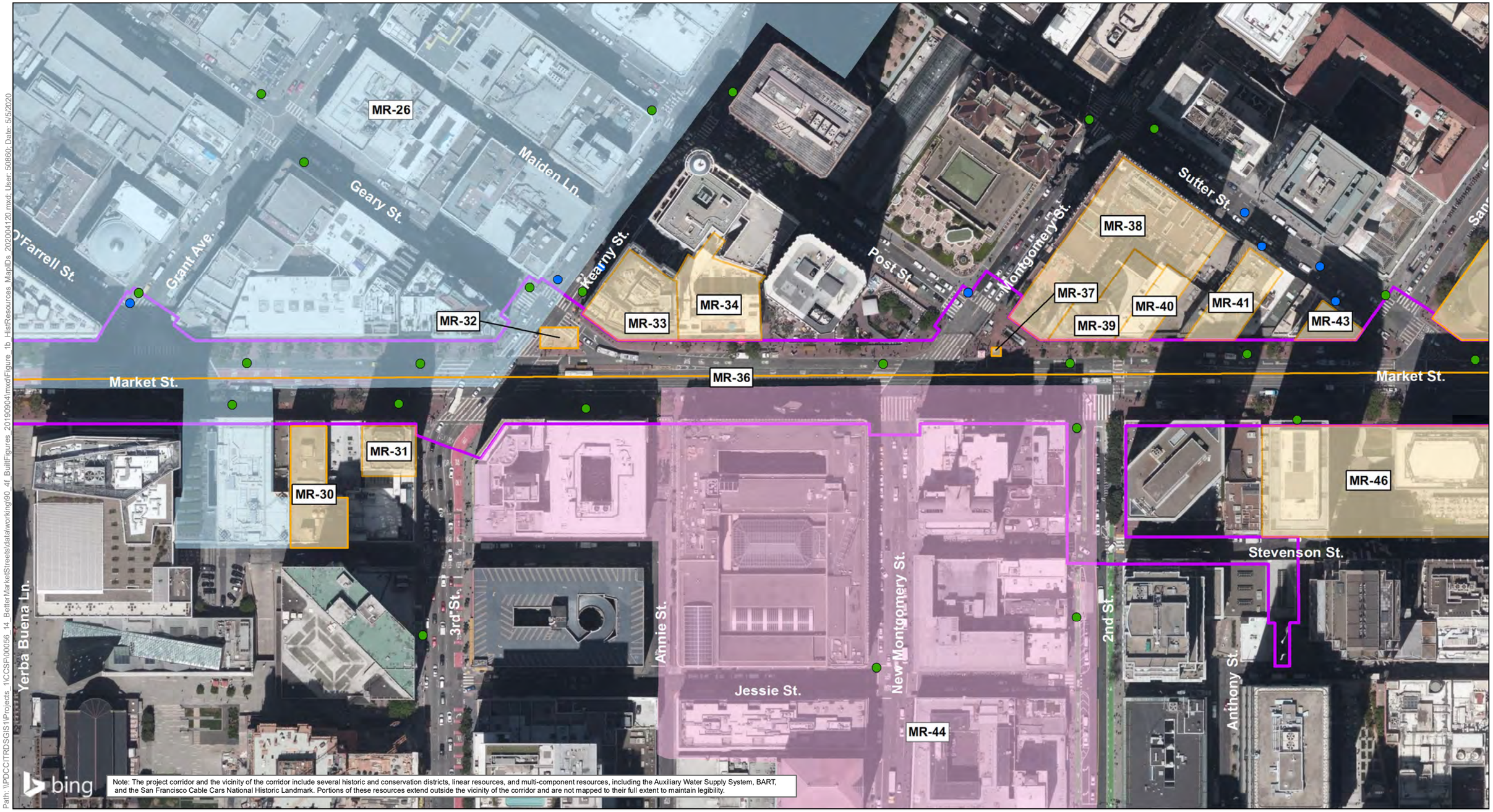
Miles

- Project Corridor
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- San Francisco Cable Cars National Historic Landmark (MR-22)
- 925 Market Street (MR-24)
- Kamm Building (MR-30)
- Samuels Clock (MR-27)
- LGBTQ Tenderloin Historic District (MR-17)
- Uptown Tenderloin National Register Historic District (MR-15)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)

Figure 1
Section 4(f) Historic Properties
(Sheet 5 of 8)



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Better Market Street Project

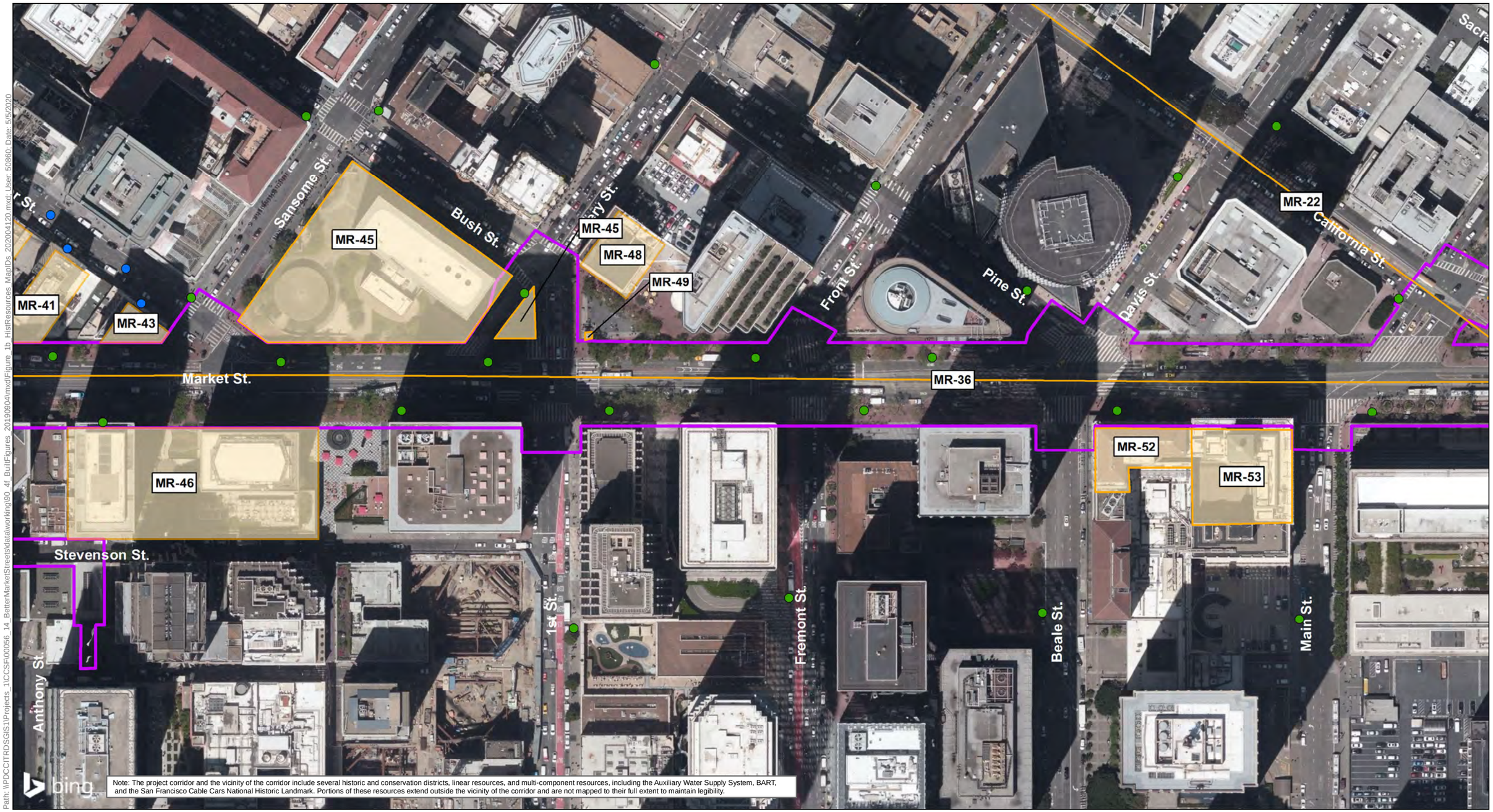
Source: Bing Maps Aerial, Microsoft Corporation 2010; Streets, City and County of San Francisco 2014; World Topographic Map, ESRI et al. 2019.
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

0 0.025 0.05
Miles

- Project Corridor
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- Chancery Building (MR-41)
- Chronicle Building (MR-33)
- Finance Building (MR-40)
- Flatiron Building (MR-43)
- Hobart Building (MR-39)
- 44 and 2-8 Montgomery Street (MR-38)
- Crown Zellerbach Complex (MR-45)
- Call Building (MR-31)
- Kamm Building (MR-30)
- Lotta's Fountain (MR-32)
- Admission Day Monument (MR-37)
- 648–660 Market Street (MR-34)
- Standard Oil Building/ Chevron Towers (MR-46)
- Kearny-Market-Mason-Sutter Conservation District (MR-26)
- New Montgomery-Mission-2nd Street Conservation District (MR-44)

Figure 1
Section 4(f) Historic Properties
(Sheet 6 of 8)



Note: The project corridor and the vicinity of the corridor include several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the vicinity of the corridor and are not mapped to their full extent to maintain legibility.

Path: \\PDCCTRDSGIS1\Projects_1\CCSF\00056_14_BetterMarketStreets\data\working\90_4f_Build\Figures_20190904\mxd\Figure_1b_HistResources_MapID5_20200412\0.mxd; User: 50860; Date: 5/5/2020

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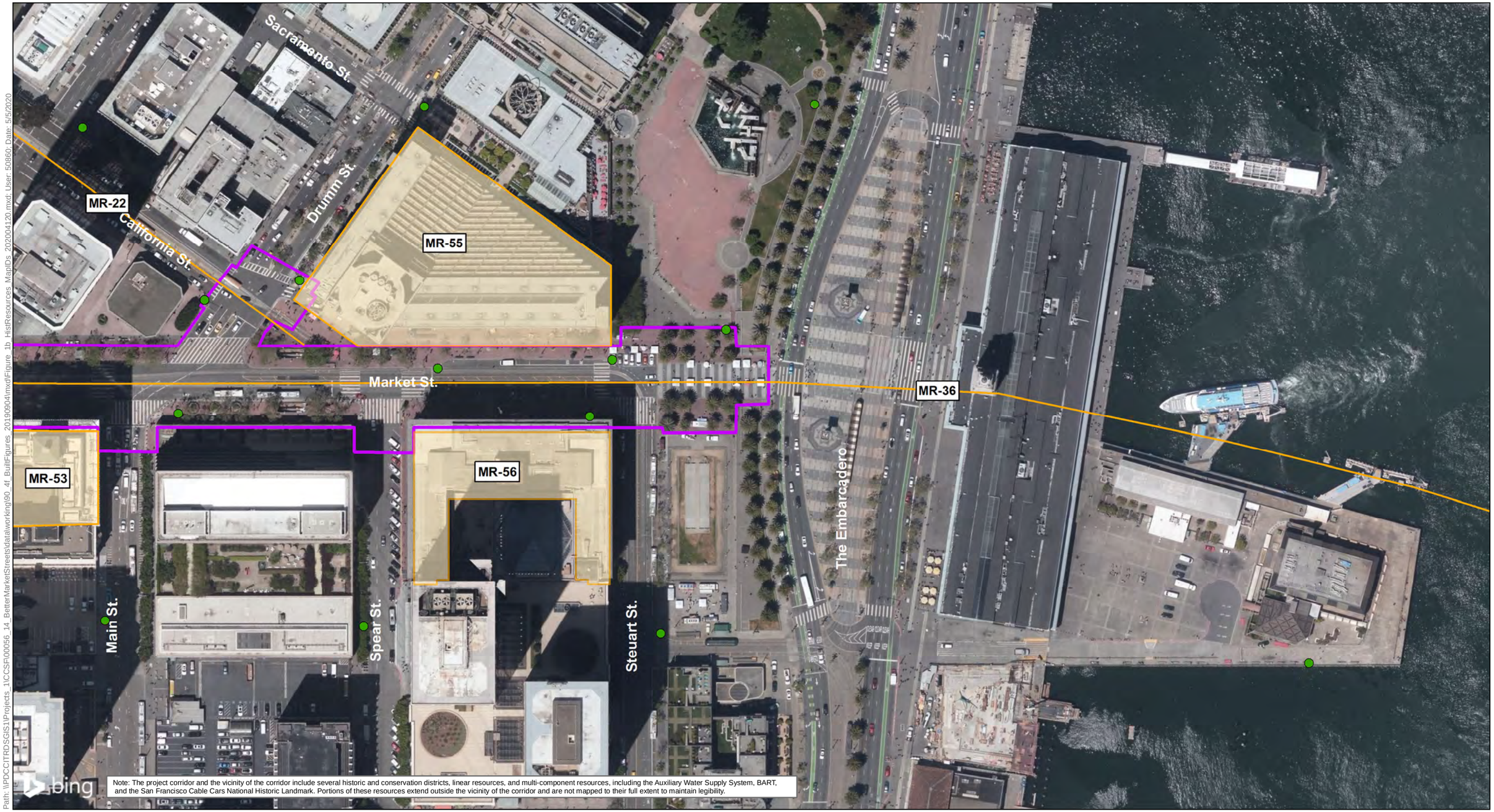
- Project Corridor
- Golden Triangle Light Standards (MR-28)
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- San Francisco Cable Cars National Historic Landmark (MR-22)
- Chancery Building (MR-41)
- Flatiron Building (MR-43)
- 44 and 2-8 Montgomery Street (MR-38)
- Hyatt Regency (MR-55)
- Crown Zellerbach Complex (MR-45)
- Matson Building and Annex (MR-53)
- Mechanics Monument (MR-49)
- PG&E General Office Building and Annex (MR-52)
- Postal Telegraph Building (MR-48)
- Standard Oil Building/ Chevron Towers (MR-46)

Figure 1
Section 4(f) Historic Properties
(Sheet 7 of 8)



Note: The project corridor and the vicinity of the corridor include several historic and conservation districts, linear resources, and multi-component resources, including the Auxiliary Water Supply System, BART, and the San Francisco Cable Cars National Historic Landmark. Portions of these resources extend outside the vicinity of the corridor and are not mapped to their full extent to maintain legibility.

Path: \\PDCCITRDSGIS1\Projects_1\CCSF\00056_14_BetterMarketStreets\data\working\90_4f_BuiltFigures_20190904\mxd\Figure_1b_HistResources_MapIDs_20200412\0.mxd; User: 50860; Date: 5/5/2020

Better Market Street Project

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Federal Project Number: STPL-5934(180)

0 0.025 0.05
Miles

- Project Corridor
- Auxiliary Water Supply System (MR-29)
- BART District (MR-36)
- San Francisco Cable Cars National Historic Landmark (MR-22)
- Southern Pacific Building (MR-56)
- Hyatt Regency (MR-55)
- Matson Building and Annex (MR-53)

Figure 1
Section 4(f) Historic Properties
(Sheet 8 of 8)

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1.1.1 San Francisco Auxiliary Water Supply System

The San Francisco Auxiliary Water Supply System (AWSS) (MR-29) is a discontiguous, gravity-fed fire-suppression system with numerous buildings, other structures, and infrastructural features throughout San Francisco (Figure 1). This property was evaluated as eligible for listing in the NRHP in the Historic Resources Evaluation Report (HRER) prepared for the proposed project, and SHPO concurrence was received on April 22, 2020.

The contributing elements of the AWSS within the project corridor include the iron pipes below Market Street, lying inside the project boundaries; however, in many areas, these pipes were replaced in the 1970s with ductile iron. Therefore, their contributing status is related primarily to their role in supporting the overall function of the AWSS rather than the materials. In addition, the project corridor has three AWSS cisterns (near the Market Street intersections at Battery Street, Van Ness Avenue, and Valencia Street) and approximately 65 AWSS fire hydrants, which line both edges of Market Street and are in many cases contributing elements. Some of the contributing elements of the AWSS will be altered by project activities. This includes relocating or replacing portions of the underground AWSS pipes within the project corridor to maintain a state of good repair or match curb movement and shifting the majority of AWSS fire hydrants within the project corridor to accommodate proposed traffic lanes, pedestrian through zones, and other project elements. Utility covers on the three AWSS cisterns within the project corridor will be retained or replaced in kind. In addition, one AWSS hydrant along the northern edge of Market Street, between Front and Pine streets, may be removed as a result of the project; this hydrant was installed after the period of significance for the resource and is not a contributing element of the AWSS.

The project prioritizes updating the AWSS to maintain functionality within the project corridor through replacement of existing pipes with new pipes that are consistent with respect to functionality, although not consistent with respect to a specific material (cast iron was used in the original system). In areas where the proposed project may remove original cast iron AWSS pipes, the replacement pipes will support the system's fire suppression function and withstand the force of pressurized water. None of the three AWSS cisterns in the project corridor will be altered during the project. Furthermore, the only AWSS hydrant proposed for removal under the project does not date to the property's period of significance; therefore, the project will not lessen its historic integrity. The approximately 64 AWSS hydrants within the project corridor will remain at or near their current locations within the Market Street streetscape and maintain the overall spatial relationships that characterize the property. In summary, the proposed project would maintain the overall characteristics that allow the property to convey its historical significance.

Permanent changes to the AWSS, including replacing or relocating pipes, shifting the location of the AWSS fire hydrants, removing one fire hydrant, and replacing the cistern utility covers, will result in a finding of no adverse effect with standard conditions on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the AWSS are *de minimis* and will inform SHPO if its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.2 BART District

The BART District (MR-36) is a multi-component regional transit system, consisting of sub-surface tunnels, passenger stations, and light-rail trains that traverse San Francisco, the East Bay, and portions of the San Francisco Peninsula (Figure 1). Construction of the BART segment within the APE, including the Embarcadero, Montgomery Street, Powell Street and Civic Center/United Nations Plaza stations, was completed and opened to the public in 1973. Each of these stations has multiple entrance portals that provide access from Market Street to the station concourse level. The BART District is assumed to be eligible for listing in the NRHP as a historic district for the purpose of the current project. Accordingly, elements within this district's boundaries are assumed to be contributing elements.

While the BART District is primarily located underground, some elements within the boundaries of the BART District extend above ground and are within the project corridor. The project may result in relocation of the BART/Muni elevator at the Civic Center station to a new location within United Nations Plaza. However, the relocation of this BART District element to a nearby location represents a minor change that will not diminish the district's overall historic character or function as the Bay Area's public transit system. The proposed project will not introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the BART District's elements that qualify the historic district for protection under Section 4(f).

Construction in the vicinity of the BART district will alter paving materials, traffic-lane configurations, infrastructure, and small-scale features along Market Street as well as McAllister Street between Market Street and Charles J. Brenham Place. However, these project activities represent a continuation of streetscape improvements that have been implemented along Market Street since the nineteenth century. The project will introduce new rail spurs from Market Street to McAllister Street and Charles J. Brenham Place to create the new F-loop. These alterations also represent a continuation of transit improvements that have been implemented within the Market Street streetscape since the nineteenth century.

In addition to the relocation of the BART/Muni elevator, streetscape and transit improvements will permanently change the historic district's setting, resulting in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. These improvements will result in a permanent change to assumed contributing elements. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the BART District are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.3 Civic Center Landmark District

The Civic Center Landmark District (MR-11) is located along the north side of Market Street and adjacent to the project corridor, generally between Larkin Street and Charles J. Brenham Place (Figure 1). The locally designated Civic Center Landmark District fully encompasses, and is larger than, the Civic Center National Historic Landmark District (which also includes United Nations Plaza – see Section 1.1.8 below). The Civic Center Landmark District contains a collection of striking Beaux-Arts civic institutional buildings, including the landmark city hall, public library, state administrative and court buildings, and Exposition Auditorium, which are arranged around the landscaped Civic Center Plaza and formal approach axis provided by Fulton Street. In addition to grand civic buildings and public plazas, the Civic Center Landmark District also encompasses

numerous small-scale landscape features that help the district convey its historic character as an early twentieth-century master-planned civic center, designed according to City Beautiful planning principles. The Civic Center Landmark District is assumed eligible for NRHP listing for the purpose of the current project. Accordingly, elements within this district's boundaries, including elements in the public right-of-way, are assumed to be contributing elements.

A portion of the district, 2.9 acres, lies within the boundaries of the project corridor along Market Street between 9th Street and 7th Street, and along 7th Street between Market Street and McAllister Street. Construction in the district will involve the removal and replacement of public sidewalks at Market Street and McAllister Street, introduction of furnishing zones, addition of curb ramps, removal and replacement and/or reuse and reinstallation of granite curbs, relocation of AWSS hydrants and emergency call boxes, removal/relocation of some Path of Gold light standards, and relocation of some associated historic utility boxes. However, these modifications will not change the ability of these elements to convey the character of the district.

The proposed project will include upgrades to the power traction substation at United Nations Plaza, which will include the removal of a portion of the brick paving in the plaza. After the upgrades, the area will be repaved using the removed bricks or, if needed, in-kind replacement bricks. In addition, the project will include relocation of the BART/Muni elevator at United Nations Plaza. This feature is not a contributing element for the district. The removal of brick paving will remove a portion of one of the small-scale features that is also a contributing element, the granite inlay that delineates quadrants of United Nations plaza and indicates the city's latitude and longitude. However, only the outermost segments of the inlay near Market Street will be removed; therefore, the feature will continue to delineate plaza quadrants and indicate the city's location. Removal of sidewalk brick and construction of new streetscape elements along Market Street will remove the continuous surface paving that unifies United Nations Plaza with the adjacent sidewalk.

Furthermore, the project will introduce new rail spurs from Market Street to McAllister Street and Charles J. Brenham Place to create the new F-loop and an associated boarding ramp. The ramp will require removal of two trees, a small area of red brick pavers, and a span of the granite curb. These changes will be minimal and will not diminish the overall historic character of the district.

In addition, work proposed in the immediate vicinity of the Civic Center Landmark District includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. In addition, tracks for the new F-loop will be constructed within the roadway of Charles J. Brenham Place, an area where no street tracks are currently located. Charles J. Brenham Place forms the eastern edge of the Civic Center Landmark District; the new F-loop tracks will be located adjacent to the district boundary. The rails will require construction of a boarding ramp along the sidewalk adjacent to the southbound lane on Charles J. Brenham Place. The ramp will require removal of two non-contributing trees, a small swath of red brick pavers, and a span of the granite curb. These project activities will alter the broader streetscape outside of the boundaries of the district, but will occur within its setting.

Assumed contributing elements of the district in the existing setting of the Civic Center Landmark District will be permanently altered by new sidewalk and roadway materials, new street trees, and reconstructed Path of Gold light standards. The proposed project will not physically damage or alter assumed contributing buildings that form the Civic Center Landmark District or introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the elements that qualify the historic district for protection under Section 4(f).

The permanent changes to assumed contributing elements in the public right-of-way, as well as permanent changes to the historic district's setting, will result in a Section 106 finding of no adverse effect, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the Civic Center Landmark District are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.4 Kearny-Market-Mason-Sutter Conservation District

The Kearny-Market-Mason-Sutter Conservation District (MR-26), arranged across approximately 25 city blocks, contains contributing buildings constructed between 1906 and 1930. It is generally bounded by Pine and Bush streets to the north; Kearny Street to the east; Market, Jessie, and Stevenson streets to the south; and Taylor Street to the west (Figure 1). The district has a primarily retail and commercial character. Its buildings are typically four to six stories high, constructed of masonry material, and clad in stone, terra cotta, or stucco. The structures, which fill the entire lot, are designed in a Classically influenced architectural style that was popular in the early twentieth century. The district is assumed eligible for NRHP listing for the purpose of the current project. Accordingly, elements within this district's boundaries, including elements in the public right-of-way, are assumed to be contributing elements.

A portion of the district, 6.1 acres within the public right-of-way, lies within the boundaries of the project corridor along Market Street between Mason Street and Kearny Street north of Market Street and between 6th Street and 3rd Street south of Market Street. Construction in the district will involve modification of the street grid in the project corridor, but no direct modifications to any buildings that are assumed to contribute to the district are proposed as part of the project. However, all work is proposed in Market Street in the vicinity of contributing buildings to the Kearny-Market-Mason-Sutter Conservation District and will involve the removal of assumed contributing elements in the public right-of-way. Work proposed includes removing and replacing public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones within the sidewalk area, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. This work will take place within a limited portion of the district, along its southeastern edge in the public right-of-way. The remaining buildings within the district are physically removed from the proposed work and will not experience any change to their physical characteristics. These project activities will alter the broader streetscape outside of the district but within its setting. Furthermore, the project will not introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the elements that qualify the historic district for protection under Section 4(f).

The permanent changes to assumed contributing elements in the public right-of-way, as well as permanent changes to the historic district's setting, will result in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the Kearny-Market-Mason-Sutter Conservation District are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.5 LGBTQ Tenderloin Historic District

The LGBTQ Tenderloin Historic District (MR-17) contains buildings that include businesses, nightlife establishments, low-rent residences, and other uses that served members of San Francisco's LGBTQ communities between the end of Prohibition in 1933 and 1990. These buildings are generally within the boundaries of the Market Street Theatre and Loft National Register District and Uptown Tenderloin National Register Historic District (Figure 1). The district is assumed eligible for NRHP listing for the purpose of the current project. Accordingly, elements within this district's boundaries, including elements in the public right-of-way, are assumed to be contributing elements.

A portion of the district, 4.4 acres within the public right-of-way, lies within the boundaries of the project corridor along Market Street between Charles J. Brenham Place and Mason Street north of Market Street, and between 8th Street and 5th Street south of Market Street. Construction in the district will involve modification of the Market Street streetscape, but these changes are consistent with streetscape improvements that began along Market Street during the district's period of significance. No direct modifications to any buildings that are assumed to contribute to the district are proposed as part of the project. All project features are proposed to be constructed in the public right-of-way and involve the removal of assumed contributing elements. Work proposed includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. In addition, tracks for the new F-loop will be constructed within McAllister Street between Market Street and Charles J. Brenham Place, an area where no street tracks are currently located. A curbside transit stop will also be constructed along McAllister Street west of Jones Street. Both this segment of the F-loop and the curbside transit stop will be within the boundary of the LGBTQ Tenderloin Historic District. This work will take place within a limited portion of the district, near its southeastern edge. These project activities will alter the broader streetscape outside of the boundaries of the district, but will occur within its setting. However, the proposed project will not physically damage or alter assumed contributing buildings that form the LGBTQ Tenderloin Historic District or introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the property's elements that qualify the historic district for protection under Section 4(f).

The permanent changes to assumed contributing elements in the public right-of-way, as well as to the historic district's setting, will result in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. These improvements will result in a permanent change to assumed contributing elements. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the LGBTQ Tenderloin Historic District are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.6 New Montgomery-Mission-2nd Street Conservation District

The New Montgomery-Mission-2nd Street Conservation District (MR-44) is in the eastern portion of the South of Market area in downtown San Francisco. It is generally bounded by Market Street to the north, Third Street to the west, Howard Street to the south, and Second Street to the east (Figure 1). The district is characterized primarily by large masonry commercial loft and light industrial buildings that were constructed between 1906 and 1933 and clustered around New Montgomery Street, which was planned as an extension to Montgomery Street, leading two blocks south from Market Street before terminating at Howard Street. The district is assumed eligible for NRHP listing

for the purpose of the current project. Accordingly, elements within this district's boundaries, including elements in the public right-of-way, are assumed to be contributing elements.

A portion of the district, 0.9 acre within the public right-of-way, lies within the boundaries of the project corridor along Market Street between 3rd Street and 2nd Street south of Market Street and along 2nd Street between Market Street and Stevenson Street. However, no direct modifications to any buildings that are assumed to contribute to the district are proposed as part of the proposed project. All project features are proposed to be constructed in the public right-of-way. Work proposed in the immediate vicinity of the New Montgomery-Mission-2nd Street Conservation District's assumed contributing buildings adjacent to Market Street includes removing and replacing public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. These elements are assumed to contribute to the district's historic character. Buildings within the district are located at a distance from the proposed work, and there will be no change to their physical characteristics. These project activities will alter the broader streetscape outside of the boundaries of the district but will occur within its setting. The proposed project will not physically damage or alter these assumed contributing buildings that form the New Montgomery-Mission-2nd Street Conservation District nor introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the property's elements that qualify the historic district for protection under Section 4(f).

The permanent changes to assumed contributing elements in the public right-of-way, as well as to the historic district's setting, will result in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the New Montgomery Mission-2nd Street Conservation District are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.7 Crown Zellerbach Complex, One Bush Street

The Crown Zellerbach Complex (MR-45) is a "Miesian" International-style and Corporate Modern–style office complex situated on an irregularly shaped lot formed by the intersection of Bush, Market, Sansome, and Battery streets. It comprises a 20-story office tower, one-story circular commercial bank building, sunken garden plaza between the two buildings, and a triangular median at the intersection of Bush and Battery streets (Figure 1). The complex was constructed in 1959. This property was evaluated as eligible for listing in the NRHP in the HRER prepared for the proposed project, and SHPO concurrence was received on April 22, 2020.

A portion of the Crown Zellerbach Complex, 0.1 acre, lies within the boundaries of the project corridor along Market Street between Sansome Street and Battery Street. Project activities will not demolish or alter the resource in an adverse manner. However, the project will require permanent alterations to this resource, including closure of the portion of Battery Street east of the Crown Zellerbach Complex to vehicle traffic and transition of this area to a pedestrian use. It is possible that the proposed modification of the Battery Street bridge could entail alterations to adjacent landscape features on a separate parcel, including a small area of river rock paving and two trees on the traffic island adjacent to the parking garage exit. These landscape features match landscaping at the resource, however, they read as a secondary feature of the property. Any change will not affect the contributing elements of the property. In addition, the sequence of street circulation at the eastern

edge of the Crown Zellerbach Complex will be modified; private vehicles exiting the sub-surface parking garage will be required to turn right onto Market Street. Furthermore, the project will close the Battery Street bridge between Bush and Market trees and pave it for pedestrian and bicycle use. The Battery Street bridge is not a contributing element to the historic property, nor is the river rock paving that covers the traffic island between Battery, Bush, and Market Streets, which may also be paved for pedestrian use under the project. Work proposed in the immediate vicinity of the Crown Zellerbach Complex includes removing and replacing the public sidewalks, installing a sidewalk level bikeway, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. Work proposed in Market Street in the vicinity of the Crown Zellerbach Complex includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements.

The existing setting of the Crown Zellerbach Complex's will be permanently altered by including new sidewalk and roadway materials, new configurations, new street trees, and reconstructed Path of Gold light standards. These changes will occur primarily in the Market Street streetscape; the Battery Street bridge will be paved for pedestrian use. The proposed project will not physically damage or alter the Crown Zellerbach Complex or introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the property's historical features that qualify the historic property for protection under Section 4(f).

There will be permanent changes to the existing setting, including landscaping changes on an adjacent parcel and changes to vehicular circulation, that will result in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on the Crown Zellerbach Complex are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.8 United Nations Plaza

United Nations Plaza (MR-16) is a Modern-style public plaza in San Francisco's Mid-Market area (Figure 1); the plaza was designed by mid-twentieth-century landscape architect Lawrence Halprin and completed in 1975. The 2.6-acre plaza features two primary pedestrian axes. One runs east–west along Fulton Street; the other runs north–south along Leavenworth Street. Red brick laid in a herringbone pattern is found throughout the pedestrian portions of the plaza. A large fountain, located at the eastern end of the plaza, is composed of more than 100 granite blocks, which have been organized into five primary groups that represent the world's major continents. United Nations Plaza includes landscape features, such as light standards and paired rows of trees parallel to the pedestrian mall along the east–west axis on Fulton Street. The plaza is also landscaped with grassy areas and scattered seating and provides access to the Civic Center BART and Muni station. This property was evaluated as eligible for listing in the NRHP in the HRER prepared for the proposed project, and SHPO concurrence was received on April 22, 2020. The United Nations Plaza is also being considered as a contributor to the Civic Center National Historic Landmark District (see Section 1.1.3 above).

A portion of United Nations Plaza, 0.7 acre, lies within the boundaries of the project corridor along Market Street between Hyde Street and 7th Street north of Market Street. The proposed project will include upgrades to the power traction substation at the resource, which will include the removal of

a portion of the brick paving in the plaza. After the upgrades, the area will be repaved using the removed bricks or, if needed, in-kind replacement bricks. In addition, the project will include relocation of the BART/Muni elevator at United Nations Plaza. This feature is not a contributing element for the district and will be relocated to an area that is non-contributing for the district. However, the removal of brick paving will remove a portion of one of the small-scale features that is also a contributing element, the granite inlay that delineates quadrants of the plaza and indicates the city's latitude and longitude. However, only the outermost segments of the inlay near Market Street will be removed; therefore, the feature will continue to delineate plaza quadrants and indicate the city's location. Removal of sidewalk brick and construction of new streetscape elements along Market Street will remove the continuous surface paving that unifies the resource with the adjacent sidewalk. In addition, the on-boarding ramp associated with the F-loop, to be installed in the southbound lane of Charles J. Brenham Place, will result in the removal of two trees, a small portion of brick paving, and a span of the granite curb. These changes, however, are minimal relative to the resource's 2.6-acre size. These changes will not change the contributing elements such that it will no longer be eligible for the NRHP or protection under Section 4(f).

The project will remove limited amounts of historic materials, including bricks to facilitate traction substation work and portions of the inlaid granite bands that extend through the sidewalk pedestrian zone adjacent to Market Street. In addition, the project may remove limited amounts of historic materials at the internal slope of the BART/Muni station portal to accommodate relocation of the elevator to this location. Despite removal of the inlaid granite bands and the original facing materials at the BART/Muni station portal, overall, the historic materials and designs throughout the approximately 110,000-square-foot plaza will remain intact.

United Nations Plaza also has a recreational use and is discussed below in Section 1.2.4, *United Nations Plaza*.

Permanent changes to the historic property, including upgrades to the power traction substation and associated removal of brick paving; relocation of a BART/Muni elevator and associated removal of a granite inlay that delineates plaza quadrants and indicates the city's latitude and longitude; removal of sidewalk brick adjacent to the plaza, which will remove unifying elements between the plaza and the existing setting; and installation of the on-boarding ramp associated with the F-loop, resulting in removal of two trees, brick paving, and a span of granite curb, will result in a Section 106 finding of no adverse effect with standard conditions on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on United Nations Plaza are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.9 Fillmore West, 10–12 South Van Ness Avenue

The resource at 10–12 South Van Ness Avenue (MR-9) (Figure 1) is a two-story commercial building that was constructed in 1927; between 1968 and 1971, it housed Fillmore West, a music performance venue. The asymmetrical, mostly two-story building sits on a triangularly shaped lot with an angular orientation toward Market Street and Van Ness Avenue. The building is assumed eligible for NRHP listing for the purpose of the current project.

A portion of the historic boundary of 10–12 South Van Ness Avenue, < 0.1 acre, lies within the boundaries of the project corridor along Market Street between 12th Street and S Van Ness Avenue

south of Market Street. No direct modifications to the historic building are proposed as part of the project. All project features are proposed to be constructed in the public right-of-way. The project proposes modification of Fillmore West's existing setting, including new sidewalk and roadway materials, new street trees, new transit boarding island, and reconstructed Path of Gold light standards. These changes will occur primarily in the Market Street streetscape, immediately in front of the building's primary façade. However, Fillmore West has experienced similar types of changes to its setting since its period of significance (1968–1971), with almost no alteration to the elements that convey the property's historic character. As such, new project features are part of the continuum of change to the visual landscape and setting of the Market Street streetscape over time. The proposed project will not physically damage or alter 10–12 South Van Ness Avenue or introduce other visual, atmospheric, or audible elements that have potential to diminish the integrity of the property's historical features that qualify the historic district for protection under Section 4(f).

The permanent change in the historic property's setting will result in a Section 106 finding of no adverse effect on the historic property, pending consultation with the SHPO. Because these changes will result in a finding of no adverse effect on the property under Section 106, Caltrans has preliminarily determined that the impacts on 10–12 South Van Ness Avenue are *de minimis* and will inform SHPO of its intent to make the *de minimis* finding during the Section 106 consultation process.

1.1.10 Conclusion for Historic Properties

Of the 9 historic properties discussed in this section, the project will alter contributing elements of 8 historic properties (AWSS, BART District, Civic Center Landmark District, Kearny-Market-Mason-Sutter Conservation District, LGBTQ Tenderloin Historic District, New Montgomery-Mission-2nd Street Conservation District, Crown-Zellerbach Complex, and United Nations Plaza) and it will not alter contributing elements of the remaining 1 property (Fillmore West, 10–12 South Van Ness Avenue), although it will extend inside the property's boundary and will alter its setting. Accordingly, Caltrans has preliminarily determined the Section 106 findings of no adverse effect will be a *de minimis* use under Section 4(f) of the 9 historic properties, pending SHPO concurrence. Because the Civic Center Landmark District encompasses the Civic Center National Historic Landmark District, concurrence will also be sought from the National Park Service, which serves as an official with jurisdiction for Section 4(f) properties that are designated as National Historic Landmarks.

1.2 Parks and Recreational Facilities

The study area for recreational facilities, defined as the area within 0.25 mile of the project corridor, includes publicly owned parks, recreational facilities, and Class 1 trails that qualify for protection under Section 4(f). Twenty-eight park and recreational facility resources were identified in the study area, one of which is also discussed as a historic property in Section 1.1.8, *United Nations Plaza*. Figure 2 shows the locations of all parks and recreational facility resources that qualify for protection under Section 4(f). The map ID number for each resource is illustrated in the figure, numbered from west to east, and is also provided in Tables 2 and 5.

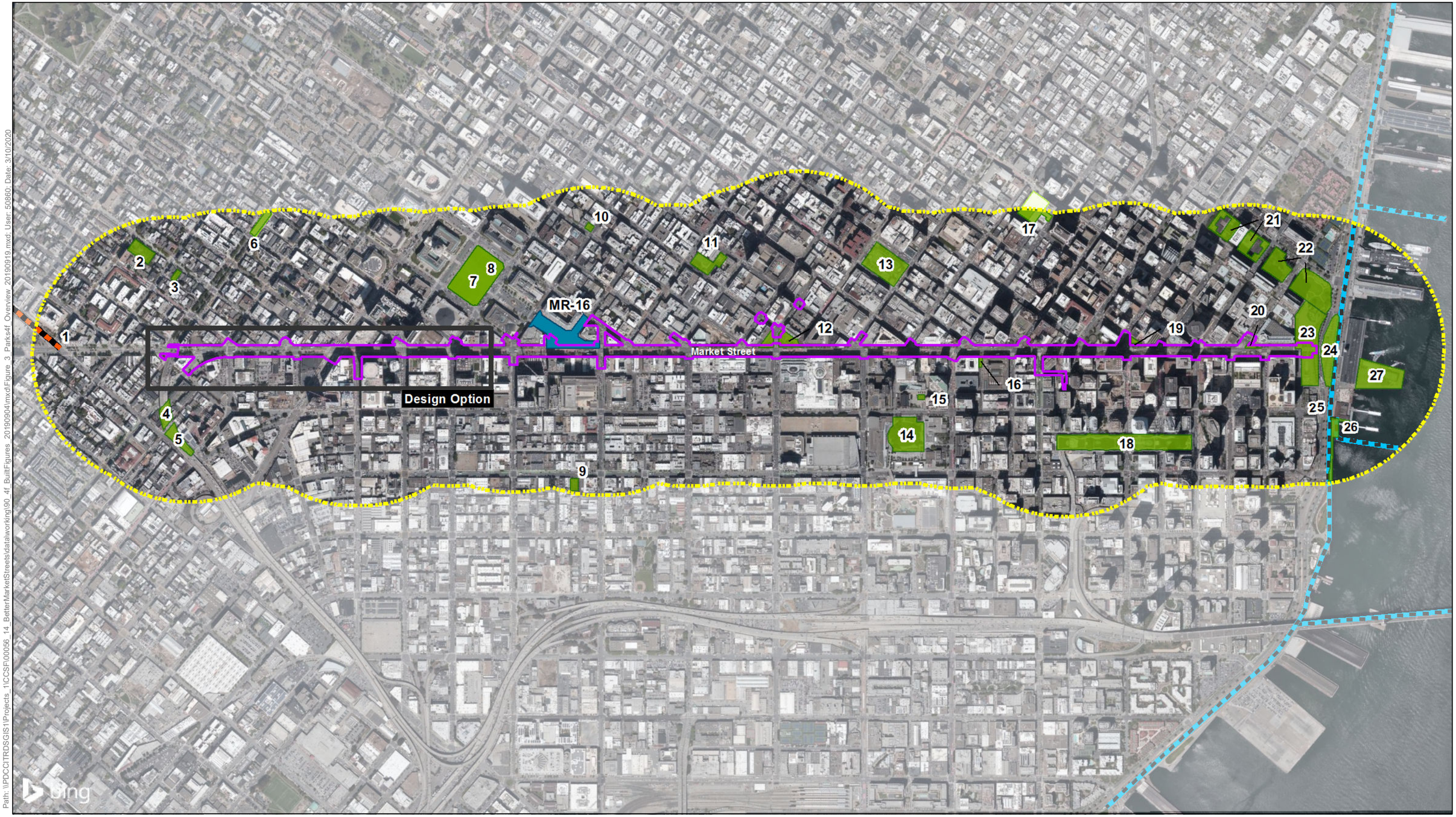
Table 2 lists the five recreational resources in the study area that are protected by Section 4(f) and that are proposed to have a *de minimis* impact. The project will not result in a proposed Section 4(f) use of the remaining 23 parks and recreational facilities in the study area, which are discussed in Section 2, *Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations*.

The subsections following Table 2 provide a description of the proposed changes to the resources, along with an explanation for why a finding of *de minimis* is appropriate for each resource.

Table 2. Parks and Recreational Facilities with *De Minimis* Impact Determinations

Map ID	Name	Description
16	Mark Twain Plaza	**Distance from Project Corridor:** within project boundaries **Location:** Annie and Market streets, SF, CA 94105 **Size:** 0.1 acre, <0.01 acre within study area **Features:** Shrubs in plaza planting beds, benches, and red brick paving in herringbone pattern **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability**: Publicly owned park
19	Mechanics Monument Plaza	**Distance from Project Corridor:** within project boundaries **Location:** Battery and Market streets, SF, CA 94105 **Size:** 0.1 acre, <0.01 acre within study area **Features:** Monument by Douglas Tilden, benches and landscaping **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability:** Publicly owned park
20	Robert Frost Plaza	**Distance from Project Corridor:** 0—adjacent **Location:** Drumm and Market streets, SF, CA 94105 **Size:** 0.1 acre, 0.1 acre within study area **Features:** Small plaque dedicated to Robert Frost, as well as a four-faced clock, an advertising kiosk, and trees **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability**: Publicly owned park
23	Embarcadero Plaza	**Distance from Project Corridor:** 0—adjacent **Location:** Steuart and Market streets, SF, CA, 94105 **Size:** 1.2 acres, 1.2 acres within study area **Features:** Play fountain, seasonal lunchtime concerts, seasonal skating, seasonal zip lining, picnic area, benches **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
MR-16	United Nations Plaza	**Distance from Project Corridor:** within project boundaries **Location:** Hyde and Market streets, SF, CA 94105 **Size:** 2.6 acres, 0.7 acre within study area **Features:** Statues, United Nations Fountain, grassy areas, seating **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability**: Publicly owned park

Sources: City and County of San Francisco 2016, 2019a, 2019b



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Better Market Street Project

Source: Parcels, City and County of San Francisco 2014; Streets, City and County of San Francisco 2014; Building Footprints, City and County of San Francisco 2011
San Francisco Public Works, January 2018; Approved Limits of Work, June 2019

Federal Project Number: STPL-5934(180)

0 0.25 0.5
Miles

Study Area (.25 mile buffer)
Project Corridor
Parks and Recreational Facilities*
Historic Resource with Recreational Uses*
San Francisco Bay Trail
Duboce Bikeway

Figure 2
Section 4(f) Parks and Recreational Facilities

** Labeled by Resource ID; refer to Tables 1, 2, and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*

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1.2.1 Mark Twain Plaza

Mark Twain Plaza (map ID #16), managed by Public Works, is located at the intersection of Annie and Market Streets (Figure 3). Amenities in the 0.1-acre plaza include landscaping and seating on planter walls.

A small portion of the plaza, <0.01 acre, lies within the boundaries of the project corridor. In this area, the existing red brick paving will be removed and replaced with ADA-compliant paving materials consistent with San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.). The existing trees will be removed and replaced. The work zone will be temporarily fenced for safety reasons and access to the plaza will be maintained around the construction zone. Construction activities to replace the sidewalk materials and to construct the portion of the project adjacent to this plaza are anticipated to last for a minimum of one year. However, the portion of the plaza which will not be affected will remain open to the public during construction activities with access maintained from Mission Street. Plaza users in the vicinity of the work zone will also experience temporary construction-related noise and visual impacts during sidewalk replacement as well as when construction on Market Street is underway. Plaza users will also have views of construction, including heavy equipment, staging areas, signage, and closures on Market Street.

Once construction of this segment of the project is complete, the plaza will reopen to the public and continue to function as it does currently. Replacing the sidewalk is a permanent change, even though there will be no permanent incorporation of the plaza into the transportation right-of-way on Market Street or change in ownership. Since the duration of the impact is not temporary, the use does not meet temporary occupancy criteria (23 CFR 774.13 [d]1). This permanent change will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Therefore, a *de minimis* impact is proposed for Mark Twain Plaza, pending public comment and concurrence from the officials with jurisdiction.

1.2.2 Mechanics Monument Plaza

Mechanics Monument Plaza (map ID #19), managed by San Francisco Public Works, is adjacent to the project corridor at Battery and Market streets, in San Francisco (Figure 4). It encompasses 0.1 acre. Mechanics Monument Plaza includes a monument by Douglas Tilden, benches, and landscaping.

A portion of the plaza lies within the boundaries of the project corridor. In this area, the existing red brick paving will be removed and replaced with ADA-compliant paving materials consistent with San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.), as shown on Figure 4. The monument (discussed below in Section 2.1.1, *Built-Environment Resources*, is outside the sidewalk area that will be replaced. The existing trees and any lighting and furnishing in the project corridor will be removed and replaced. The work zone will be temporarily fenced for safety reasons and access to the plaza will be maintained around the construction zone. Construction activities to replace the sidewalk materials and to construct the portion of the project adjacent to this plaza are anticipated to last for a minimum of one year. However, the portion of the plaza which will not be affected will remain open to the public during construction activities with access maintained from Bush or Front streets. The monument will not be affected on a temporary or permanent basis. Plaza users in the vicinity of the work zone will also experience temporary construction-related noise and visual impacts during sidewalk replacement as well as when construction on Market Street is underway. Plaza users will also have views of construction, including heavy equipment, staging areas, signage, and closures on Market Street.

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Project Corridor
Featured Park*

0 0.01 0.02 Miles

Figure 3
Mark Twain Plaza

**Labeled by Resource ID; refer to Tables 2 and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*

Better Market Street Project

Federal Project Number: STPL-5934(180)

0 0.01 0.02 Miles

Figure 4
Mechanics Monument Plaza

Project Corridor
Featured Park*

**Labeled by Resource ID; refer to Tables 2 and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*

Once construction of this segment of the project is complete, the plaza will reopen to the public and continue to function as it does currently. Replacing the sidewalk is a permanent change, even though there will be no permanent incorporation of the plaza into the transportation right-of-way on Market Street or change in ownership. Since the duration of the impact is not temporary, the use does not meet temporary occupancy criteria (23 CFR 774.13 [d]1). This permanent change will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Therefore, a *de minimis* impact is proposed for Mechanics Plaza, pending public comment and concurrence from the officials with jurisdiction.

1.2.3 Robert Frost Plaza

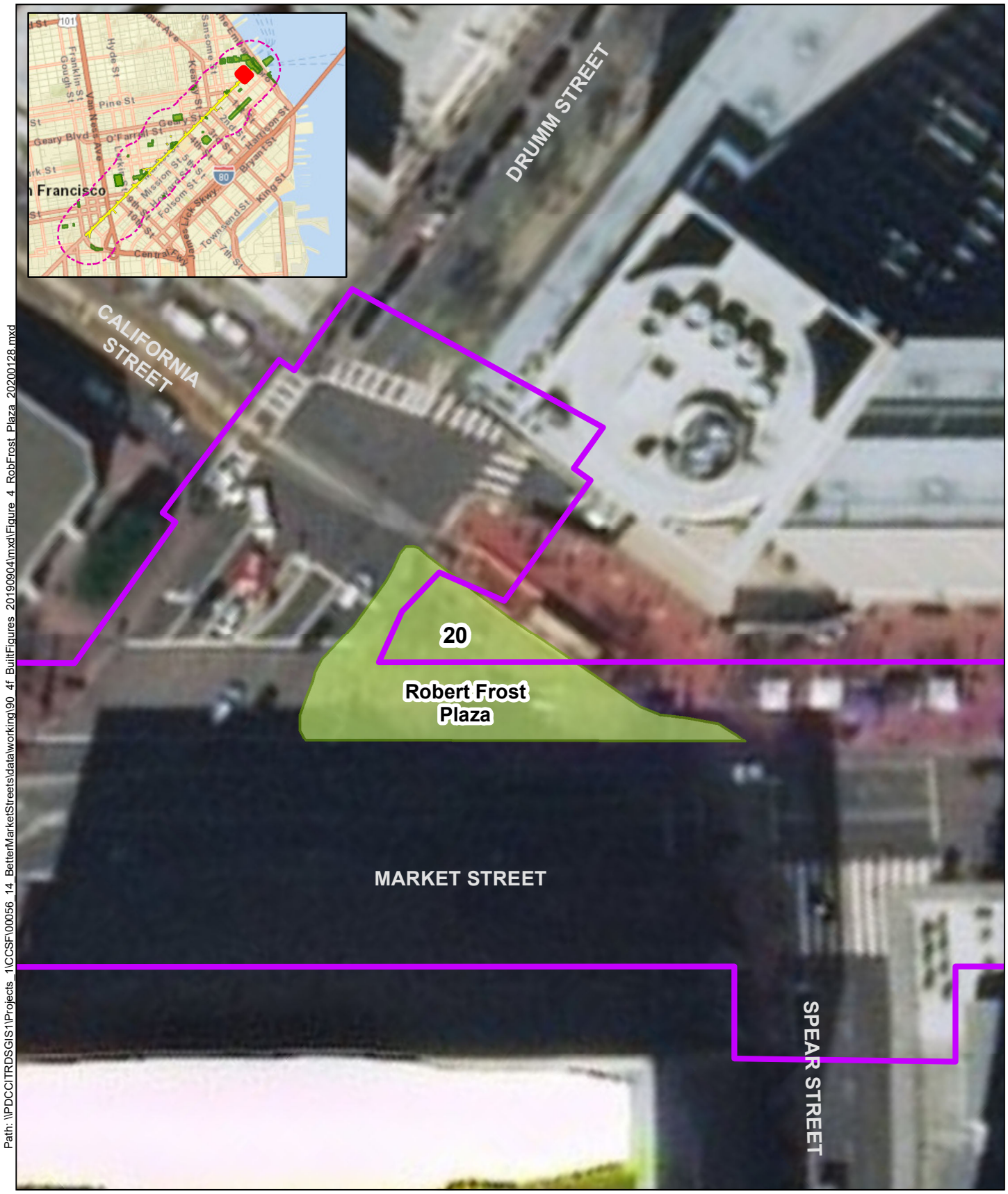
Robert Frost Plaza (map ID #20), managed by San Francisco Public Works, is adjacent to the project corridor at Drumm and Market streets, in San Francisco (Figure 5). It encompasses 0.1 acre. Robert Frost Plaza includes a small plaque dedicated to Robert Frost, a four-faced clock, and trees.

The majority of the plaza, slightly less than the 0.1 acre plaza size, lies within the boundaries of the project corridor. In this area, the existing red brick paving will be removed and replaced with ADA-compliant paving materials consistent with San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.), as shown on Figure 4. The plaque and clock are outside the sidewalk area that will be replaced. The existing trees will be removed and replaced. The work zone will be temporarily fenced for safety reasons and access to the plaza will be maintained around the construction zone. Construction activities to replace the sidewalk materials and to construct the portion of the project adjacent to this plaza are anticipated to last for a minimum of one year. However, the portion of the plaza which will not be affected will remain open to the public during construction activities with access maintained from Drumm Street. The plaque and clock will not be affected on a temporary or permanent basis. Plaza users in the vicinity of the work zone will also experience temporary construction-related noise and visual impacts during sidewalk replacement as well as when construction on Market Street is underway. Plaza users will also have views of construction, including heavy equipment, staging areas, signage, and closures on Market Street.

Once construction of this segment of the project is complete, the plaza will reopen to the public and continue to function as it does currently. Replacing the sidewalk is a permanent change, even though there will be no permanent incorporation of the plaza into the transportation right-of-way on Market Street or change in ownership. Since the duration of the impact is not temporary, the use does not meet temporary occupancy criteria (23 CFR 774.13 [d]1). This permanent change will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Therefore, a *de minimis* impact is proposed for Robert Frost Plaza, pending public comment and concurrence from the officials with jurisdiction.

1.2.4 Embarcadero Plaza

Embarcadero Plaza (map ID #23), managed by San Francisco Recreation and Parks Department, is adjacent to the project corridor at 1 Market Street, at the intersection with Steuart Street, in San Francisco (Figure 6). It encompasses 1.2 acres. Embarcadero Plaza is at the end of Market Street and The Embarcadero across from the Ferry Building on the San Francisco Bay. Amenities include a picnic area, benches, a children's play area, bocce courts, the Vaillancourt Fountain, and seasonal lunchtime concerts, skating, and zip lining. In addition, weekly farmers markets are held on the sidewalk areas adjacent to the plaza. Access to the plaza is via Market Street and The Embarcadero.



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Better Market Street Project

Federal Project Number: STPL-5934(180)

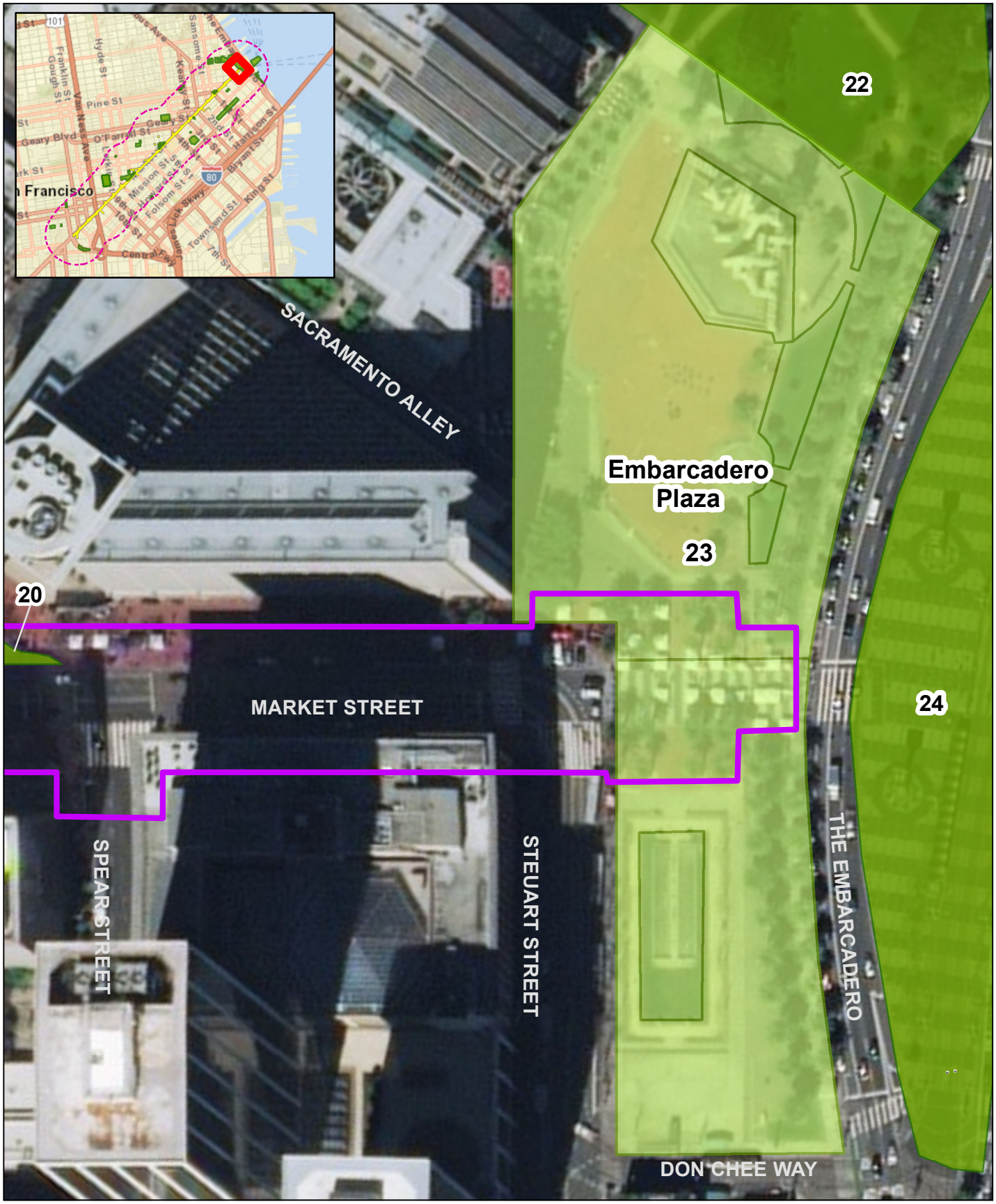
Featured Park*

Project Corridor

0 0.01 0.02 Miles

Figure 5
Robert Frost Plaza

**Labeled by Resource ID; refer to Tables 2 and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*



Better Market Street Project

Federal Project Number: STPL-5934(180)

0 0.02 0.04 Miles

Project Corridor
Featured Park*
Other Parks and Recreational Facilities*

Figure 6
Embarcadero Plaza

**Labeled by Resource ID; refer to Tables 2 and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*

A portion of the plaza, 0.44 acre, lies within the boundaries of the project corridor between Steuart Street and The Embarcadero. In this area, the existing brick paving of the sidewalk that extends through the plaza center will be removed and replaced, as shown on Figure 5. The sidewalk consists of alternating inlaid granite bands that will be replaced with ADA-compliant paving materials consistent with San Francisco Public Works Order No. 200369 (City and County of San Francisco n.d.). The recreational amenities are located outside the sidewalk area that will be replaced, however the farmers market is currently held in an area that will experience some temporary closures while the sidewalk materials are being replaced and therefore will need to be relocated to another part of the plaza for the duration of construction. The parallel rows of palm trees on either side of the sidewalk will remain in place. The work zone will be temporarily fenced for safety reasons and access to the other recreational areas of the plaza will be maintained around the construction zone. Access to the plaza from The Embarcadero, Sue Bierman Park, and areas to the south will not change.

Access from Market Street to the plaza may be limited or narrowed by construction or work zones during some portion of the construction period, which is anticipated to last for a minimum of one year. However, at a minimum access to the plaza will be maintained from the north side of the plaza and from The Embarcadero to the east of the plaza. None of the existing recreational amenities in the plaza will be affected by the project on a temporary or permanent basis. Plaza users in the vicinity of the work zone will also experience temporary construction-related noise and visual impacts but would not experience any loss of access or usage of recreational amenities. Replacing the sidewalk is a permanent change to 0.44 acre of the 1.2-acre plaza, even though there will be no permanent incorporation of the plaza into the transportation right-of-way on Market Street or change in ownership. Since the duration of the impact is not temporary, the use does not meet temporary occupancy criteria (23 CFR 774.13 [d]1). This permanent change will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Therefore, a *de minimis* impact is proposed for Embarcadero Plaza because of sidewalk replacement, pending public comment and concurrence from the officials with jurisdiction.

1.2.5 United Nations Plaza

United Nations Plaza (map ID MR-16), managed by San Francisco Public Works, is located at the intersection of Hyde Street and Market Street (Figure 7). The 2.6-acre plaza includes elements with historic character (described above in Section 1.1.8, *United Nations Plaza*) that also have recreational purposes. Amenities include the United Nations Fountain, statues, grassy areas, and seating.

As described above in Section 1.1.8, *United Nations Plaza*, a portion of the plaza, 0.7 acre, lies within the boundaries of the project corridor along Market Street between Hyde Street and 7th Street north of Market Street. The street-level plaza has grassy areas with scattered seating areas “display[ing] San Francisco history and culture.” The plaza is surrounded by the Asian Art Museum and the San Francisco Main Public Library, as well as its multiple historic statues, features, and fountain. The "Heart of the City Farmers Market" is a diverse and popular weekly attraction for locals (San Francisco Recreation and Park Department 2020). The plaza is popular for walkers and shoppers at the farmers markets. During construction, 0.7 acres will be temporarily fenced for safety reasons and unavailable to the plaza users for a minimum of one year. The fenced areas will include the relocated BART/Muni elevator, the F-loop ADA ramp, and areas where sidewalk removal and replacement will occur. The BART/Muni elevator at the Civic Center station on the north side of

Better Market Street Project

Federal Project Number: STPL-5934(180)

Project Corridor
Featured Park*

0 0.02 0.04 0.08 Miles

Figure 7
United Nations Plaza

**Labeled by Resource ID; refer to Tables 2 and 5 in the Section 4(f) De Minimis and No Use Determinations analysis*

Market Street will be relocated to the current location of the staircase entrance to the Civic Center station in the plaza. As a result, access to portions of the sidewalks and plaza will be limited or narrowed but not completely restricted. The landscaped grassy and seating areas are outside the construction zone and given the size of the plaza, the weekly market or other activities will be relocated to other areas. Once construction is finished, access and public use of the plaza will resume.

None of the existing recreational amenities in the plaza will be affected by the project on a temporary or permanent basis. Plaza users in the vicinity of the work zone will also experience temporary construction-related noise and visual impacts but would not experience any loss of access or usage of recreational amenities. Permanent changes include replacement of sidewalk bricks, granite bands, and other features as well as potential relocation of an elevator, these permanent changes will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Since the duration of the impact is not temporary, the use does not meet temporary occupancy criteria (23 CFR 774.13 [d]1). This permanent change will not adversely affect the protected activities, features, or attributes that qualify the plaza for protection under Section 4(f). Therefore, a *de minimis* impact is proposed for United Nations Plaza because of sidewalk replacement and elevator relocation, pending public comment and concurrence from the officials with jurisdiction.

1.2.6 Conclusion for Parks and Recreational Resources

The project will have *de minimis* impacts on five recreational resources: Mark Twain Plaza, Mechanics Monument Plaza, Robert Frost Plaza, Embarcadero Plaza, and United Nations Plaza. The permanent changes to these plazas will not substantially impair the protected activities, features, or attributes that qualify the resources for protection under Section 4(f). Accordingly, Caltrans has preliminarily determined the impacts will be a *de minimis* use under Section 4(f), pending public comment and written concurrence from the officials with jurisdiction.

1.2.7 Coordination with Agencies Having Jurisdiction

San Francisco Recreation and Parks Department and San Francisco Public Works have jurisdiction over the plazas. The City has informed San Francisco Recreation and Parks Department and San Francisco Public Works of the impacts of the project, discussed the measures to minimize impacts, and Caltrans' intention to adopt a *de minimis* finding. Written concurrence from the San Francisco Recreation and Parks Department and San Francisco Public Works that the proposed project would result in a *de minimis* use of Mark Twain Plaza, Mechanics Monument Plaza, Robert Frost Plaza, Embarcadero Plaza, and United Nations Plaza will be sought after the public comment period and included in the final EA.

1.2.8 *De Minimis* Impact Finding Review Process

Given the above analysis of the project, a *de minimis* impact finding is proposed for the Mark Twain Plaza, Mechanics Monument Plaza, Robert Frost Plaza, Embarcadero Plaza, and United Nations Plaza. Through the draft EA, the proposed *de minimis* findings will be made available for public and agency review as required under 23 CFR 774.5(b)(2). Public and agency comments on the proposed *de minimis* impact findings, either through review of the EA or participation in the public hearing on the EA, will be analyzed. If the findings are substantiated based on an analysis of public and agency comments, written concurrence will be received from the officials with jurisdiction over the Section

4(f) resources. At that point, Caltrans will make the final determination on the *de minimis* finding and include it in the final EA.

2 Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations

Section 4(f) of the Department of Transportation Act of 1966, codified in federal law at 49 USC 303, declares that "it is the policy of the United States government that special effort should be made to preserve the natural beauty of the countryside and public park and recreation lands, wildlife and waterfowl refuges, and historic sites."

This section of the document discusses parks, recreational facilities, wildlife refuges, and historic properties within or next to the project area that do not trigger Section 4(f) protection because 1) they are not publicly owned, 2) they are not open to the public, 3) they are not eligible historic properties, or 4) the project will not permanently use the property and will not hinder preservation of the property.

2.1 Historic Properties

As stated in Section 1, background research revealed 146 NRHP-listed or -eligible historic properties within the built-environment APE (ICF 2020a). Ten of these properties are historic districts and 136 are individual historic properties. All qualify for protection under Section 4(f).

As noted previously, the Market Street Cultural Landscape District is evaluated in Appendix A. Nine historic properties with a proposed *de minimis* use are discussed in Section 1, and the remaining 136 historic properties protected by Section 4(f) but for which there will be no use are discussed in this section.

Data collection involved identifying historic properties in the built-environment APE by reviewing the HRER (ICF 2020a) and Finding of Adverse Effect (ICF 2020b) as well as archaeological resources in the archaeological APE by reviewing the Archaeological Survey Report (ICF 2020c).

2.1.1 Built-Environment Resources

Description of Section 4(f) Historic Properties

Table 3 presents an inventory of the 135 historic resources in the built-environment APE that would have no Section 4(f) use under the proposed project. Figure 1 shows the location of these resources.

Table 3. Historic Properties in the Area of Potential Effects with No Use

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
NRHP-Listed Historic Districts		
MR-15	Uptown Tenderloin National Register Historic District, approximately 16 city blocks in central San Francisco, SF, CA	**Period of Significance:** 1906 to 1957 **Evaluation Criteria:** A and C
MR-23	Market Street Theatre and Loft National Register District, parcels along or near the Market Street corridor generally between 7th Street and Turk Street, SF, CA	**Period of Significance:** 1899 to 1930 **Evaluation Criteria:** A and C
NRHP-Listed Individual Historic Properties		
MR-22	San Francisco Cable Cars National Historic Landmark (NHL), Hyde, Powell, Jackson, Washington, Mason, Taylor, and California streets, SF CA	**Period of Significance:** 1873 to 1899 **Evaluation Criteria:** A and C
MR-32	Lotta's Fountain, intersection of Market, Geary, and Kearny streets, SF CA	**Period of Significance:** 1875 **Evaluation Criteria:** A, B, and C
MR-52	Pacific Gas & Electric General Office Building and Annex, 245 Market Street, SF, CA	**Period of Significance:** 1923 to 1947 **Evaluation Criteria:** A and C
MR-53	Matson Building and Annex, 215 Market Street, SF, CA	**Period of Significance:** 1922 to 1947 **Evaluation Criteria:** A and C
Assumed NRHP-Eligible Historic Districts		
MR-6	Market Street Masonry Landmark District—specific buildings on and near Market Street between Franklin and Valencia streets, SF, CA	**Period of Significance:** 1911 to 1925 **Evaluation Criteria:** A and C
NRHP-Eligible and Assumed NRHP-Eligible Individual Historic Properties		
MR-4	Hotel Andree, 1661–1667 Market Street, SF, CA	**Period of Significance:** 1921 **Evaluation Criterion:** C
MR-5	Wilson Brothers Company Building, 1632 Market Street, SF, CA	**Period of Significance:** 1911 **Evaluation Criterion:** C
MR-6	8 buildings within the Market Street Masonry Landmark District (MR-6) assumed NRHP-eligible as individual historic properties: • 20 Franklin Street, SF, CA • 1666–1668 Market Street, SF, CA • 1670–1680 Market Street, SF, CA • 64–78 Gough Street, SF, CA • 1649–1655 Market Street, SF, CA • 1693–1695 Market Street, SF, CA • 1687 Market Street, SF, CA • 1657 Market Street, SF, CA	**Period of Significance:** 1911 to 1925 **Evaluation Criteria:** A and C
MR-7	Lesser Brothers Building, 1629–1637 Market Street, SF, CA	**Period of Significance:** 1925 **Evaluation Criterion:** C
MR-8	Civic Center Hotel, 1605 Market Street, SF, CA	**Period of Significance:** 1915 **Evaluation Criterion:** C

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
MR-11	17 buildings within the Civic Center Landmark District (MR-11) assumed NRHP-eligible as individual historic properties: • 2 Hyde Street, SF, CA • 79 McAllister Street, SF, CA • 35 Fulton Street, SF, CA • 40 Leavenworth Street, SF, CA • 1170 Market Street, SF, CA • 83–91 McAllister Street, SF, CA • 30 Grove Street, SF, CA • 11 Grove Street, SF, CA • 25–29 Grove Street, SF, CA • 37–39 Grove Street, SF, CA • 1240–1242 Market Street, SF, CA • 1244–1254 Market Street, SF, CA • 1256–1266 Market Street, SF, CA • 1272–1276 Market Street, SF, CA • 1278–1298 Market Street, SF, CA • 1200 Market Street, SF, CA • 99 Grove Street, SF, CA	**Period of Significance:** 1896 to 1975 **Evaluation Criteria:** A and C
MR-13	Western Furniture and Merchandise Mart, 1301–1363 Market Street, SF, CA	**Period of Significance:** 1937 **Evaluation Criterion:** C
MR-14	Whitcomb Hotel, 1215–1231 Market Street, SF, CA	**Period of Significance:** 1911 to 1915 **Evaluation Criteria:** A and C
MR-17	37 buildings within the LGBTQ Tenderloin Historic District (MR-17) assumed NRHP-eligible as individual historic properties: • 982–988 Market Street, SF, CA • 982–988 Market Street, SF, CA • 42 Golden Gate Avenue, SF, CA • 1 Jones Street, SF, CA • 1000–1108 Market Street, SF, CA • 1028–1056 Market Street, SF, CA • 1066 Market Street, SF, CA • 20 Jones Street, SF, CA • 1100–1112 Market Street, SF, CA • 6–26 7th Street, SF, CA • 6–12 6th Street, SF, CA • 1011 Market Street, SF, CA • 1035 Market Street, SF, CA • 25 7th Street, SF, CA • 1089 Market Street, SF, CA • 1083–1087 Market Street, SF, CA • 1073–1081 Market Street, SF, CA • 1067–1071 Market Street, SF, CA	**Period of Significance:** 1933 to 1990 **Evaluation Criterion:** A

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
	• 1063 Market Street, SF, CA • 1059–1061 Market Street, SF, CA • 1053–1055 Market Street, SF, CA • 1049–1051 Market Street, SF, CA • 1041–1045 Market Street, SF, CA • 1035 Market Street, SF, CA • 1023 Market Street, SF, CA • 1017–1019 Market Street, SF, CA • 1007 Market Street, SF, CA • 1025–1029 Market Street, SF, CA • 993 Market Street, SF, CA • 979–989 Market Street, SF, CA • 973 Market Street, SF, CA • 1 6th Street, SF, CA • 101–127 Eddy Street, SF, CA • 2–16 Turk Street, SF, CA • 44 McAllister Street, SF, CA • 60 Leavenworth Street, SF, CA • 54–70 McAllister Street, SF, CA	
MR-19	Francesca Theater, 1127 Market Street, SF, CA	**Period of Significance:** 1917 **Evaluation Criterion:** C
MR-24	925 Market Street, SF, CA	**Period of Significance:** 1910 **Evaluation Criterion:** C
MR-26	32 buildings within the Kearny-Market-Mason-Sutter Conservation District (MR-26) assumed NRHP-eligible as individual historic properties: • 2 Geary Street, SF, CA • 37–45 Geary Street, SF, CA • 744 Market Street, SF, CA • 47–55 Geary Street, SF, CA • 1–31 Geary Street, SF, CA • 1 Grant Street, SF, CA • 120–150 Cyril Magnin Street, SF, CA • 17–25 Stockton Street, SF, CA • 18 Ellis Street, SF, CA • 750–780 Market Street, SF, CA • 790 Market Street, SF, CA • 800–830 Market Street, SF, CA • 41 Ellis Street, SF, CA • 840–842 Market Street, SF, CA • 844–846 Market Street, SF, CA • 856 Market Street, SF, CA • 870–898 Market Street, SF, CA • 119–139 Ellis Street, SF, CA • 1 Powell Street, SF, CA	**Period of Significance:** 1906 to 1930 **Evaluation Criterion:** C

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
	• 934–936 Market Street, SF, CA • 944–948 Market Street, SF, CA • 83 Eddy Street, SF, CA • 25 Cyril Magnin Street, SF, CA • 938–940 Market Street, SF, CA • 901 Market Street, SF, CA • 825–833 Market Street, SF, CA • 845 Market Street, SF, CA • 801 Market Street, SF, CA • 799 Market Street, SF, CA • 783–785 Market Street, SF, CA • 735 Market Street, SF, CA • 725–731 Market Street, SF, CA	
MR-27	Samuels Clock, Market between Powell and Stockton, SF, CA	**Period of Significance:** 1915 **Evaluation Criterion:** C
MR-28	Golden Triangle light standards, bounded by Market and Sutter, SF, CA	**Period of Significance:** 1915 to 1918 **Evaluation Criteria:** A, B, and C
MR-30	Kamm Building, 715–719 Market Street, SF, CA	**Period of Significance:** 1906 to 1940 **Evaluation Criterion:** C
MR-31	Call Building, 701–703 Market Street, SF, CA	**Period of Significance:** 1896 to 1938 **Evaluation Criterion:** C
MR-33	Chronicle Building, 690 Market Street, SF, CA	**Period of Significance:** 1890 **Evaluation Criteria:** A, B, and C
MR-34	648–660 Market Street, SF, CA	**Period of Significance:** 1911 **Evaluation Criterion:** C
MR-37	Admission Day Monument, intersection of Market and Montgomery streets, SF, CA	**Period of Significance:** 1897 **Evaluation Criterion:** C
MR-38	44 and 2–8 Montgomery Street, SF, CA	**Period of Significance:** 1966 to 1967 **Evaluation Criterion:** C
MR-39	Hobart Building, 582–590 Market Street, SF, CA	**Period of Significance:** 1914 **Evaluation Criterion:** C
MR-40	Finance Building, 576–580 Market Street, SF, CA	**Period of Significance:** 1923 **Evaluation Criterion:** C
MR-41	Chancery Building, 562–566 Market Street, SF, CA	**Period of Significance:** 1923 **Evaluation Criterion:** C
MR-43	Flatiron Building, 540–548 Market Street, SF, CA	**Period of Significance:** 1913 **Evaluation Criterion:** C
MR-44	9 buildings within the New Montgomery-Mission-2nd Street Conservation District (MR-48) assumed NRHP-eligible as individual historic properties: • 601–605 Market Street, SF, CA • 20–30 2nd Street, SF, CA • 609 Market Street, SF, CA • 36 2nd Street, SF, CA	**Period of Significance:** 1906 to 1933 **Evaluation Criterion:** C

APE Map ID	Name of Historic Property and Location	Period of Significance and Evaluation Criteria
	• 681–685 Market Street, SF, CA • 643–665 Market Street, SF, CA • 1–29 3rd Street, SF, CA • 625 Market Street, SF, CA • 615 Market Street, SF, CA	
MR-46	Standard Oil Building/Chevron Towers, 555–575 Market Street, SF CA	**Period of Significance:** 1964 and 1975 **Evaluation Criterion:** C
MR-48	Postal Telegraph Building, 2–22 Battery Street, SF, CA	**Period of Significance:** 1908 **Evaluation Criterion:** C
MR-49	Mechanics Monument, intersection of Bush and Market streets, SF, CA	**Period of Significance:** 1901 **Evaluation Criterion:** C
MR-55	Hyatt Regency, 22 Drumm Street, SF, CA	**Period of Significance:** 1973 **Evaluation Criterion:** C
MR-56	Southern Pacific Building, 1 Market Street, SF, CA	**Period of Significance:** 1917 **Evaluation Criterion:** C

Historic Property Use Assessments, No Section 4(f) Use

This section presents the preliminary use assessments for the Section 4(f) cultural resources that do not have a Section 4(f) use, as discussed in Table 4 (location shown on Figure 1).

The APE for archaeological resources does not include any archaeological resources that will be subject to Section 4(f) (see Section 2.1.2 for a discussion of archaeological resources). The APE for built environment resources includes cultural resources that are subject to Section 4(f) analysis but will not result in a Section 4(f) use (see Section 2.1.1).

No permanent use of the historic properties in the APE will occur because the proposed project will not include property acquisition. No temporary use would occur because these resources are not within the boundaries of the project corridor. A constructive use assessment is provided below.

Impacts and preliminary use assessments for resources that are not within the boundaries of the project corridor are discussed in Table 4. Note that construction and operational noise effects are not considered because the historic properties are in downtown San Francisco; a quiet setting is not considered to be a character-defining feature or an important aspect of integrity for these properties. Temporary increases in noise during construction will not affect features that qualify the resource for listing in the NRHP, and project operational noise will increase only slightly (below the limits of human perceptibility) in some areas. Traffic noise will increase by up to 2.4 dBA by 2040; streetcar noise will increase by up to 2.1 dBA. Therefore, noise impacts are not discussed further for historic properties.

Table 4. Section 4(f) Historic Properties No Use Determination Summary

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
NRHP-Listed Historic Districts				
Uptown Tenderloin National Register Historic District, approximately 16 city blocks in central San Francisco, SF, CA (MR-15)	No	No	No	Approximately 0.4 acre of this district lies within the boundaries of the project corridor. However, project activities in the public right-of-way will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the district. Work proposed in the immediate vicinity of a single building that contributes to the historic district includes removing and replacing the public sidewalks, adding curb ramps, subsurface utility replacement, and replacement of the existing roadway pavement. There will be no adverse effect under Section 106.
Market Street Theatre and Loft National Register District, parcels along or near the Market Street corridor generally between 7th Street and Turk Street, SF, CA (MR-23)	No	No	No	Approximately 4.0 acres of this district lie within the boundaries of the project corridor. However, project activities in the public right-of-way will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the district. Work proposed in the immediate vicinity of the Market Street Theatre and Loft National Register District's contributing buildings includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones within the sidewalk area, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. Work proposed in the Market Street roadway adjacent to contributing buildings to the Market Street Theatre and Loft National Register District includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. In addition, tracks for the new F-loop will be installed within the public right-of-way on McAllister Street between Market Street and Charles J. Brenham Place, an area where no tracks are currently located. A curbside transit stop will also be constructed along McAllister Street west of Jones Street. Both this segment of the F-loop and the curbside transit stop will be placed within

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				the boundary of the Market Street Theatre and Loft National Register District. There will be no adverse effect under Section 106.
NRHP-Listed Individual Historic Properties				
San Francisco Cable Cars National Historic Landmark (NHL), Hyde, Powell, Jackson, Washington, Mason, Taylor, and California streets, SF CA (MR-22)	No	No	No	Intersects the boundaries of the project corridor at the tracks and below-grade cables at the center of California Street, which terminate east of Drumm Street, a linear length of 0.02 miles. These contributing elements will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. The public sidewalk surrounding the tracks along Drumm Street and Market Street will be resurfaced; other work proposed in the vicinity includes a new furnishing zone, reconstructed Path of Gold light standards, and new alignments for street trees along Market Street. There will be no adverse effect under Section 106.
Lotta's Fountain, intersection of Market, Geary, and Kearny streets, SF CA (MR-32)	No	No	No	Located within the project corridor. The property will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. Project activities proposed in the immediate vicinity of Lotta's Fountain include removing and replacing the public sidewalks, adjusting the Market Street curb location, adding curb ramps, and reconstructing the Path of Gold light standards. There will be no adverse effect under Section 106.
Pacific Gas & Electric General Office Building and Annex, 245 Market Street, SF, CA (MR-52)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Pacific Gas & Electric General Office Building and Annex's primary Market Street façade includes removing and replacing the public sidewalks, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Pacific Gas & Electric

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				General Office Building and Annex includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Matson Building and Annex, 215 Market Street, SF, CA (MR-53)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Matson Building and Annex's primary Market Street façade includes removing and replacing the public sidewalks, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Matson Building and Annex includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Assumed NRHP-Eligible Historic Districts				
Market Street Masonry Landmark District (MR-6)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic district; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the assumed contributing elements of the property. Work proposed in the immediate vicinity of the Market Street Masonry Landmark District's contributing buildings includes removing and replacing public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. Work proposed in Market Street in the vicinity of contributing buildings to the Market Street Masonry Landmark District includes demolishing the public right-of-way as well as designing and constructing various

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
NRHP-Eligible and Assumed NRHP-Eligible Individual Historic Properties				
Hotel Andree, 1661–1667 Market Street, SF, CA (MR-4)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of Hotel Andree's Market Street and Gough Street façades includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street and Gough Street roadways in the vicinity of Hotel Andree includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Wilson Brothers Company Building, 973–977 Market Street, SF, CA (MR-5)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Wilson Brothers Company Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Wilson Brothers Company Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
8 buildings within the Market Street	No	No	No	Located adjacent to the project corridor. Project activities in the public

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
Masonry Landmark District (MR-6) assumed NRHP-eligible as individual historic properties: • 20 Franklin Street, SF, CA • 1666–1668 Market Street, SF, CA • 1670–1680 Market Street, SF, CA • 64–78 Gough Street, SF, CA • 1649–1655 Market Street, SF, CA • 1693–1695 Market Street, SF, CA • 1687 Market Street, SF, CA • 1657 Market Street, SF, CA				right-of-way will occur outside the boundaries of the historic properties; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the properties. Work proposed in the immediate vicinity of the 8 assumed NRHP-eligible buildings within the Market Street Masonry Landmark District includes removing and replacing public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. Work proposed in Market Street in the vicinity of the 8 assumed NRHP-eligible buildings within the Market Street Masonry Landmark District includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Lesser Brothers Building, 1629–1637 Market Street, SF, CA (MR-7)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Lesser Brothers Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Lesser Brothers Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Civic Center Hotel, 1605 Market Street, SF, CA (MR-8)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Civic Center Hotel's Market Street and 12th Street façades includes removing and replacing the public sidewalks, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Civic Center Hotel includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
17 buildings within the Civic Center Landmark District (MR-11) assumed NRHP-eligible as individual historic properties: • 2 Hyde Street, SF, CA • 79 McAllister Street, SF, CA • 35 Fulton Street, SF, CA • 40 Leavenworth Street, SF, CA • 1170 Market Street, SF, CA • 83–91 McAllister Street, SF, CA • 30 Grove Street, SF, CA • 11 Grove Street, SF, CA • 25–29 Grove Street, SF, CA • 37–39 Grove Street, SF, CA • 1240–1242 Market Street, SF, CA • 1244–1254 Market Street, SF, CA • 1256–1266 Market Street, SF, CA • 1272–1276 Market Street, SF, CA • 1278–1298 Market Street, SF, CA • 1200 Market Street, SF, CA • 99 Grove Street, SF, CA	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundaries of the historic properties; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the properties. Work proposed in the immediate vicinity of the 17 assumed NRHP-eligible buildings within the Civic Center Landmark District includes removing and replacing public sidewalks at Market Street and McAllister Street to create a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment along Market Street, and reconstructing the Path of Gold light standards. Work proposed in Market Street in the vicinity of the 17 assumed NRHP-eligible buildings within the Civic Center Landmark District includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Western Furniture and Merchandise Mart, 1301–1363 Market Street, SF, CA (MR-13)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Western Furniture and Merchandise Mart's primary Market Street façade includes removing and replacing the public sidewalks, installing a furnishing zone, introducing a sidewalk-level bikeway with buffer, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				proposed in the Market Street roadway in the vicinity of the Western Furniture and Merchandise Mart includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Whitcomb Hotel, 1215–1231 Market Street, SF, CA (MR-14)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Whitcomb Hotel's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, introducing a furnishing zone, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Whitcomb Hotel includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
37 buildings within the LGBTQ Tenderloin Historic District (MR-17) assumed NRHP-eligible as individual historic properties: • 982–988 Market Street, SF, CA • 982–988 Market Street, SF, CA • 42 Golden Gate Avenue, SF, CA • 1 Jones Street, SF, CA • 1000–1108 Market Street, SF, CA • 1028–1056 Market Street, SF, CA • 1066 Market Street, SF, CA • 20 Jones Street, SF, CA • 1100–1112 Market Street, SF, CA	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundaries of the historic properties; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the properties. Work proposed in the immediate vicinity of the 37 assumed NRHP-eligible buildings within the LGBTQ Tenderloin Historic District includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in Market Street in the vicinity of the 37 assumed NRHP-eligible buildings within the LGBTQ Tenderloin Historic District includes demolishing the public right-of-way, as well as designing and

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
• 6–26 7th Street, SF, CA • 6–12 6th Street, SF, CA • 1011 Market Street, SF, CA • 1035 Market Street, SF, CA • 25 7th Street, SF, CA • 1089 Market Street, SF, CA • 1083–1087 Market Street, SF, CA • 1073–1081 Market Street, SF, CA • 1067–1071 Market Street, SF, CA • 1063 Market Street, SF, CA • 1059–1061 Market Street, SF, CA • 1053–1055 Market Street, SF, CA • 1049–1051 Market Street, SF, CA • 1041–1045 Market Street, SF, CA • 1035 Market Street, SF, CA • 1023 Market Street, SF, CA • 1017–1019 Market Street, SF, CA • 1007 Market Street, SF, CA • 1025–1029 Market Street, SF, CA • 993 Market Street, SF, CA • 979–989 Market Street, SF, CA • 973 Market Street, SF, CA • 1 6th Street, SF, CA • 101–127 Eddy Street, SF, CA • 2–16 Turk Street, SF, CA • 44 McAllister Street, SF, CA • 60 Leavenworth Street, SF, CA • 54–70 McAllister Street, SF, CA				constructing various transportation improvements and streetscape improvements. In addition, rail tracks for the new F-loop will be constructed within the roadway of McAllister Street between Market Street and Charles J. Brenham Place, where no street tracks are currently located. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
Francesca Theater, 1127 Market Street, SF, CA (MR-19)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Francesca Theater's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Francesca Theater includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
925 Market Street, SF, CA (MR-24)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of 925 Market Street's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of 925 Market Street includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
32 buildings within the Kearny-Market-Mason-Sutter Conservation District (MR-26) assumed NRHP-eligible as individual historic properties: • 2 Geary Street, SF, CA • 37–45 Geary Street, SF, CA • 744 Market Street, SF, CA • 47–55 Geary Street, SF, CA • 1–31 Geary Street, SF, CA • 1 Grant Street, SF, CA • 120–150 Cyril Magnin Street, SF, CA • 17–25 Stockton Street, SF, CA • 18 Ellis Street, SF, CA • 750–780 Market Street, SF, CA • 790 Market Street, SF, CA • 800–830 Market Street, SF, CA • 41 Ellis Street, SF, CA • 840–842 Market Street, SF, CA • 844–846 Market Street, SF, CA • 856 Market Street, SF, CA • 870–898 Market Street, SF, CA • 119–139 Ellis Street, SF, CA • 1 Powell Street, SF, CA • 934–936 Market Street, SF, CA • 944–948 Market Street, SF, CA • 83 Eddy Street, SF, CA • 25 Cyril Magnin Street, SF, CA • 938–940 Market Street, SF, CA • 901 Market Street, SF, CA	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundaries of the historic properties; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the properties. Work proposed in the immediate vicinity of the 32 assumed NRHP-eligible buildings within the Kearny-Market-Mason-Sutter Conservation District includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in Market Street in the vicinity of the Kearny-Market-Mason-Sutter Conservation District includes demolishing the public right-of-way, as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
• 825–833 Market Street, SF, CA • 845 Market Street, SF, CA • 801 Market Street, SF, CA • 799 Market Street, SF, CA • 783–785 Market Street, SF, CA • 735 Market Street, SF, CA • 725–731 Market Street, SF, CA				
Samuels Clock, Market between Powell and Stockton, SF, CA (MR-27)	No	No	No	Located within the project corridor. The property will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. The existing setting of Samuels Clock will be permanently altered by new sidewalk and roadway materials, new street trees, and reconstructed Path of Gold light standards. There will be no adverse effect under Section 106.
Golden Triangle light standards, bounded by Market and Sutter, SF, CA (MR-28)	No	No	No	Intersects the project corridor boundary at 13 points. The property will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. The existing setting of the Golden Triangle light standards will be permanently altered by the construction of streetscape improvements. There will be no adverse effect under Section 106.
Kamm Building, 715–719 Market Street, SF, CA (MR-30)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Kamm Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Kamm Building includes demolishing the public right-of-way as well as

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Call Building, 701–703 Market Street, SF, CA (MR-31)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Call Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Call Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Chronicle Building, 690 Market Street, SF, CA (MR-33)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Chronicle Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Chronicle Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
648–660 Market Street, SF, CA (MR-34)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of 648–660 Market Street's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of 648–660 Market Street includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Admission Day Monument, intersection of Market and Montgomery streets, SF, CA (MR-37)	No	No	No	Within the boundary of the project corridor. The property will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. The existing setting of the Admission Day Monument will be permanently altered by new sidewalk and roadway materials, and reconstructed Path of Gold light standards. There will be no adverse effect under Section 106.
44 and 2–8 Montgomery Street, SF, CA (MR-38)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of 44 and 2–8 Montgomery Street's primary Market Street façade includes removing and replacing the public sidewalks, including curb ramps, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of 44 and 2–8 Montgomery Street includes demolishing the public right-of-way as well as designing and

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Hobart Building, 582–590 Market Street, SF, CA (MR-39)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Hobart Building's primary Market Street façade includes removing and replacing the public sidewalks, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Hobart Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Finance Building, 576–580 Market Street, SF, CA (MR-40)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Finance Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Finance Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
Chancery Building, 562–566 Market Street, SF, CA (MR-41)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Chancery Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Chancery Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Flatiron Building, 540–548 Market Street, SF, CA (MR-43)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Flatiron Building's Market Street and Sutter Street façades includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Flatiron Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
9 buildings within the New Montgomery-Mission-2nd Street Conservation District (MR-44) assumed NRHP-eligible as individual historic properties: • 601–605 Market Street, SF, CA • 20–30 2nd Street, SF, CA • 609 Market Street, SF, CA • 36 2nd Street, SF, CA • 681–685 Market Street, SF, CA • 643–665 Market Street, SF, CA • 1–29 3rd Street, SF, CA • 625 Market Street, SF, CA • 615 Market Street, SF, CA	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundaries of the historic properties; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the properties. Work proposed in the immediate vicinity of the 9 assumed NRHP-eligible buildings within the New Montgomery-Mission-2nd Street Conservation District includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing furnishing zones, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in Market Street in the vicinity of the 9 assumed NRHP-eligible buildings within the New Montgomery-Mission-2nd Street Conservation District includes demolishing the public right-of-way, as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Standard Oil Building/ Chevron Towers, 555–575 Market Street, SF, CA (MR-46)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Standard Oil Building/Chevron Towers along Market Street includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Standard Oil Building/Chevron Towers includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
Postal Telegraph Building, 2–22 Battery Street, SF, CA (MR-48)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Postal Telegraph Building includes removing and replacing the public sidewalks. The existing Mechanics Monument Plaza, which is adjacent to the building's front façade, will not be modified. Work proposed in and along Market Street and Bush Street in the vicinity of the Postal Telegraph Building includes removing existing street trees and planting new street trees in a new alignment, reconstructing Path of Gold light standards, demolishing the public right-of-way, and designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.
Mechanics Monument, intersection of Bush and Market streets, SF, CA (MR-49)	No	No	No	Within the boundary of the project corridor. The property will be protected in place, and project activities in the public right-of-way will occur outside the boundary of the historic property such that no contributing elements will be demolished or incompatibly altered. Project features proposed in the immediate vicinity of Mechanics Monument include removing and replacing the public sidewalks, installing a sidewalk-level bikeway, adding curb ramps, introducing a furnishing zone, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. There will be no adverse effect under Section 106.
Hyatt Regency, 22 Drumm Street, SF, CA (MR-55)	No	No	No	Approximately <0.1 acre of the parcel lies within the boundaries of the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property (consisting of the building footprint); will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Hyatt Regency's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway

Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
				transitioning to a street-level bikeway, introducing a furnishing zone within the sidewalk area, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing the Path of Gold light standards. There will be no adverse effect under Section 106.
Southern Pacific Building, 1 Market Street, SF, CA (MR-56)	No	No	No	Located adjacent to the project corridor. Project activities in the public right-of-way will occur outside the boundary of the historic property; will not result in changes to individual buildings, structures, and objects located outside the public right-of-way; and will not include any activities that demolish or incompatibly alter the contributing elements of the property. Work proposed in the immediate vicinity of the Southern Pacific Building's primary Market Street façade includes removing and replacing the public sidewalks, installing a sidewalk-level bikeway, introducing a furnishing zone, adding curb ramps, removing existing street trees and planting new street trees in a new alignment, and reconstructing Path of Gold light standards. Work proposed in the Market Street roadway in the vicinity of the Southern Pacific Building includes demolishing the public right-of-way as well as designing and constructing various transportation improvements and streetscape improvements. There will be no adverse effect under Section 106.

2.1.2 Archaeological Resources

The boundaries of nine archaeological resources are included in the archaeological APE. These resources include CA-SFR-28, CA-SFR-127H, CA-SFR-156H, CA-SFR-157H, Yerba Buena Cemetery (no trinomial), the Panama, the Byron, the Callao, the Autumn, the Galen,, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, and the Stuart Street Wharf (ICF 2020b). Three of these resources (CA-SFR-28, CA-SFR-156H, and CA-SFR-157) are no longer extant due to removal during field investigations. A feature associated with CA-SFR-127H (P-38-000126) intersects a portion of archaeological APE. This feature is the Gold Rush-era ship Rome, which was identified 30 feet (9 meters) below ground surface. Project-related ground disturbance in the vicinity of this feature will not exceed approximately eight inches and therefore the resource is located outside of the vertical archaeological APE. The Rome, a feature associated with CA-SFR-127H (P-38-000126) was identified at 30 feet below ground surface. While this resource is within the horizontal extent of the archaeological APE, it is not within the vertical extent of the archaeological APE. Project-related ground disturbance in the vicinity of the Rome will not extend beyond 8 inches and will not encounter the resource.

The locations of the latter nine historic-era resources above are listed as possible and they have not been subject to archaeological investigation (San Francisco National Maritime Historical Park 2017). These resources may still be present within the horizontal extent of the archaeological APE at an unknown depth. However, previous disturbance along the archaeological APE in the vicinity of six of these potential resources (the Panama, the Byron, the Callao, the Autumn, the Galen, and the Market Street Wharf) include the cut and cover excavation associated with the Embarcadero BART Station. The construction of the station included excavation up to 80 feet (24 meters) below ground surface; construction extended along Market Street from Spear to First streets and included subsurface sidewalk easements. It is likely that portions or all of these potential resources, if they once existed within the archaeological APE, were removed during construction of BART. However, their presence within the archaeological APE is unknown. Additionally, the California Street Wharf, the Main Street Wharf, and the Stuart Street Wharf have not been subject to archaeological investigation and may exist within the archaeological APE at an unknown depth. Therefore, project-related ground disturbance has the potential to encounter these potential resources. Caltrans assumes that these resources are eligible for listing in the NRHP under Criterion D.

The boundary of the Yerba Buena Cemetery intersects the archaeological APE in two locations: at United Nations Plaza and along the length of Charles J. Brenham Place. No intact portions of the Yerba Buena Cemetery are believed to exist within the archaeological APE at United Nations Plaza due to the 1970s construction of the Civic Center BART station, which excavated an 80- to 100-foot-deep by 61-foot-wide trench along Market Street and into United Nations Plaza. However, historic documentation indicates that intact deposits associated with Yerba Buena Cemetery could be present within the archaeological APE along Charles J. Brenham Place between 10 to 25 feet below ground surface. Artificial fill has been identified up to 8 feet below ground surface. Project-related excavation proposed within the resource boundary will extend to up to 15 feet below ground surface, which could extend beyond the previous level of disturbance. Thus, ground disturbance associated with the proposed utility rehabilitation/replacement along the proposed F-loop (on Charles J. Brenham Place) could encounter intact portions of Yerba Buena Cemetery. Caltrans assumes that this resource is eligible for listing in the NRHP under Criterion D.

An archaeological resource that is eligible under only Criterion D is generally considered to be valuable, primarily for the data that can be recovered from it. It is generally assumed that there is minimal value to preserving such resources in place. In other words, Section 4(f) does not apply if a site is important chiefly because of what can be learned from data recovery, with minimal value for preservation in place (Federal Highway Administration n.d.). Based on the above, no known archaeological resources in the archaeological APE qualify for protection under Section 4(f).

2.1.3 Conclusion for Historic Properties

One hundred and thirty-five of the historic properties discussed in this section are Section 4(f) properties, but no use will occur.

No known archaeological resources in the archaeological APE qualify for protection under Section 4(f). Therefore, the provisions of Section 4(f) do not apply.

2.2 Parks and Recreational Facilities

Data collection, to identify parks and recreational facilities that are potentially eligible for Section 4(f) protection, consisted of a review of facilities managed by the following agencies:

- San Francisco Recreation and Parks Department facilities (San Francisco Recreation and Parks Department 2019)
- San Francisco Public Works recreational facilities (San Francisco Public Works n.d.)
- Port of San Francisco recreational facilities (City and County of San Francisco n.d.b)
- Association of Bay Area Governments and Metropolitan Transportation Commission (San Francisco Bay Trail 2019)
- School yards available for public recreational use (City and County of San Francisco 2015; San Francisco Shared Schoolyard Project 2019)

Analysts evaluated the following resources for qualification but determined that they were not Section 4(f) resources, based on the applicability criteria, specifically, Section 4(f) does not apply in the following circumstances:

1. Land that is privately owned, even if it is designated in a formal plan including privately owned public spaces [1]
2. Public or private school recreational facilities where no joint use agreement for public use exists
3. Publicly owned facilities where park, recreational, or refuge activities will be incidental, secondary, occasional, or dispersed

[1] Privately-owned public open spaces are publicly accessible spaces in forms of plazas, terraces, atriums, small parks, and snippets which are provided and maintained by private developers.

The criteria that form the basis for why the following resources are not Section 4(f) resources appear in parentheses in the following:

- One Bush Plaza (1)
- McKesson Plaza (1)
- Crocker Plaza (1)
- Beale Street Plaza (1)
- Larkin Street Youth Services Academy, San Francisco (2)

2.2.1 Description of Parks and Recreational Facilities

Table 5 lists the 23 parks and recreational facility resources in the study area that qualify for protection under Section 4(f) that will result in no use. Mark Twain Plaza, Mechanics Monument Plaza, Robert Frost Plaza, Embarcadero Plaza, and United Nations Plaza, which will result in *de minimis* impacts, are discussed in Section 1.2. Figure 2 shows the locations of all parks and recreational facility resources that qualify for protection under Section 4(f). The map ID number for each resource is illustrated in the figure, numbered from west to east, and is also provided in Tables 2 and 5.

Table 5. Parks, Recreational Areas, and Class 1 Path Resources Evaluated for Potential Section 4(f) Use

Map ID	Name	Description
1	Duboce Avenue Bike Path	**Distance from Project Corridor (mile):** 0.23 **Location:** Between Church and Market streets/Buchanan Street intersection, SF, CA 94117 **Size:** Total of 0.2 mile total; < 0.1 mile within study area along Duboce Avenue **Features:** Class 1 multi-use trail, mural of bicycles **Agency with Jurisdiction:** San Francisco Municipal Transportation Agency **Section 4(f) Applicability:** Publicly owned path
2	Koshland Park	**Distance from Project Corridor (mile):** 0.17 **Location:** Page and Buchanan streets, SF, CA, 94102 **Size:** 0.8 acre, 0.8 acre within study area **Features:** Play structures, sand pit, community learning garden, basketball half-court, dog park, benches **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
3	Page and Laguna Mini Park	**Distance from Project Corridor (mile):** 0.12 **Location:** Page and Laguna streets, SF, CA, 94102 **Size:** 0.2 acre, 0.2 acre within study area **Features:** Community gardens with ornamental beds and apple trees, winding path, benches **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
4	SoMa West Dog Park	**Distance from Project Corridor (mile):** 0.06 **Location:** Between Valencia and Otis streets under Central Freeway, SF, CA 94103 **Size:** 0.6 acre, 0.6 acre within study area **Features:** Dog play area with artificial lawn **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability:** Publicly owned park
5	SoMa West Skate Park	**Distance from Project Corridor (mile):** 0.10 **Location:** Between Valencia and Otis streets under Central Freeway, SF, CA 94103 **Size:** 0.7 acre, 0.7 acre within study area **Features:** Skate park with skateboarding structures **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability:** Publicly owned park

Map ID	Name	Description
6	Patricia's Green in Hayes Valley	**Distance from Project Corridor (mile):** 0.21 **Location:** Octavia Boulevard and Hayes Street, SF, CA, 94102 **Size:** 0.4 acre, 0.4 acre within study area **Features:** Playground, picnic tables, benches, lawn, walkways **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
7	Joseph L. Alioto Performing Arts Piazza	**Distance from Project Corridor (mile):** 0.07 **Location:** Grove and Larkin streets, SF, CA, 94102 **Size:** 4.4 acres, 4.4 acres within study area **Features:** Performing arts area, soccer fields, fountain **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
8	Helen Diller Civic Center Playgrounds	**Distance from Project Corridor (mile):** 0.07 **Location:** 55 Larkin Street, SF, CA 94102 **Size:** 4.4 acres, 4.4 acres within study area **Features:** Play structures, fountain, walkways **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
9	Howard and Langton Mini Park	**Distance from Project Corridor (mile):** 0.22 **Location:** Howard and Langton streets, SF, CA, 94103 **Size:** 0.2 acre, 0.2 acre within study area **Features:** Community garden with 40 plots for vegetables or ornamentals and walkways **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
10	Turk and Hyde Mini Park	**Distance from Project Corridor (mile):** 0.16 **Location:** Turk and Hyde streets, SF, CA, 94102 **Size:** 0.1 acre, 0.1 acre within study area **Features:** Play structures for young children, benches, picnic tables **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park

Map ID	Name	Description
11	Father Alfred E. Boeddeker Park	**Distance from Project Corridor (mile):** 0.12 **Location:** 246 Eddy Street, SF, CA, 94102 **Size:** 1.0 acre, 1.0 acre within study area **Features:** Community clubhouse, a basketball half-court, swings, slide and play structures, adult exercise equipment, basketball hoop, picnic area **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability**: Publicly owned park
12	Hallidie Plaza	**Distance from Project Corridor (mile):** adjacent to project corridor **Location:** Market and 5th Street, SF, CA 94102 **Size:** 0.3 acres, 0 acre within study area **Features:** sign with the names and distances to San Francisco's sister cities **Agency with Jurisdiction:** San Francisco Public Works **Section 4(f) Applicability:** Publicly owned park
13	Union Square	**Distance from Project Corridor (mile):** 0.11 **Location:** Post and Stockton streets, SF, CA 94108 **Size:** 2.6 acres, 2.6 acres within study area **Features:** Performance stage, seasonal ice skating, restaurant and café, picnic areas **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
14	Yerba Buena Gardens	**Distance from Project Corridor (mile):** 0.12 **Location:** 750 Howard Street, SF, CA 94103 **Size:** 5.0 acres, 5.0 acres within study area **Features:** Open space, performance facilities, public art, cafés **Agency with Jurisdiction:** Office of Community Investment and Infrastructure **Section 4(f) Applicability:** Publicly owned park
15	Jessie Square	**Distance from Project Corridor (mile):** 0.1 **Location:** Mission Street between 3rd and 4th Streets, SF, CA ZIP **Size:** 0.1 acres, 0 acre within study area **Features:** event space, gathering space used for public dances **Agency with Jurisdiction:** Office of Community Investment and Infrastructure **Section 4(f) Applicability:** Publicly owned park

Map ID	Name	Description
17	St. Mary's Square	**Distance from Project Corridor (mile):** 0.22 **Location:** California and Grant streets, SF, CA, 94108 **Size:** 1.4 acres, 0.7 acre within study area **Features:** Play structures, picnic areas, outdoor movie space **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
18	Transit Center Park	**Distance from Project Corridor (mile):** 0.08 **Location:** Mission Street from Second to Beale streets, SF, CA, 94105 **Size:** 5.0 acres, 5.0 acres within study area **Features:** Open-air amphitheater, public space with active and quiet areas, children's play spaces, bike storage **Agency with Jurisdiction:** Transbay Joint Powers Authority **Section 4(f) Applicability:** Publicly owned park
21	Maritime Plaza	**Distance from Project Corridor (mile):** 0.14 **Location:** 285 Washington Street, SF, CA, 94111 **Size:** 2.0 acres, 2.0 acres within study area **Features:** Landscaped plaza, connected to Golden Gateway and Embarcadero Center by pedestrian bridges, walking trails **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
22	Sue Bierman Park (formerly Ferry Park)	**Distance from Project Corridor (mile):** 0.07 **Location:** Clay Street and The Embarcadero, SF, CA, 94111 **Size:** 4.3 acres, 4.2 acres within study area **Features:** Benches, walking trails, play structures **Agency with Jurisdiction:** San Francisco Recreation and Parks Department **Section 4(f) Applicability:** Publicly owned park
24	Harry Bridges Plaza/Ferry Building Square	**Distance from Project Corridor (mile):** 0.04 **Location:** The Embarcadero, SF, CA 94111 **Size:** 1.85 acres, 1.85 acres within study area **Features:** Public art, bicycle rentals, war memorial, open-air market **Agency with Jurisdiction:** Port of San Francisco **Section 4(f) Applicability:** Publicly owned park

Map ID	Name	Description
25	Bay Trail	**Distance from Project Corridor (mile):** 0.06 **Location:** The Embarcadero, SF, CA **Size:** Total of 500 miles planned to extend around San Francisco Bay; > 350 miles currently built, and 0.7 mile built along The Embarcadero within the study area **Features:** Class 1 multi-use trail **Agency with Jurisdiction:** Association of Bay Area Governments, Metropolitan Transportation Commission **Section 4(f) Applicability:** Publicly owned trail
26	Rincon Park	**Distance from Project Corridor (mile):** 0.13 **Location:** Howard and Folsom streets, SF, CA 94105 **Size:** 1.5 acres, 0.7 acre within study area **Features:** Bayfront promenade, walking paths, public art **Agency with Jurisdiction:** Port of San Francisco **Section 4(f) Applicability:** Publicly owned park
27	Ferry Plaza	**Distance from Project Corridor (mile):** 0.10 **Location:** The Embarcadero and Market Street, SF, CA 94111 **Size:** 2.9 acres, 0 acre within study area **Features:** Views of San Francisco Bay, event space, farmers' market **Agency with Jurisdiction:** Port of San Francisco **Section 4(f) Applicability:** Publicly owned park

Sources: City and County of San Francisco 2015, 2016, 2019a, 2019b; Metropolitan Transportation Commission 2016; San Francisco Municipal Transportation Agency 2019; San Francisco Public Works n.d.; San Francisco Recreation and Parks Department 2019; Yerba Buena Gardens 2019a, 2019b; Transbay Joint Powers Authority n.d.a, n.d.b.

2.2.2 Parks and Recreational Facilities Use Assessments, No Section 4(f) Use

A constructive use assessment is provided in Table 6 for the Section 4(f) resources adjacent to the project corridor, the area where the most severe visual and noise impacts will be experienced. Note that the distance for analysis of proximity impacts is different from and larger than the study area identified in Section 2.1-2 of the EA. With distance, potential visual and noise impacts are exponentially reduced because of the structures and landscaping that occur between the source of the noise or visual impact and the resource.

Impacts and preliminary use assessments for Section 4(f) parks and recreational resources that are not directly adjacent to the project corridor and do not involve a Section 4(f) use are discussed only in Table 6.

Table 6 presents the resources, along with an explanation as to why no permanent use, temporary occupancy, or constructive use will occur at each resource. Figure 2 shows the locations of all parks and recreational resources that qualify for protection under Section 4(f).

Table 6. Section 4(f) Parks and Recreational Facilities No Use Determination Summary

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
1	Duboce Avenue Bike Path	No	No	No	Located 0.23 mile from project corridor; no potential for use.
2	Koshland Park	No	No	No	Although the park is 0.17 mile from the project corridor, the closest views of the project will be obscured by mixed-use residential and commercial buildings between the park and project corridor. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor from Page and Haight streets. Construction is anticipated to last approximately one year at this location, but the closest line-of-sight view is 0.3 mile away. Construction noise will be muffled by intervening commercial and residential buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
3	Page and Laguna Mini Park	No	No	No	Although the mini park is 0.12 mile from the project corridor, the closest views of the project will be obscured by mixed-use residential and commercial buildings between the park and project corridor. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor from Page and Haight streets. Construction is anticipated to last approximately one year at this location, but the closest line-of-sight view is 0.2 mile away. Construction noise will be muffled by intervening buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
4	SoMa West Dog Park	No	No	No	Although the park is 0.06 mile from the project corridor, the closest views of the project will be completely obscured by the elevated Central Freeway. Construction noise will be masked by freeway noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
5	SoMa West Skate Park	No	No	No	Although the park is 0.10 mile from the project corridor, the closest views of the project will be completely obscured by the elevated Central Freeway. Construction noise will be masked by freeway noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
6	Patricia's Green in Hayes Valley	No	No	No	Located 0.21 mile from project corridor; no potential for use.
7	Joseph L. Alioto Performing Arts Piazza	No	No	No	Although the resource is 0.07 mile from the project corridor, views in most parts of the park will be obscured by multi-story commercial buildings. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor from park margins along Larkin Street, Grove Street, and McAllister Street. Construction is anticipated to last approximately one year at this location. In addition, it will be possible to view project construction from the middle of the park, along Fulton Street, through United Nations Plaza. However, views of construction will not interrupt enjoyment of the park. AMMs will minimize construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
8	Helen Diller Civic Center Playgrounds	No	No	No	Although the resource is 0.07 mile from the project corridor, views in most parts of the park will be obscured by multi-story commercial buildings. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor from park margins along Larkin Street, Grove Street, and McAllister Street. Construction is anticipated to last approximately one year at this location. In addition, it will be possible to view project construction from the middle of the park, along Fulton Street, through United Nations Plaza. However, views of construction will not interrupt enjoyment of the park. AMMs will minimize construction noise effects. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
9	Howard and Langton Mini Park	No	No	No	Located 0.22 mile from project corridor; no potential for use.
10	Turk and Hyde Mini Park	No	No	No	Although the park is 0.16 mile from the project corridor, the closest views of the project will be obscured by commercial buildings between the park and project corridor. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor along Turk and Hyde streets. Construction is anticipated to last approximately one year at this location; the closest line-of-sight view is 0.3 mile away. Construction noise will be muffled by intervening buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
11	Father Alfred E. Boeddeker Park	No	No	No	Because the resource is 0.12 mile from project construction, at the intersection of Mason and Eddy streets, intermittent and short-lived views of construction equipment are possible from the southwest margin of the park, along Jones Street. Construction is anticipated to last approximately one year at this location. However, views will be obscured by commercial buildings. Any such views will be short lived and will not interfere with use or enjoyment of the facilities. Construction noise will be muffled by intervening buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
12	Hallidie Plaza	No	No	No	Because Hallidie Plaza is adjacent to the project corridor, there will be views of construction during the period of project construction. Construction is anticipated to last approximately one year at this location. However, views of construction will not interrupt enjoyment of the park. AMMs will minimize construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
13	Union Square	No	No	No	Although the park is within 0.11 mile of the project corridor, views will be obscured by commercial buildings. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor along Post, Geary, Powell, and Stockton streets. Construction is anticipated to last approximately one year at this location, but the closest line-of-sight view is 0.1 mile away. Construction noise will be muffled by intervening multi-story commercial buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
14	Yerba Buena Gardens	No	No	No	Although the park is within 0.12 mile of the project corridor, views will be obscured by intervening multi-story commercial buildings between the facility and the project corridor. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor along Third and Fourth streets. Construction is anticipated to last approximately one year at this location; the closest line-of-sight view is 0.12 mile away. Construction noise will be muffled by intervening commercial buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
15	Jessie Square	No	No	No	Although Jessie Square is within 0.1 mile of the project corridor, the closest views of the project will be obscured by commercial buildings between the park and project corridor. Construction is anticipated to last approximately one year at this location. Construction noise will be muffled by intervening commercial buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
17	St. Mary's Square	No	No	No	Located 0.22 mile from project corridor; no potential for use.
18	Transit Center Park	No	No	No	Because the resource is 0.08 mile from the project corridor, along Fremont and First Streets, intermittent and short-lived views of construction equipment are possible from the park, depending on the location in the park. Construction is anticipated to last approximately one year at this location. However, generally, views will be obscured by intervening multi-story commercial buildings. Any such views will be short lived and will not interfere with use or enjoyment of the facilities. Construction noise will be muffled by intervening commercial buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
21	Maritime Plaza	No	No	No	Because the resource is 0.14 mile from the project corridor, at Drumm and Davis streets, intermittent and short-lived views of construction equipment are possible from the margins of the park along Davis and Drumm streets. Construction is anticipated to last approximately one year at this location. However, views will be obscured by intervening multi-story commercial buildings. Any such views will be short lived and will not interfere with use or enjoyment of the facilities. Construction noise will be muffled by intervening commercial buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
22	Sue Bierman Park (formerly Ferry Park)	No	No	No	Because the resource is 0.07 mile from the project corridor at Drumm Street, intermittent and short-lived views of construction equipment are possible from the park. Construction is anticipated to last approximately one year at this location. Generally, views will be obscured by multi-story commercial buildings. However, views of the project corridor will be possible from the eastern portion of the park, across Embarcadero Plaza. Any such views will be short lived and will not interfere with use or enjoyment of the facilities. Construction noise will be muffled by intervening buildings. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
24	Harry Bridges Plaza/Ferry Building Square	No	No	No	Although Harry Bridges Plaza/Ferry Building Square is 0.04 mile from the project corridor and has a direct line of sight, Embarcadero Plaza and The Embarcadero lie between it and the project corridor. Therefore, potential views of construction activities and equipment will be intermittent and short lived. Construction is anticipated to last approximately one year at this location. In addition, noise from The Embarcadero, a four-lane facility, will diminish the effect of construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
25	Bay Trail	No	No	No	Although the Bay Trail is within 0.06 mile of the project corridor, Embarcadero Plaza, Harry Bridges Plaza/Ferry Building Square, and The Embarcadero lie between it and the project corridor. Therefore, potential views of construction activities and equipment will be intermittent and short lived. Construction is anticipated to last approximately one year at this location. In addition, noise from The Embarcadero, a four-lane facility, will diminish the effect of construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the Bay Trail.

Map ID	Name	Use?	Temporary Occupancy Resulting in Use?	Constructive Use?	Explanation
26	Rincon Park	No	No	No	Although Rincon Park is within 0.13 mile of the project corridor, the closest views of the project will be obscured by commercial buildings between the park and project corridor. Depending on the location in the park, there could be intermittent and short-lived views of the project corridor from the northern border of the park. Construction is anticipated to last approximately one year at this location; the closest line-of-sight view is 0.1 mile away. In addition, noise from The Embarcadero, a four-lane facility, will diminish the effect of construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.
27	Ferry Plaza	No	No	No	Although Ferry Plaza is within 0.1 mile of the project corridor, the closest views of the project will be obscured by commercial buildings between the park and project corridor. Construction is anticipated to last approximately one year at this location. Noise from The Embarcadero, a four-lane facility, will diminish the effect of construction noise. There will be no impacts from operational noise because changes in noise levels will be below levels of human perceptibility. The proposed project will not interrupt or change access to the park.

Sources: California Protected Areas Database 2019; City and County of San Francisco 2016; San Francisco Bay Trail 2019.

2.2.3 Conclusion for Parks and Recreational Facilities

The 23 parks and recreational facilities in the study area described in Table 6 are Section 4(f) properties, but no use will occur. Therefore, the provisions of Section 4(f) do not apply.

3 Measures to Minimize Harm

The following measures are proposed to minimize harm to the Section 4(f) properties along the project corridor.

- The temporary construction zone(s) will be fenced to ensure the exclusion and safety of recreational users and/or visitors.
- In the event that any inadvertent damage occurs to the park or recreational facilities in the project corridor, the property will be restored to the condition that existed prior to the construction activities or better.

To minimize construction noise along the project corridor, avoidance, minimization, and/or mitigation measures will be implemented.

- **AMM-NOI-1: Caltrans Standard Specifications Section 14-8.02:**

  Standard Caltrans procedures include implementation of the following measures to minimize temporary noise effects from construction (California Department of Transportation 2018):

  - Control and monitor noise resulting from work activities.
  - Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.

4 Resources Evaluated Relative to the Requirements of Section 6(f) of the Land and Water Conservation Fund Act

The Land and Water Conservation Fund (LWCF) Act was established by Congress in 1964 to fulfill a bipartisan commitment to safeguard natural areas, water resources and cultural heritage, and to provide recreation opportunities to all Americans. The LWCF program provides matching grants to States and local governments for the acquisition and development of public outdoor recreation areas and facilities. Section 6(f) of this Act prohibits the conversion of property acquired or developed with these grants to a non-recreational purpose without the approval of the Department of Interior's National Park Service.

No Section 6(f) resources occur in the parks and recreation study area (California Department of Parks and Recreation 2019).

5 References

See Appendix A for the references associated with this document.

Appendix C

Title IV Policy Statement

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Making Conservation a California Way of Life.

November 2019

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To obtain this information in an alternate format such as Braille or in a language other than English, please contact the California Department of Transportation, Office of Business and Economic Opportunity, at 1823 14th Street, MS-79, Sacramento, CA 95811; (916) 324-8379 (TTY 711); or at Title.VI@dot.ca.gov.

Toks Omishakin
Director

Appendix D

Past, Present, and Reasonably Foreseeable Land Use Projects, Plans, and Transportation Projects in the Vicinity of the Project Corridor

Appendix D

Past, Present, and Reasonably Foreseeable Land Use Projects, Plans, and Transportation Projects in the Vicinity of the Project Corridor

Project Name	Proposed Uses	Status
Land Use Projects		
706 Mission Street	The project will renovate the existing Aronson Building and construct a new 47-story, 550-foot-tall tower, including a mix of residential, museum, restaurant/retail, and possibly office uses.	Under Construction
1040/1036 Mission	The project will create a 100 percent affordable residential mid-rise building, consisting of 106 dwelling units with ground-floor retail.	Construction is complete
570 Jessie Street	Demolish existing 15,000 square feet of office/printing shop and construct 47 dwelling units and 24 parking spaces.	Construction is complete
2 New Montgomery Street	The project will convert 25 hotel rooms to residential use and construct a new 17-story addition (680 feet tall with 125 dwelling units).	On hold since October 2014
1390 Market Street (Assessor's Block 0813/006)	The project will demolish an existing two-story retail and office building and construct a new 120-foot-tall, 11-story building with up to 250 dwelling units and approximately 20,000 gross square feet of ground-floor retail use. There will be no change to the existing Fox Plaza mixed-use tower.	CEQA clearance issued in 2009
1401–1415 Mission Street	The project will allow construction of a 15-story, 150-foot-tall mixed-use development, including 190 units, 4,400 gross square feet of commercial/retail space, and approximately 38,000 gross square feet of mechanical/storage/circulation/service areas. The project received CEQA clearance in 2015.	Construction is complete
50 First Street	The project will include a new 61-story, 850-foot-tall building with 34 stories of office and a potential 5-story street-level urban room or atrium below 22 stories containing 124 dwelling units. The project received CEQA clearance in 2016.	Under Construction
1145 Mission Street	The project will include a new 6-story building with 25 dwelling units and ground-floor retail.	CEQA clearance issued in 2017

Project Name	Proposed Uses	Status
One Oak Street (formerly 1500–1540 Market Street) (Assessor's Block 0836/002)	The project will demolish two buildings and construct a 40-story mixed-use residential building. The project will include 310 residential units with ground-floor commercial space, one off-street loading space, and a subsurface parking garage for residents.	CEQA clearance issued in 2017
925 Mission Street (5M)	The project will include substantial development of office, retail, residential, cultural, educational, and open space uses in the southwest quadrant of Fifth and Mission streets, including buildings of up to 470 feet in height.	CEQA clearance issued in 2017
1400 Mission Street (Assessor's Block 3507/042)	The project will include an approximately 150-foot-tall, 10- to 15-story mixed-use building on an approximately 25,000-square-foot lot. It will provide approximately 242,000 gross square feet of space for approximately 190 affordable housing units over approximately 4,400 gross square feet of ground-floor retail space, with 42 off-street parking spaces.	Construction is complete
101 Polk Street (Assessor's Block 0811/002 and 003)	The project will construct a 13-story, 162-dwelling unit residential building with 51 subgrade parking spaces on a site that currently contains a surface parking lot.	Construction is complete
19–25 Mason Street and 2–16 Turk Street	The project will include replacement of a parking lot with a 12-story, 120-foot-tall building with 155 dwelling units, ground-floor retail, and 68 off-street parking spaces.	CEQA clearance issued in 2015
351V Turk Street and 145 Leavenworth Street	The project will include the construction of two 8-story, 80-foot-tall, group housing buildings with 238 group housing rooms.	CEQA clearance issued in 2014
1100 Market Street (Assessor's Block 0351/001)	The project will include exterior improvements to the existing building.	Construction is complete
1546–1564 Market Street (Assessor's Block 0836/007)	The project will construct 110 dwelling units.	Construction is complete
Moscone Center Expansion	This project will include an increase in the size of Moscone Center from about 945,200 gross square feet to 1,156,300 gross square feet.	Construction is complete
350 Mission Street	The project will include a six-story addition to a 24-story, 375-foot-tall building, resulting in 420,000 square feet of office space plus retail and parking.	Construction is complete
1700 Market Street (Assessor's Block 0855/016)	The project will demolish an existing two-story building and construct an eight-story mixed-use residential building (up to 48 dwelling units) with approximately 1,500 gross square feet of ground-floor retail.	Under Construction
1066 Market Street (Assessor's Block 0350/003)	The project will construct up to 330 dwelling units.	Under Construction
1075 Market Street (Assessor's Block 3703/062)	The project will construct 90 dwelling units.	Construction is complete

Project Name	Proposed Uses	Status
950–974 Market Street (Assessor's Block 0342/001)	The project will demolish the buildings and parking lot/structure and construct a 12-story mixed-use building with 242 dwelling units, a 232-room hotel, and approximately 16,600 gross square feet of commercial retail space. As part of the project, the sidewalk along the south side of Turk Street between Taylor and Mason streets will be reconstructed and widened (except at the pedestrian loading area) to remove conflicts and existing sidewalk elevators and accommodate new sidewalk transformer vaults at the western end of the Turk Street frontage.	Under Construction
72 Ellis Street (Assessor's Block 0327/011)	The project will demolish a surface parking lot and construct an 11-story, 125-foot-tall hotel, consisting of approximately 192 rooms, a lobby, accessory meeting rooms, and retail.	CEQA clearance issued in 2018
22–24 Franklin Street (Assessor's Block 0836/011-012)	The project will demolish the existing commercial building and construct an eight-story, 85-foot tall mixed-use building. The building will include 35 dwelling units and 2,100 gross square feet of retail space.	Under Construction
198 Valencia Street	This project will demolish existing one-story, 1,900 square foot oil change facility and a surface parking lot with seven off-street parking spaces and construct a five-story, 55 foot-tall, 33,795 gross square foot mixed-use building (6,269 gross square feet of ground-floor commercial space and a subterranean garage to accommodate 19 off-street parking spaces on, with 28 residential units (16 one-bedroom units and 12 two-bedroom units) on the first through fourth-floor levels.	CEQA clearance issued in 2016.
1125 Market Street (Assessor's Block 3702/047)	The project will construct a 160-room mixed-use hotel.	Environmental Review Stage
150 Van Ness Avenue	The project will construct a 13-story over-basement-level mixed-use residential building.	Construction is complete
1532 Howard Street	The project will construct a six-story single-room-occupancy building.	Construction is complete
1870 Market Street	The project will demolish a vacant single-story, 600-gross-square-foot commercial building and a four-vehicle surface parking lot and construct an approximately eight-story, 85-foot-tall (with an additional 16 feet for the mechanical and staircase penthouses) mixed-use development. The approximately 16,300-gross-square-foot building will be comprised of approximately 12,900 gross square feet of residential space and 400 gross square feet of ground-floor commercial space. The proposed project will provide approximately 10 dwelling units. No off-street parking is proposed.	Construction is complete

Project Name	Proposed Uses	Status
1228 Folsom Street	The project will merge three lots into one lot, demolish a 16,450-square-foot building, and construct a new 41,440-square-foot mixed-use building with 24 residential units and 1,110 square feet of ground floor commercial use. The building will be 65 feet tall (79 feet tall with elevator penthouse) and six stories on its Folsom Street frontage and 45 feet tall and four stories on its Clementina Street frontage.	CEQA clearance issued in 2016
1699 Market Street (Assessor's Block 3504/030)	The project will construct 160 dwelling units.	Under Construction
1740 Market Street (Assessor's Block 0855/010)	The project will demolish an existing 25,000-gross-square-foot commercial building and construct a nine-story, 85-foot-tall mixed-use building with 110 group housing units and approximately 7,600 gross square feet of ground-floor retail space.	CEQA clearance issued in 2016
1028 Market Street (Assessor's Block 0350/002)	The project will construct 186 dwelling units.	CEQA clearance issued in 2017
1053 Market Street (Assessor's Block 3703/066)	The project will construct a 155-room tourist hotel.	CEQA clearance issued in 2017
1095 Market Street (Assessor's Block 3703/059)	The project will construct a 202-room tourist hotel/motel with 3,992 gross square feet of retail space.	Construction is complete
1270 Mission Street	The project will replace a single-story commercial building and surface parking lot with 13-story, 120-foot-tall mixed-use building with 199 dwelling units.	CEQA clearance issued in 2016
1500 Mission Street (Assessor's Block 3506/006, 3506/007, 3506/008-011 [4 lots]))	The project will construct 767,200 gross square feet of residential uses (including 560 dwelling units) and 567,300 gross square feet of City office uses.	Under Construction
1601 Mission Street (Assessor's Block 3514/043)	The project will demolish gas station facilities and construct a 120-foot-tall, 12-story mixed-use building with up to 220 dwelling units, 6,756 gross square feet of retail space, 145 bicycle parking space, and 102 below-grade vehicle parking spaces that will be accessed from South Van Ness Avenue. The building will include a publicly accessible mid-block alley and public realm improvements.	CEQA clearance issued in 2016
1 Franklin Street (Assessor's Block 0837/003)	The project will replace a 32-space surface parking lot with a mixed-use building, consisting of residential, retail, and parking spaces.	Construction is complete

Project Name	Proposed Uses	Status
Parcel M (300 Octavia Street) (Assessor's Block 0832/025) and Parcel N (350 Octavia Street) (Assessor's Block 0832/025)	The project site consists of two discontinuous vacant lots along the east side of Octavia Street, between Fell and Oak streets. Parcel M is an approximately 2,200-square-foot lot with frontages on Fell, Octavia, and Hickory streets; Parcel N is an approximately 2,300-square-foot lot with frontages on Oak, Octavia, and Hickory streets. The project includes construction of two 55-foot-tall (70 feet with elevator penthouse), five-story mixed-use buildings. No off-street parking is proposed. In total, the project will involve construction of 32 residential units, approximately 1,400 gross square feet of commercial uses, and 32 bicycle parking spaces.	CEQA clearance issued in 2016
Parcel R and Parcel S (Assessor's Block 0838/034, 035, 093-096)	The project will develop a vacant lot by constructing an approximately 34,504-gross-square-foot mixed-use development, consisting of two dwellings with approximately 19,492 gross square feet of affordable housing and approximately 4,925 gross square feet of neighborhood-serving retail.	On hold as of December 2016
Parcel T/188 Octavia (Assessor's Block 0853/033, 034, and 022)	The project will construct a five-story, 55-foot-tall (71 feet with elevator penthouse) mixed-use building with up to 27 dwelling units above ground-floor commercial space. No off-street parking is proposed.	Under Construction
10 South Van Ness Avenue (Assessor's Block 3506/004)	The project will demolish an existing two-story building and construct a mixed-use residential building with up to 984 residential units, retail space on the ground floor, and two below-grade levels for parking and loading activities (up to 518 vehicle parking spaces and seven freight loading spaces), which will be accessed from a single curb cut and driveway on 12th Street. Two project design options are being considered: the "project," a two-tower design with two separate 41-story, 400-foot-tall towers (420 feet to the top of the elevator penthouses) on top of podiums, and the "single tower project variant," a single 55-story, 590-foot-tall tower (610 feet to the top of the elevator penthouses) on top of a podium. The project will include approximately 48,000 gross square feet of usable open space, including an approximately 3,000-square-foot mid-block alley that will provide a pedestrian connection between South Van Ness Avenue and 12th Street; the single tower project variant will include approximately 47,000 square feet of open space and the mid-block pedestrian alley.	Environmental Review Stage
30 Otis Street (Assessor's Block 3505/016)	The project will demolish buildings and construct an approximately 27-story, 250-foot-tall mixed-use building. It will include up to 423 dwelling units and approximately 5,600 gross square feet of retail space. In addition, 17,000 gross square feet of arts activity space will be used by the City Ballet School, which currently operates onsite.	Under Construction

Project Name	Proposed Uses	Status
1629 Market Street (1601–1637 Market Street, 1125 Stevenson Street, 53 Colton Street [Plumbers Union site]) (Assessor's Block 3505/001, 007, 008, 027, 028, 029, 031, 031A, 032, 032A, 033, 033A, 035), 1601–1937 Market Street/53 Colton Street (Assessor's Block 3505/001)	The project will demolish the existing UA Local 38 building (1621 Market Street), demolish the majority of the Lesser Brothers Building (1629–1645 Market Street), rehabilitate the Civic Center Hotel (1601 Market Street), and demolish the 242-space surface parking lots. In total, the project will construct five new buildings (ranging from four to 10 stories, 58 to 85 feet tall). The project will include 477 market-rate residential units and 107 affordable supportive housing units. The project will also include construction of the 18,300-square-foot Brady Open Space at the northeast corner of Brady and Colton streets. Within the new buildings, there will be approximately 13,000 gross square feet of ground-floor retail/restaurant space. The project will construct 584 dwelling units.	CEQA clearance issued in 2017
111 Turk Street (57 Taylor Street) (Assessor's Block 0343/001)	The project will demolish a portion of the existing structure (vacant retail space) and construct of a 12-story over-basement mixed-use residential group housing and retail building with 190 dwelling units.	Environmental Review Stage
996 Mission Street (Assessor's Block 3704/025)	The project will demolish a two-story residential hotel building and construct of an eight-story hotel (two floors for residential hotel units and five floors for a tourist hotel) with ground-floor retail.	On Hold
200-214 Van Ness Avenue	The project will demolish two buildings, a three-story building with 27 dwelling units (200 Van Ness Avenue) and a two-story building, approximately 12,000 gross square feet. The project will merge the two parcels and construct a 12-story mixed-use building to provide housing and other facilities for the San Francisco Conservatory of Music. The proposed building will have approximately 113 units (420 beds), three faculty housing units, 27 housing units to replace the 27 existing units at 200 Van Ness Avenue, approximately 50,000 gross square feet of institutional uses, approximately 4,300 gross square feet of broadcast studio space, and 2,600 gross square feet of restaurant space.	Under Construction
30 Van Ness Avenue (Assessor's Block 0835/004)	The project's approximately 790,000 gross square feet will include 21,000 gross square feet for retail, 350,000 gross square feet for general office, and 520,000 gross square feet for residential uses (including 610 residential units).	Environmental Review Stage
33 Gough Street Project (Assessor's Block 3504/029)	The project's approximately 420,000 gross square feet will include a mix of approximately 304,000 gross square feet for market-rate and affordable residential uses (518 residential units), approximately 5,600 gross square feet for commercial uses (retail), and 8,400 gross square feet for common indoor spaces.	Environmental Review Stage

Project Name	Proposed Uses	Status
98 Franklin Street (Assessor's Block 0836/008, 009, and 013)	The project's approximately 469,100 gross square feet will include a mix of approximately 349,200 gross square feet of market-rate and affordable residential uses (354 total apartment units), approximately 3,100 gross square feet of commercial uses (retail), and approximately 75,000 gross square feet of school uses.	Environmental Review Stage
1245 Folsom Street (3756/041)	The project will demolish existing one story of Alt School and construct a seven-story at Folsom street and five-story at Ringold Street mixed-use building. The building will include 37 residential units above a two-story commercial space at the ground floor, with parking space at basement level.	CEQA clearance issued in 2018
1695 Folsom Street	The project will construct a building that includes five stories, one basement, and four dwelling units.	Environmental Review Stage
42 Otis Street (Assessor's Block3505/020)	The project will replace the existing building with a 15,805-gross-square-foot, five-story, 55-foot-tall mixed-used building. The proposed building will include 24 single-occupancy residential units on the upper floors and 1,900 gross square feet of ground-floor commercial space fronting Otis Street. No off-street parking will be provided.	Environmental Review Stage
973 Mission Street (Assessor's Block 3725/078)	The project will build out a currently open (warm shell) space of approximately 16,000 gross square feet to configure it for use by Proof School.	Environmental Review Stage
5 Third Street (Hearst Building) (Assessor's Block 3707/057)	The project will include a change of use for the existing Hearst Building to include hotel, roof deck, office, and retail space.	Environmental Review Stage
1500-1528 15th Street	The project will demolish existing automotive sales office and smog check facility and parking area to construct an eight story, 62,100-gross-square-foot building with approximately 1,300 square feet of ground floor retail and 184 group housing units. No off-street parking is proposed.	Environmental Review Stage
301 Mission Street Project	The project will involve a structural update consisting of the installation of approximately 52, 24-inch diameter piles, which will be placed underneath a portion of the sidewalk areas surrounding 301 Mission Street on Fremont and Mission streets and connecting to the existing mat foundation of 301 Mission Street. These piles will be extended into bedrock, approximately 235 feet beneath the sidewalk, and the piles and mat foundation will be located approximately 15 feet beneath the sidewalk, with a vault located approximately 12 feet beneath the sidewalk.	Environmental Review Stage

Project Name	Proposed Uses	Status
Plans		
Eastern Neighborhoods Rezoning and Area Plans	The Eastern Neighborhoods Rezoning and Area Plans will involve the introduction of new use (zoning) districts, including districts that will permit at least some PDR uses in combination with commercial uses, districts mixing residential and commercial uses, residential and PDR uses, and new residential-only districts. The new districts will generally replace existing industrial, commercial, and residential single-use districts. In addition to zoning changes, the project will include revisions to the existing Central Waterfront and South of Market Area Plans within the San Francisco General Plan and the preparation and adoption of new area plans for East SoMa, the Mission, Showplace Square/Potrero Hill and the Central Waterfront.	CEQA clearance issued in 2008
Market and Octavia Area Plan	The Market and Octavia Area Plan proposes new and amended zoning and height and bulk districts throughout the area as well as transit preferential, bicycle and pedestrian-oriented street and public space improvements.	CEQA clearance issued in 2007
Western SoMa Community Plan	The Western SoMa Community Plan consists of three separate components: (1) adoption of the Western SoMa Community Plan; (2) the rezoning of 46 parcels, comprising 35 lots, two proximate to the draft plan boundary, to reconcile their use districts with those of the neighboring properties; and (3) a mixed-use project at 350 Eighth Street, within the Western SoMa Community Plan Area, consisting of approximately 444 dwelling units, approximately 34,000 gross square feet of commercial space, approximately 8,150 gross square feet of light industrial/artist space, and approximately 1,400 gross square feet of community space.	CEQA clearance issued in 2012
Central SoMa Plan	The Central SoMa Plan (formerly, Central Corridor Plan) is a comprehensive plan for the area surrounding much of the southern portion of the Central Subway transit route, a 1.7-mile extension of the Third Street light-rail line, which will link the Caltrain depot at Fourth and King streets to Chinatown and provide service within the SoMa area. The Central SoMa Plan area includes roughly 230 acres, comprising 17 city blocks, as well as the streets and thoroughfares that connect SoMa to its adjacent neighborhoods: Downtown, Mission Bay, Rincon Hill, and the Mission District. The Central SoMa Plan will rezone the area for a variety of land uses, including residential and retail, and increase height limits in some areas. The Central SoMa Plan will also propose improvements for streets and open spaces in the area.	CEQA clearance issued in 2018

Project Name	Proposed Uses	Status
Civic Center Public Realm Plan	The Civic Center Public Realm Plan will create a unified vision for medium- and long-term improvements to Civic Center's plazas, streets, and other public spaces. The plan is an interagency effort managed by the planning department and part of the City's larger Civic Center initiative to improve the area by creating both a neighborhood gathering space and a public commons for all San Franciscans.	Environmental Review Stage anticipated to start in 2019
The Hub Plan, 30 Van Ness Avenue Project, 98 Franklin Street Project, and Hub Housing Sustainability District (HSD)	The Hub Plan, which is an amendment to the 2008 Market and Octavia Area Plan, is a comprehensive plan for the easternmost portions of the Market and Octavia Area Plan as well as two individual development projects within the Hub Plan area at 30 Van Ness Avenue and 98 Franklin Street. The Hub HSD will be designated within all or portions of the Hub Plan area. The Hub Plan seeks to encourage housing, especially affordable housing; create safer and more walkable streets as well as welcoming and active public spaces; increase transit capacity and make transit services more reliable; and create a complete neighborhood with adequate services and amenities. The Hub Plan will pursue this vision through changes to current zoning controls in the area to meet plan objectives. This will include changes to building heights for select parcels to allow more housing, including more affordable housing. Modifications to zoning controls will also allow more flexibility for development of nonresidential uses, specifically, institutional uses, art uses, and public uses. The plan also calls for public realm improvements to streets and alleys within and adjacent to the Hub Plan area. Requirements for micro retail will ensure a mix of retail sizes and uses. Parking requirements will be lowered to decrease the number of vehicles parked within the Hub Plan area, a transit-rich location.	Environmental Review Stage

Project Name	Proposed Uses	Status
Transportation Projects		
Muni Forward	Muni Forward (previously referred to as the Transit Effectiveness Project [TEP]) presents a thorough review of San Francisco's public transit system, initiated by SFMTA in collaboration with the City Controller's Office. Muni Forward is aimed at improving reliability, reducing travel times, providing more frequent service, and updating Muni bus routes and rail lines to match current travel patterns. Implementation of Muni Forward was initiated in 2015. Muni Forward recommendations include new routes and route realignments, increased service frequency and speed on busy routes, and elimination or consolidation of certain routes or route segments with low ridership. In addition, the TEP identified the need for "rapid," or "travel time reduction," networks, which are currently being planned or incorporated as a part of Muni Forward. For example, the 14 Mission Rapid Project (between the Daly City Bay Area Rapid Transit [BART] station and The Embarcadero) has been approved and implemented between 13th and Randall streets. It has reduced Muni collisions by 85 percent, improved reliability, and reduced travel time for 67,000 daily Muni riders.	CEQA clearance issued in 2014
Polk Street Streetscape Project	The SFMTA, Public Works, and San Francisco Public Utilities Commission are implementing streetscape and utility improvements on Polk Street between Beach and McAllister streets. The aim of the project is to create a thriving and active corridor, enhance the pedestrian experience, complement bicycle and transit mobility, and support commercial activities. Interim safety improvements, part of overall streetscape improvements, have been implemented and include leading pedestrian intervals, daylighting at signalized and stop-controlled intersections, loading zone improvements, new accessible parking spaces, new shared lane markings (sharrows), and a new right turn on northbound Polk Street at Broadway.	Construction is complete

Project Name	Proposed Uses	Status
Van Ness BRT Project/Van Ness Improvement Project	The Van Ness BRT Project is a program to improve Muni bus service (i.e., the 90 San Bruno Owl, 47 Van Ness, and 49 Van Ness/Mission bus routes, including the planned 49R Van Ness-Mission Rapid route) along Van Ness Avenue between Mission and North Point streets through the implementation of operational improvements and physical improvements. The project will construct transit-only lanes in each direction of Van Ness Avenue within a median right-of-way. Other physical improvements will include high-quality and well-lit bus stations to improve passenger safety and comfort and streetscape improvements and amenities to make the street safer and more comfortable for pedestrians and bicyclists who access the transit stations. Operational improvements will include adjusting traffic signals to give buses more green-light time at intersections and providing real-time bus arrival and departure information to passengers to allow them to manage their time more efficiently. Construction of the project within the Van Ness Avenue right-of-way is currently underway; the current travel lane configuration during construction (i.e., two mixed-flow travel lanes in each direction, reduced from three mixed-flow travel lanes in each direction pre-construction) is consistent with the final number of mixed-flow travel lanes. The project also includes eliminating all left turns on Van Ness Avenue, except for the northbound left turn at Lombard Street and the southbound left turn at Broadway. To date, all planned left-turn restrictions have been implemented. Following completion of construction in 2019, bus service will be relocated to the median transit-only lanes, and the existing curbside bus stops on Van Ness Avenue at Market Street will be discontinued. New BRT stations in the southbound and northbound directions of Van Ness Avenue will be located at Market Street.	Under Construction
Geary Rapid Project/Geary Boulevard Improvement Project	The Geary Rapid Project will provide transit and pedestrian infrastructure improvements along the corridor from Market Street to 34th Avenue, including improvements similar to those proposed under the Van Ness BRT Project. Phase 1 of Geary Rapid construction began in summer 2018, which will extend transit and pedestrian improvements from Market Street west to Stanyan Street, including enhanced bus stops, side-running bus-only lanes, and related streetscape improvements.	Under Construction

Project Name	Proposed Uses	Status
Vision Zero	The City adopted Vision Zero in 2014. Vision Zero is a road safety policy that focuses on eliminating traffic deaths in San Francisco by 2024. To commence, SFMTA, in collaboration with other City agencies, prioritized more than 24 street engineering projects, which are to be completed within the first two years of adopting the policy; pedestrian improvements at more than 170 locations (identified through the WalkFirst pedestrian safety planning process) along high-injury corridors; and bicycle-related safety improvement projects. The key Vision Zero projects applicable to the proposed project include signals at the following alleyway locations: Mission and Ecker streets, Mission and Mint streets, Sixth and Stevenson streets, and Sixth and Jessie streets.	
Active Beale Street Project	The project is part of the South Downtown Design + Activation (Soda) Plan. Along Beale Street, the project will convert a general travel lane to a Muni and Golden Gate Transit–only lane between Market and Natoma streets to improve operations of Muni buses accessing the new Transbay Transit Center. To improve the transition to this new Muni and Golden Gate Transit–only lane, the westernmost lane on Davis Street at the approach to Market Street will be right turn only, except for Muni and Golden Gate Transit buses. In addition, a new southbound right-turn pocket will be created on Beale Street at Mission Street by eliminating some freight and passenger loading spaces to minimize conflicts between transit buses and vehicles queuing to make a right turn. Furthermore, a protected bikeway (class IV) will be built along the eastern side of Beale Street between Market and Folsom streets. This will be accomplished by eliminating parking and loading along the east side of Beale Street between Mission and Folsom streets and by converting the left-turn lane between Market and Mission streets into a left-turn pocket. The sidewalk bulb-out on the east side of Beale Street south of Market Street will be extended by approximately 65 feet to provide additional width for pedestrians.	Construction anticipated to start in 2020

Project Name	Proposed Uses	Status
Eleventh Street Improvement Project	The project will include the following near-term improvements: Mission Street to Market Street northbound protected bikeway, Division Street to Harrison Street northbound protected bikeway, and continental crosswalks across alleys and intersections. Specifically, the project will convert the existing bicycle lane (class II facility) on 11th Street to a class IV separated bikeway. The project will include the following proposed long-term improvements: overhead wiring relocation and pole replacement, two travel lanes on 11th Street (one in each direction) between Market Street and Division Street, new bike lane configuration between Mission Street and Harrison Street, maintaining the existing left- and right-turn lanes, and two new Ford GoBike bike share stations at the intersections of 11th and Minna streets.	Construction anticipated to start in 2025
Central Subway Project	The Central Subway Project is the second phase of the Third Street light rail line (i.e., T Third), which opened in 2007. Construction is currently under way. The Central Subway will extend the T Third line northward from its current terminus at Fourth and King streets to a surface station south of Bryant Street, then go underground through a portal at I-80. From there, it will continue north to stations at Moscone Center (i.e., on the west side of Fourth Street between Folsom and Clementina streets); Union Square, providing passenger connections to Powell Street Station and BART; and Chinatown, with the line terminating at Stockton and Clay streets. Construction associated with utility relocation and tunneling has been completed. Work is under way to outfit the alignment with an overhead contact system, rails, telecommunications, signaling, and stations.	Construction of the Central Subway is scheduled to be complete in 2019
San Francisco Bicycle Plan	The San Francisco Bicycle Plan includes planned short-term improvements to Fifth Street, including class II bicycle lanes and class III bicycle routes in both directions between Market and Townsend streets. San Francisco Bicycle Plan improvements on Fifth Street will reduce the number of travel lanes and prohibit northbound and southbound left turns; other minor changes to lane geometry and on-street parking will be implemented.	Plan is currently being implemented
San Francisco Bicycle Strategy	The SFMTA 2013–2018 Bicycle Strategy sets new directions and policy targets to make bicycling a part of everyday life in San Francisco. The key actions are designed to meet the SFMTA 2013–2018 Strategic Plan's mode share goal (i.e., 50 percent of all trips made using sustainable modes [walking, bicycle, public transit, vehicle sharing]).	

Project Name	Proposed Uses	Status
Ford GoBike	In May 2015, Ford GoBike announced an expansion of the existing pilot system in San Francisco. New bike share stations were rolled out in phases through 2017, throughout SoMa and north of Market Street. Further expansion is planned in several locations, including Upper and Lower Haight, Japantown, North Beach, Westwood Highlands, the Marina District, Excelsior and Outer Mission, and farther west.	
Upper Market Street Safety Project	The Upper Market Street Safety Project is a substantial, multi-phased effort to improve the safety and comfort of Market Street between Octavia Boulevard and Castro Street for all roadway users. The project is based on a data-driven approach to identifying collision hot spots and factors, and includes engineering recommendations for the corridor's complex 6-legged intersections, dedicated bike lane upgrades, and public realm improvements to enhance safety and comfort for people walking, driving, and bicycling. Project goals are to improve safety and comfort for all users by reducing the potential for conflict and by making travel along the corridor more predictable and intuitive.	Implementation of near-term improvements was initiated in 2015 and is anticipated to be complete by 2020.

Project Name	Proposed Uses	Status
SFMTA Mission Street/South Van Ness Avenue/Otis Street Intersection Improvements	SFMTA Mission Street/South Van Ness Avenue/Otis Street Intersection Improvements[b] – The SFMTA is planning implementation of various improvements at the intersection of Mission/South Van Ness/Otis as well as along Otis and Mission Street in the vicinity of this intersection. This will be constructed by the Van Ness BRT Project. Key improvements will include: • Extending and/or creating a bulb out at the northeast corner of the intersection by up to 25 feet into the roadway to shorten the northern crosswalk, and potentially include landscaping/sidewalk furniture and bicycle racks and benches; • Conversion of the existing class III route (sharrows) along westbound (outbound) Mission Street to a class II bicycle route located adjacent to the planned right-turn only lane; • Redesign of the existing median on the east edge of the intersection of South Van Ness Avenue and Mission Street and relocate the median to the south to accommodate the westbound (outbound) right-turn only lane, the planned westbound (outbound) class II bicycle lane and allow for two-stage pedestrian crossing along the east crosswalk with a new pedestrian refuge island; • Extending the sidewalk (or bulb out) on the west side of the intersection between westbound (outbound) Otis Street and eastbound (inbound) Mission Street north into the roadway up to 12 feet to shorten the crossing distance between this sidewalk and the northwest corner of the intersection; • Widen the north sidewalk along westbound (outbound) Otis Street by five feet, from 10 feet to 15 feet wide. The sidewalk widening will extend from South Van Ness Avenue to Brady Street; • Installation of an eight-foot-wide transit island that will be five to six feet from the widened sidewalk on the north side of Otis Street and the transit island will be approximately 120 feet long; and • Relocating the existing parking on the north side of Otis Street from approximately 200 feet east of Brady Street to Gough Street from the curb to 9 to 12 feet south of the curb to allow for a parking-separated bikeway.	
Transbay Terminal and Transit Center District Plan	The project will include road diets, transit facilities, and bike facilities consistent with the Transit Center District Plan.	The SF Transit Center was completed in 2018 and began service in August 2019.

Project Name	Proposed Uses	Status
Second Street Improvement Project	Second Street Improvement Project includes a road diet from two to one through lane with right-turn pockets in each direction, cycle tracks in each direction, and new protected right-turn phases on Second Street.	Under Construction
Sixth Street Road Diet Project	The Sixth Street Road Diet Project will reduce the number of vehicle lanes in each direction from two to one; it will also provide wider sidewalks, corner bulb-outs, new traffic signals, and new crosswalks at targeted intersections.	Construction is expected to begin in Spring 2020
BART Market Street Canopies and Escalators Modernization Project	The project will include the installation of canopy covers over 22 of the Downtown San Francisco BART/Muni station entrances/exits along Market Street leading to the underground Embarcadero, Montgomery Street, Powell Street, and Civic Center/UN Plaza station concourses, as well as replacement and refurbishment of existing street-level escalators.	Under Design Review
Safer Taylor Street	The project will identify streetscape improvements on the section of Taylor Street between Market and Sutter streets to improve transportation safety and livability for all users of this corridor. Preliminary design options have been developed for Taylor Street, which include sidewalk widening, travel lane reductions, traffic signal modifications, and improved loading zones.	Engineering and Design Phase
Turk Street Safety Project	The project identified transportation network improvements on the section of Turk Street between Market and Gough streets to provide a safer and more comfortable walking and bicycling environment as well as a more predictable and safer driving environment. As part of the project, the bicycle lane network on Turk Street was completed.	Implementation Phase
Powell Streetscape Project	The project will design and construct a new permanent streetscape layout for Powell Street between Geary and Ellis streets to enhance the quality and use of the public realm, improve safety for all street users, improve cable car safety and performance, and renew transportation infrastructure. Changes could include wider sidewalks, restrictions to vehicle access, and improved loading for businesses and hotels.	Engineering and Design Phase
The Embarcadero Enhancement Project	The project will develop and implement improvements along The Embarcadero between Townsend and North Point streets. The project will focus on providing a physically protected two-way waterside bikeway to reduce conflicts with other modes, including shorter, more accessible pedestrian crossings; more efficient traffic signals and intersections; improved loading zones; and enhancements to streetcar operations. The project is completing the planning and conceptual design phase, which will be followed by environmental review and preliminary engineering.	Near-term improvements implemented in December 2018.

Project Name	Proposed Uses	Status
27 Bryant Transit Reliability Project	The project will identify improvements to enhance the reliability of the 27 Bryant bus route, particularly north of Market Street, as well as improvements to the transportation network for people walking and bicycling.	Planning Phase
Bike Lane Pilot on Valencia Street from Market Street to 15th Street	The project will include changes in parking and loading as well as other pedestrian safety improvements. The purpose of the project is to improve safety for cyclists and pedestrians. The project is a pilot program in that data will be collected as part of a study leading to the development of a long-term streetscape project along the corridor. Extensive evaluation of the pilot will help inform long-term streetscape changes. The project will include a parking-protected bike lane on Valencia from Market to 15th streets. Left turns off Valencia Street to Duboce Avenue will be restricted to accommodate separated signal phasing for right turns and through bicycles; eastbound left turns off Clinton Park will be restricted during school hours. Concrete parking buffers/accessible paths for portions of the corridor with school loading will be included.	Under Construction

Notes:

a. Project summaries are based on the best available information as of August 2019.

b. SFMTA – Mission Street/South Van Ness Avenue/Otis Street Certificate of Determination Exemption from Environmental Review. A copy of this report is available for review at the San Francisco Planning Department, 1650 Mission Street Suite 400, San Francisco as part of Case File No. 2014.002258ENV.

Source: San Francisco Planning Department 2019.

Appendix E

Correspondence

Documentation from MTC following the September 27, 2018 AQTF meeting confirming the Better Market Street Project is not a POAQC.

From: Fund Management System
Sent: Thursday, September 27, 2018 11:06 AM
To: Alonso, Rachel (DPW)
Cc: Fund Management System <fms@bayareametro.gov>; Harold Brazil
Subject: FMS POAQC Project TIP ID SF-130001 (SF- Better Market Street Transportation Elements) update: Project is a not a POAQC

Dear Project Sponsor

Based on the recent interagency consultation with the Air Quality Conformity Task force, Project TIP ID SF-130001 (FMS ID:5673.00) does not fit the definition of a project of air quality concern as defined by 40 CFR 93.123(b)(1) or 40 CFR 93.128 and therefore is not subject to PM2.5 project level conformity requirement. Please save this email as documentation confirming the project has undergone and completed the interagency consultation requirement for PM2.5 project level conformity. Note project sponsors are required to undergo a proactive public involvement process which provides opportunity for public review as outlined by 40 CFR 93.105(e). For projects that are not of air quality concern, a comment period is only required for project level conformity determinations if such a comment period would have been required under NEPA. For more information, please see FHWA PM2.5 Project Level Conformity Frequently Asked Questions (FAQ): http://www.fhwa.dot.gov/environment/air_quality/conformity/reference/faqs/pm25faqs.cfm

If you have any questions, please direct them to Harold Brazil

From:	Blackmore, Helen@DOT
To:	Boyce, Gretchen
Cc:	Deunert, Boris (DPW)
Subject:	FW: Assumptions for Eligibility for Better Market Street - STPL-5934 (180)
Date:	Tuesday, November 26, 2019 8:39:09 AM

Hi Gretchen,

Please find attached CSOs approval of the assumptions of eligibility for Better Market Street.

Let me know if you have any questions.
Thanks,

Helen Blackmore

Architectural History Branch Chief
Office of Cultural Resource Studies
510-286-6477

From: Neeb, Alexandra@DOT
Sent: Tuesday, October 15, 2019 12:58 PM
To: Blackmore, Helen@DOT <Helen.Blackmore@dot.ca.gov>
Subject: RE: Assumptions for Eligibility for Better Market Street - STPL-5934 (180)

Hi Helen,
Thank you for the information. **CSO approves the assumption of eligibility** for the historic districts listed in Table B-1 with contributors listed in Table B-2, as well as individual properties listed in Table B-3, for purposes of the project due to limited potential to affect, pursuant to Stipulation VIII.C.4 of the 2014 PA. Please retain this email as confirmation for your files.

Alexandra Bevk Neeb
Section 106 Coordinator
(916) 654-3567

From: Blackmore, Helen@DOT
Sent: Friday, October 4, 2019 2:18 PM
To: Neeb, Alexandra@DOT <Alexandra.Neeb@dot.ca.gov>
Subject: Assumptions for Eligibility for Better Market Street - STPL-5934 (180)

Hi Alex,

As we discussed, Caltrans District 4, in coordination with the San Francisco Public Works Department, proposes to construct the Better Market Street Project, Federal Identification Number: STPL-5934 (180). The project consists of improvements to bicycle, pedestrian and transit rider's environment. All the work will be within the City of San Francisco Right-of-Way. There are six historic districts and 125 individual resources within the Area of Potential Effect that District 4 would like to

assume eligible for inclusion on the National Register of Historic Places (NRHP) for the purposes of the undertaking as outlined under Stipulation VIII.C.4 of the Section 106 PA. The attached pdf lists the resources, and within the zip files are the supporting documents for each resource, and finally the draft APE map showing the location of the resources.

Because of the large number of properties within the APE, the undertaking does not have the scope to evaluate them all, and the scope of work has limited potential to effect the buildings and districts along Market Street, Caltrans District 4 proposed to assume the 131 resource eligible for the NRHP for the purposes of the undertaking.

Please let me know if you have any questions.
Thanks,

Helen Blackmore

Architectural History Branch Chief
Office of Cultural Resource Studies
Caltrans District 4, Oakland
510-286-6477

Viramontes, Jessica

From: Rivas, Dan@DOT <Dan.Rivas@dot.ca.gov>
Sent: Wednesday, January 29, 2020 12:26 PM
To: Deunert, Boris (DPW); Iberien, Oliver (DPW); Viramontes, Jessica; Carter, Aaron
Cc: Holstein, Thomas@DOT
Subject: FW: Assumption for Eligibility for Better Market Street - STPL-5934 (180) - Yerba Buena Cemetery

Hi everyone,

CSO has approved the assumption of eligibility for the Yerba Buena Cemetery (see below).

Regards,

Dan Rivas
Associate Environmental Planner
Caltrans Office of Local Assistance, District 4
dan.rivas@dot.ca.gov
510-286-5743

From: Alahan, Kelli@DOT
Sent: Wednesday, January 29, 2020 11:28 AM
To: Rivas, Dan@DOT <Dan.Rivas@dot.ca.gov>
Subject: FW: Assumption for Eligibility for Better Market Street - STPL-5934 (180) - Yerba Buena Cemetery

Hi Dan,

I received the approval on the assumption of eligibility from CSO due to large resource size and limited access. Regardless of the reasoning for assumption of eligibility (limited potential to effect, access, resource size) the documentation and effect discussion will need to be presented in the FOE; meaning: the assumption of eligibility under limited potential to effect does not carry any weight in the process.

Please see the forwarded email below and send along to the local agency. If you have any questions, please let me know.

Thank you,

KELLI ALAHAN, MA

Associate Archaeologist, PI Prehistoric Archaeology
Office of Local Assistance
Caltrans District 4, Oakland
(510) 286-5530
Kelli.Alahan@DOT.CA.GOV

From: Price, David@DOT
Sent: Tuesday, January 28, 2020 4:42 PM
To: Alahan, Kelli@DOT <Kelli.Alahan@dot.ca.gov>
Subject: RE: Assumption for Eligibility for Better Market Street - STPL-5934 (180) - Yerba Buena Cemetery

Hi Kelli,

Thank you for the information and for the extended discussion. **CSO approves the assumption of eligibility** for the Yerba Buena Cemetery under Criterion D for the purposes of this project only, due to large resource size and limited access, pursuant to Stipulation VIII.C.4 of the Section 106 PA. Please keep a copy of this email for your documentation.

Regards,

David Price
Section 106 Coordination Branch Chief
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, MS 27, Sacramento, CA 95814
(916) 653-0516

From: Alahan, Kelli@DOT
Sent: Monday, January 13, 2020 10:57 AM
To: Price, David@DOT <David.Price@dot.ca.gov>
Subject: Assumption for Eligibility for Better Market Street - STPL-5934 (180) - Yerba Buena Cemetery

Hi David,

Caltrans District 4, in coordination with the San Francisco Public Works Department, proposes to construct the Better Market Street Project, Federal Identification Number: STPL-5934 (180). The project consists of improvements to bicycle, pedestrian and transit rider's environment. All work will be within the City of San Francisco Right-of-Way. The Yerba Buena Cemetery (no trinomial) is immediately adjacent to/lies within the Area of Potential Effects (see attached APE map). District 4 would like to assume eligible the Yerba Buena Cemetery for inclusion on the National Register of Historic Places (NRHP) for the purposes of the undertaking as outlined under Stipulation VIII.C.4 of the Section 106 PA for a limited potential to effect. The portions of the site that is within/adjacent to the APE has been previously disturbed through the construction of BART and MUNI infrastructure down to 80 feet. Although the Yerba Buena cemetery's formal boundary lies slightly within the APE boundary, due to the extreme degree of previous construction, there is a limited potential to effect the resource.

Archaeological testing conducted in 2018 as part of the Asian Art Museum Expansion and Improvements Project identified seven archaeological features within a deposit of dune sands that extended 3 to 10 feet (0.9 to 3meters) below the ground surface. These features consisted of five intact burials, isolated bone fragments, and a wooden board, all of which were discovered within a 3-to 4-foot-thick deposit of dune sands. Of the seven features, six were recorded and removed; one intact burial (Feature 6) was encased in concrete and preserved in-situ with an informational plaque to allow for future identification (Russell et al. 2018). Formal evaluation of the burials associated with the Yerba Buena Cemetery, which were recently discovered during work at the Asian Art Museum, is still in process. The Yerba Buena Cemetery can be assumed eligible under Criterion D for data potential.

If you have any questions or need further information, please let me know.

KELLI ALAHAN, MA

Associate Archaeologist, PI Prehistoric Archaeology

Office of Local Assistance

Caltrans District 4, Oakland

(510) 286-5530

Kelli.Alahan@DOT.CA.GOV

Viramontes, Jessica

From: Rivas, Dan@DOT <Dan.Rivas@dot.ca.gov>
Sent: Monday, February 24, 2020 3:16 PM
To: Deunert, Boris (DPW); Iberien, Oliver (DPW); Viramontes, Jessica; Carter, Aaron
Cc: Holstein, Thomas@DOT
Subject: FW: Assumption for Eligibility for Better Market Street - STPL 5934(180)

Hi everyone,

CSO has approved the assumption of eligibility for the five shipwrecks and four wharves (see below).

Regards,

Dan Rivas
Associate Environmental Planner
Caltrans Office of Local Assistance, District 4
dan.rivas@dot.ca.gov
510-286-5743

From: Alahan, Kelli@DOT
Sent: Monday, February 24, 2020 2:46 PM
To: Rivas, Dan@DOT <Dan.Rivas@dot.ca.gov>
Subject: Fw: Assumption for Eligibility for Better Market Street - STPL 5934(180)

Hi Dan,

Please see below for the assumption for eligibility for BMS wharves and shipwrecks. Can you please forward it on to the Local Agency and consultants?

Thanks so much!

KELLI ALAHAN, MA

Associate Archaeologist, PI Prehistoric Archaeology

Office of Local Assistance

Caltrans District 4, Oakland

(510) 286-5530

Kelli.Alahan@DOT.CA.GOV

From: Price, David@DOT <David.Price@dot.ca.gov>
Sent: Monday, February 24, 2020 2:19 PM
To: Alahan, Kelli@DOT <Kelli.Alahan@dot.ca.gov>
Subject: RE: Assumption for Eligibility for Better Market Street - STPL 5934(180)

The Galen Shipwreck is so assumed.

David Price
Section 106 Coordination Branch Chief
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, MS 27, Sacramento, CA 95814
(916) 653-0516

From: Alahan, Kelli@DOT
Sent: Monday, February 24, 2020 11:39 AM
To: Price, David@DOT <David.Price@dot.ca.gov>
Subject: Re: Assumption for Eligibility for Better Market Street - STPL 5934(180)

Hi David,

Thank you for your email. We would also like to add on the Galen Shipwreck to the others assumed eligible under the same criterion and for the same reasons outlined in the original email.

If you have any questions or need more information, please let me know.

KELLI ALAHAN, MA

Associate Archaeologist, PI Prehistoric Archaeology

Office of Local Assistance

Caltrans District 4, Oakland

(510) 286-5530

Kelli.Alahan@DOT.CA.GOV

From: Price, David@DOT <David.Price@dot.ca.gov>
Sent: Monday, February 24, 2020 9:21 AM
To: Alahan, Kelli@DOT <Kelli.Alahan@dot.ca.gov>
Subject: RE: Assumption for Eligibility for Better Market Street - STPL 5934(180)

HI Kelli,

Thank you for the detailed information. **CSO approves the assumptions of eligibility** for the Panama Shipwreck, Byron Shipwreck, Callao Shipwreck, and Autumn Shipwreck, as well as the Market Street Wharf, California Street Wharf, Stuart Street Wharf, and Main Street Wharf. These resources are being assumed eligible under Criterion D for the purposes of this project only because evaluation is not possible due to limited potential to effect and restricted access, pursuant to Stipulation VIII.C.4 of the Section 106 PA. Please retain a copy of this email for your records.

Thank you,

David Price
Section 106 Coordination Branch Chief
Cultural Studies Office
Caltrans Division of Environmental Analysis
1120 N Street, MS 27, Sacramento, CA 95814
(916) 653-0516

From: Alahan, Kelli@DOT
Sent: Friday, February 21, 2020 3:35 PM
To: Price, David@DOT <David.Price@dot.ca.gov>
Subject: Assumption for Eligibility for Better Market Street - STPL 5934(180)

Hi David,

Caltrans District 4, in coordination with the San Francisco Public Works Department, proposes to construct the Better Market Street Project, Federal Identification Number: STPL-5934 (180). The project consists of improvements to bicycle, pedestrian and transit rider's environment along the Market Street corridor from Castro Street to The Embarcadero. All work will be within the City of San Francisco Right-of-Way.

Four shipwrecks (the Panama Shipwreck, Byron Shipwreck, Callao Shipwreck, and Autumn Shipwreck) and four wharves (Market Street Wharf, California Street Wharf, Stuart Street Wharf, and Main Street Wharf) are located within the APE as shown on the SF Maritime National Historical Park Map (July 2017), see attached, with contributions by Dr. James Allan, Dr. James Delgado, Al Harmon. Karl Kortum, Dr. Allen Pastron, Rhonda Robichaud, and Harlan Soeten. District 4 would like to assume eligible the four shipwrecks and four wharves for inclusion on the National Register of Historic Places (NRHP) for the purposes of the undertaking as outlined under Stipulation VIII.C.4 of the Section 106 PA for a limited potential to effect and restricted access. The Panama Shipwreck, Byron Shipwreck, Callao Shipwreck, Autumn Shipwreck, Market Street Wharf, California Street Wharf, Stuart Street Wharf, and Main Street Wharf can be assumed eligible under Criterion D for data potential.

The shipwrecks and wharves are believed to be located approximately 30 feet below ground surface based on stratigraphic profiles from previous bore study locations throughout the project corridor in addition to known depths of other shipwrecks in the vicinity. Excavations in this area should reach a maximum of 15 feet; thus, the limited potential to effect. In addition, these resources lie beneath Market Street in San Francisco; therefore, their evaluation would not meet the scope of the project, thus having restricted access. We plan on outlining the ground disturbance and potential locations of the resource in the ASR and FOE documents. There will also be a treatment plan for the wharves, shipwrecks, Yerba Buena Cemetery, and potential prehistoric sensitivity, should any resources be encountered during construction.

If you have any questions or need further information, please let me know.

KELLI ALAHAN, MA

Associate Archaeologist, PI Prehistoric Archaeology
Office of Local Assistance
Caltrans District 4, Oakland
(510) 286-5530
Kelli.Alahan@DOT.CA.GOV

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

DEPARTMENT OF PARKS AND RECREATION
OFFICE OF HISTORIC PRESERVATION
Lisa Ann L. Mangat, *Director*

Julianne Polanco, State Historic Preservation Officer
1725 23rd Street, Suite 100, Sacramento, CA 95816-7100
Telephone: (916) 445-7000 FAX: (916) 445-7053
calshpo.ohp@parks.ca.gov www.ohp.parks.ca.gov

April 23, 2020

VIA EMAIL

In reply refer to: FHWA_2020_0312_001

Mr. Christopher Caputo, Chief
Office of Cultural Resources Studies
Caltrans District 4
PO Box 23660, MS 8-A
Oakland, CA 94623-0660

Subject: Determinations of Eligibility for the Proposed Better Market Street Project, San Francisco, San Francisco County, CA

Dear Mr. Caputo:

Caltrans is initiating consultation regarding the above project in accordance with the January 1, 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA). As part of your documentation, Caltrans submitted a Historic Property Survey Report (HPSR), a Historical Resources Evaluation Report (HRER) and an Archaeological Survey Report for the proposed project.

San Francisco Public Works (SFPW), in coordination with Citywide Planning Division of the San Francisco Planning Department, The San Francisco Municipal Transportation Agency, the San Francisco Public Utilities Commission, the San Francisco County Transportation Authority, and the Caltrans propose to redesign and provide various transportation and streetscape improvements to Market Street between Steuart Street and Octavia Boulevard in San Francisco, CA. The project includes changes to and replacement/modification of roadway configuration and private vehicle access, traffic signals, surface transit, bicycle facilities, pedestrian facilities, commercial and passenger loading, vehicular parking, and utilities. A more detailed description starts on Page 1-1 of the HRER.

Pursuant to Stipulation VIII.C.6 of the PA, Caltrans determined that the following properties, located in the City of San Francisco, are not eligible for the National Register of Historic Places (NRHP):

- Valmar Apartments, 1745-1755 Market Street
- 1640-1658 Market Street
- 1525 Market Street
- Fox Plaza, 95 Hayes Street
- National Hotel, 1133-1139 Market Street
- William B. Wagnon Building, 1115-1119 Market Street
- Hallidie Plaza
- McKesson Building, 1 Post Street
- 550 Market Street
- San Francisco Municipal Railway Substation
- Native Sons of the Golden West Shoreline Markers
- 1 California Street
- Market Street Traffic Control Boxes
- Embarcadero Plaza

Caltrans has also determined that the following properties are eligible for the (NRHP) for the following reasons:

- Path of Gold Light Standards – eligible under various Criteria and contexts depending on construction date

- United Nations Plaza (UN Plaza) – eligible under Criteria A and C and Criteria Consideration G. Under Criterion A the UN Plaza is eligible at the national level of significance for civic engagement activities related to the LGBTQ rights and the AIDS epidemic. The periods of significance are 1977-1978 for Gay Freedom Day Parades (Gay Pride) and creation of the rainbow flag as a LGBTQ symbol; and 1985-1995, corresponding to the first use of civil disobedience against the AIDS epidemic at the 10-year vigil in UN Plaza. Under Criterion C the UN Plaza is historically significant at the local level of significance as a designed landscape associated with master landscape architect Lawrence Halprin and one of the most emblematic post-modern landscapes in San Francisco. The period of significance in 1975.

- Market Street Cultural Landscape District (MSCLD) – eligible under Criteria A and C and Criteria Consideration G. Under Criterion A the MSCLD is eligible at the local level for its historic role as San Francisco's main circulation artery and facilitator of urban development based on its association with urban and economic growth in San Francisco. The period of significance is 1847-1968. It is also eligible under Criterion A at the national level for its historic role as venue for civic engagement based on association with public demonstrations associated with LGBTQ civil rights and on a local level for association with social history themes including labor rights and civil right movements, war protest and peace celebration, and women's suffrage. The period of significance is 1870-1979.

The MSCLD is also significant under Criterion C at the national level for its association with the work of master architects John Carl Warnecke and Mario J. Ciampi, and master landscape architect Lawrence Halprin. The period of significance is 1979, the date when a critical volume of the Market Street Redevelopment Plan components were present to physically express the design intent of the Market Street Joint Venture Architects for this project.

- San Francisco Auxiliary Water Supply (AWSS) – The AWSS is significant under Criterion A at the local level with a period of significance of 1908-1913. This is the period when city engineers drafted a preliminary plan for the AWSS and city voters overwhelmingly supported a bond measure funding its construction. The period of significance ends when the Board of Public Works and the Board of Fire Underwriters certified that construction of the system was complete. The AWSS is also significant under Criterion C as a unique example of an emergency water supply system adapted to the specific geographic and seismic conditions of San Francisco, which required innovative design and engineering to meet the specific needs of the city after the 1906 earthquake and fires. Contributors to the district are listed in the 2018 DPR 523 form for the property.

- Admission Day Monument – eligible under Criterion C and Criteria Consideration B and F. The monument is the work of two artists, Douglas Tilden and Willis Polk, who are now recognized as masters in their craft. The object exemplifies high artistic values of the Beaux-Arts during the period when the City Beautiful Movement was sweeping over San Francisco. The period of significance is 1897.

- Crown Zellerbach Complex, 1 Bush Street – eligible under Criterion C as an example of “Miesian” International and Corporate Modern styles, represents the work of several masters (Charles Bassett of SOM and Hertzka & Knowles, and possesses high artistic value. The period of significance is 1959.

- Standard Oil Building/Chevron Towers, 555-575 Market Street – eligible under Criterion C as a significant example of a Corporate Modern high-rise complex associated with master architects Wayne Soloman Hertzka and William Howard Knowles. The period of significance is 1964 for 555 Market Street and 1975 for 575 Market Street, their dates of construction respectively.

- Mechanics Monument – eligible under Criterion C and Criteria Consideration B and F at the local level of significanace, as a product of master sculptor Douglas Tilden, and also for its high artistic value. The period of significance is 1901.

- Hyatt Regency Hotel, 22 Drumm Street – eligible under Crieterion C at the local level of significance, for its association with noteworthy architect John C Portier, Jr., as a recognized example of his atrium-type hotel designs, and as an exceptional example of the Late Modern architectural style in San Francisco. The period of significance is 1973.

Based on review of the submitted documentation, I have the following comments:

- I concur the following properties are not eligible for the NRHP either individually or as contributors to a historic district:
    - 1640-1658 Market Street
    - San Francisco Municipal Railway Substation
    - Native Sons of the Golden West Shoreline Markers

- I concur the following properties are not eligible for the NRHP as individual properties:
    - Valmar Apartments, 1745-1755 Market Street
    - 1525 Market Street
    - Fox Plaza, 95 Hayes Street
    - National Hotel, 1133-1139 Market Street
    - William B. Wagnon Building, 1115-1119 Market Street
    - Hallidie Plaza
    - McKesson Building, 1 Post Street
    - 550 Market Street
    - 1 California Street
    - Market Street Traffic Control Boxes
    - Embarcadero Plaza

- I concur the following properties are eligible for the NRHP for the reasons stated above:
    - San Francisco Auxiliary Water Supply
    - Admission Day Monument
    - Crown Zellerbach Complex, 1 Bush Street
    - Standard Oil Building/Chevron Towers, 555-575 Market Street
    - Mechanics Monument
    - Hyatt Regency Hotel, 22 Drumm Street

- The SHPO is unable to concur on the eligibility of the Path of Gold Light Standards. As currently presented Caltrans has a historic district with more non-contributors than contributors. Based on the information presented it appears that there are two distinct set of resources with different construction dates and different contexts. The original lights appear to be an eligible historic district in their own rights but do not contribute to the Market Street Cultural Landscape District. The replica lights do not contribute to a Path of Gold Light Standards Historic District but do contribute to the MSCLD.

  I recommend that Caltrans split these distinct resources into separate DPR 523s. The current DPR 523 is very confusing to follow and it would be very easy to misinterpret the distinctions between the resources. While putting together these DPR 523s it is vital that Caltrans detail what elements of these resources are important to the integrity of the

resources and date to their respective periods of significance. As Caltrans moves into assessing effects, these details will be critical.

- I concur that the UN Plaza is eligible for the NRHP for the reasons listed above. Please note that the UN Plaza is listed in the NRHP as a contributor to the San Francisco Civic Center Historic District. In order to be considered a non-contributor the NRHP nomination for this Historic District must be formally amended through the Keeper of the National Register.

- Before I can comment on the eligibility of the MSCLD I will require additional information.

  Currently the period of significance under Criterion C is 1979. Please explain why 1979 was chosen versus a range of dates under which construction on the project was completed. It is currently unclear if properties need to be constructed in 1979, be extant in 1979, or be in construction in 1979. Please provide additional information on if a 1979 period of significance accurately represents all of the properties in the district that would contribute under this context.

  Please provide specific information with regards to contributors and non-contributors and their association and levels of integrity to the periods of significance. The DPR 523 uses very general terms to describe contributors and non-contributors. As Caltrans moves into the effects phase of this consultation it will be critical that everyone reading these documents be able to understand what it is about the different contributing elements that make them important to the historic significance of the historic district. This is critically important for landscape elements that might be affected by the project.

- Caltrans submitted, "Archaeological Survey Report Better Market Street Project, March 2020, J.T. Elder, ICF, San Francisco, CA" (ICF Report), which provides information for a buried site sensitivity analysis. Based upon this analysis, pursuant to Stipulation VIII.C.4 of the Section 106 PA, Caltrans is assuming eligibility, under Criterion D, for previously documented sub-surface resources (historic archaeological sites) that are and may be within the area of potential effect (APE). They are the Yerba Buena Cemetery, five shipwrecks (Panama, Byron, Callao, Galen, and Autumn) and four wharf structures (Market Street, California Street, Stuart Street and Main Street). In addition, it is noted that, due to the presence of sub-surface dune and tidal marsh flat formations, there may also be a sensitivity for encountering buried prehistoric archaeological sites. While the ICF Report documents that there is the potential to encounter these sites, it also states that their presence is currently unknown and has not yet been defined in relation to the APE boundaries. However, their posited presence is based upon historical documentation and although there is the potential that they were either partially or fully destroyed during previous construction activity along Market Street, Caltrans has determined there is still the "potential to encounter" these sub-surface resources during the proposed Better Market Street Project construction activities.

The report notes several areas within the APE that have heightened sensitivity due to the potential for excavations to extend below previously disturbed areas or to be outside areas of previous disturbance. They are: 691 Market Street sub-sidewalk basement, where deep excavations (35 feet) have the potential to extend into intact dune sands; Charles J. Brenham Place (F-Loop), near the Asian Art Museum, where fill is about eight feet deep and the vertical APE is 15 feet at this location and documents indicate burials were previously discovered between 3 and 25 feet deep in this locale; and the APE area along Market Street, from Valencia Street to the southwest end of the project at Octavia Boulevard, lacks Geotech information and the stratigraphic profile indicates that the dune sands may deepen towards Octavia Boulevard (Figure 1- Stratigraphic Profile from the Embarcadero to Valencia Street).

Although Caltrans is assuming archaeological sites eligible for purposes of the project, it has not yet provided justification of why the project will not adversely affect these resources. Typically, this is because there is an Environmentally Sensitive Area (ESA) established (either horizontal or vertical) that ensures the project will not impact the resources. Particularly with the Yerba Buena Cemetery, burials were encountered recently during construction near the Asian Art Museum and historical documentation suggest the burials extend close to the APE at nearby Charles J. Brenham Place. Please provide information to explain why Caltrans is confident that burials will not be encountered. From the information submitted it appears that fill is about 8 feet and the vertical APE is 15 feet at this location and documents indicate burials were discovered between 3 and 25 feet deep. This information should be a critical component of any additional information Caltrans provides as part of any future finding of effect, treatment plan, or data recovery plan documents.

If you have questions, please do not hesitate to contact State Historian II Natalie Lindquist at (916) 445-7014 or at natalie.lindquist@parks.ca.gov or State Archaeologist Jeanette Schulz at (916) 445-7031 or at jeanette.schulz@parks.ca.gov .

Sincerely,

Julianne Polanco
State Historic Preservation Officer

State of California • Natural Resources Agency
Gavin Newsom, *Governor*

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May 22, 2020

VIA EMAIL

In reply refer to: FHWA_2020_0312_001

Mr. Christopher Caputo, Chief
Office of Cultural Resources Studies
Caltrans District 4
PO Box 23660, MS 8-A
Oakland, CA 94623-0660

Subject: Determinations of Eligibility for the Proposed Better Market Street Project, San Francisco, San Francisco County, CA

Dear Mr. Caputo:

Caltrans is continuing consultation regarding the above project in accordance with the January 1, 2014 *First Amended Programmatic Agreement Among the Federal Highway Administration (FHWA), the Advisory Council on Historic Preservation, the California State Historic Preservation Officer, and the California Department of Transportation Regarding Compliance with Section 106 of the National Historic Preservation Act, as it Pertains to the Administration of the Federal-Aid Highway Program in California* (PA). As part of your supplemental documentation, Caltrans submitted a revised DPR 523 form for the Market Street Cultural Landscape District as well as DPR 523s for the original Path of Gold Light and a separate DPR 523 for the replica Path of Gold Light Standards.

Pursuant to Stipulation VIII.C.6 of the PA, Caltrans determined that the following properties, located in the City of San Francisco, are eligible for the National Register of Historic Places (NRHP):

- **Market Street Cultural Landscape District** (MSCLD) – eligible under Criteria A and C and Criteria Consideration G. Under Criterion A the MSCLD is eligible at the local level for its historic role as San Francisco's main circulation artery and facilitator of urban development based on its association with urban and economic growth in San Francisco. The period of significance is 1847-1968. It is also eligible under Criterion A at the national level for its historic role as venue for civic engagement based on association with public demonstrations associated with LGBTQ civil rights and on a local level for association with social history themes including labor rights and civil right movements, war protest and peace celebration, and women's suffrage. The period of significance is 1870-1979. The MSCLD is also significant under Criterion C at the national level for its association with the

work of master architects John Carl Warnecke and Mario J. Ciampi, and master landscape architect Lawrence Halprin. The period of significance is 1968-1979, these dates span the interval between the approval of the design to the completion of construction.

- **Path of Gold Light Standards, Castro Street to Octavia Boulevard** - The original Path of Gold light standards are significant under Criteria C/3 at the local level because they represent the work of multiple master designers and engineers and possess high artistic value. They also meet the requirements of Criteria Consideration B. Although the original Market Street light standards were reinstalled in their current locations on upper Market Street in the 1980s, their period of significance remains 1908–1925 because they meet the requirements of Criteria Consideration B. These light standards are significant as the work of multiple master designers and possess high artistic value, and their period of significance reflects the period they were designed, created, and first installed, rather than the year they were reinstalled in a new location.

Caltrans has also determined that the replica Path of Gold Light Standards, Octavia Boulevard to the Embarcadero, constructed in 1979, are not individually eligible for the NRHP.

In addition Caltrans, as indicated in an e-mail on May 21, 2020 from David Price, will consider United Nations Plaza as a contributor to the Civic Center Historic District, a historic district listed on the NRHP.

Finally, with regards to archaeology, Caltrans determined that there may be an effect to archaeological resources within the area of potential effect (APE). Future submittals for this undertaking will provide detailed information in support of an assessment of effects, which demonstrate the nature and extent of specific project impacts as they relate to the archaeological context within the APE.

Based on review of the submitted documentation, I concur with the above determinations.

If you have questions, please do not hesitate to contact State Historian II Natalie Lindquist at (916) 445-7014 or at natalie.lindquist@parks.ca.gov or State Archaeologist Jeanette Schulz at (916) 445-7031 or at jeanette.schulz@parks.ca.gov .

Sincerely,

Julianne Polanco
State Historic Preservation Officer

Appendix F

Avoidance, Minimization, and/or Mitigation Summary

Appendix F

Avoidance, Minimization, and/or Mitigation Summary

In order to be sure that all of the environmental measures identified in this document are executed at the appropriate times, the following mitigation program (as articulated on the proposed Environmental Commitments Record [ECR] which follows) would be implemented. During project design, avoidance, minimization, and /or mitigation measures will be incorporated into the project's final plans, specifications, and cost estimates, as appropriate. All permits will be obtained prior to implementation of the project. During construction, environmental and construction/engineering staff will ensure that the commitments contained in this ECR are fulfilled. Following construction and appropriate phases of project delivery, long-term mitigation maintenance and monitoring will take place, as applicable. As the following ECR is a draft, some fields have not been completed, and will be filled out as each of the measures is implemented. Note: Some measures may apply to more than one resource area. Duplicative or redundant measures have not been included in this ECR.

Community Impacts and Environmental Justice
AMM-CI-1: Loading areas within active construction zones will be relocated as close to the construction zone as practical. Temporary loading zones may be possible under some circumstances.
AMM-CI-2: A Construction Management Plan will be developed and implemented by the City and San Francisco Public Works (Public Works) to manage detours for vehicles, transit, bicyclists, and pedestrians. Temporary detours for bicyclists, pedestrians, and transit will be provided to maintain access to existing businesses for the duration of construction. Pedestrian access throughout the corridor will be preserved at all times. Periodic sidewalk, plaza, or crosswalk closures may occur during sidewalk reconstruction and utility work and detours will be provided. For all pedestrian facilities, the alternate path of travel will meet the minimum width required to maintain Americans with Disabilities Act compliance.
AMM-CI-3: Caltrans Standard Specification Section 14 will be implemented. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust.
AMM-CI-4: Additional Control Measures for Construction Emissions of Fugitive Dust will be implemented. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of Caltrans' Standard Specifications and Special Provisions, a National Pollutant Discharge Elimination System permit, biological opinions, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project.

AMM-CI-5: Implement the following measures, per Caltrans Standard Specifications Section 14-8.02, to minimize temporary noise effects from construction (California Department of Transportation 2015): • Control and monitor noise resulting from work activities. • Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.
AMM-CI-6: Nighttime Construction Vibration Control Measures will be implemented. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan will evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan will also require vibration levels at vibration-sensitive receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources.
AMM-CI-7: Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access changes, routing and scheduling.
AMM-CI-8: Utility lines will be relocated by the utility companies, in coordination with the City. Potentially affected utility customers will be notified of potential service disruptions before relocation.
AMM-CI-9: Targeted outreach to businesses in the project corridor will take place to accommodate the loading/unloading needs of each business.
AMM-CI-10: San Francisco Public Works will conduct targeted outreach to homeless persons along the project corridor to notify them at least three days in advance of construction activities.
AMM-CI-11: San Francisco Public Works will work with local or nonprofit groups that assist the homeless, such as the Department of Homelessness and Supportive Housing – Homeless Outreach Team, to move homeless persons from construction zones to shelters, transitional housing, or supportive housing to the extent feasible.
Utilities/Emergency Services
AMM-UT-1: Utilities will be relocated by the utility companies, in coordination with the City. Potentially affected utility customers will be notified of potential service disruptions before relocation.
AMM-ES-1: Advanced notice and coordination with emergency service providers and school officials will minimize potential temporary impacts from access, routing, and scheduling changes.
AMM-ES-2: Streets will be reviewed by the Transportation Advisory Staff Committee, including review by the fire and police departments so that emergency-vehicle access is not impaired. Pursuant to the SFMTA Blue Book, Public Works or its contractor(s) will be required to work with the SFMTA to identify detour routes and locations where detour signs will be implemented and incorporate detour plans into the project's construction management plan.
Cultural Resources
AMM-CUL-1: Data Recovery Plan The project has the potential to adversely affect one known archaeological resource (the Yerba Buena Cemetery) and nine resources whose presence have not been field-verified (the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf). In addition, there are five areas that are considered sensitive for containing archaeological deposits. Public Works will ensure that adverse effects of the project on these resources are resolved by implementing the *Data Recovery Plan for the Better Market Street Project* (DRP). The DRP identifies archaeologically sensitive areas; presents a research design and describes data requirements for archaeological sites; describes monitoring and data recovery methods, procedures, and protocols;

describes procedures for unanticipated discoveries; describes procedures and protocols for data recovery; and describes reporting requirements.

Archaeological monitoring will occur in the vicinity of Yerba Buena Cemetery, the Panama, the Byron, the Callao, the Autumn, the Galen, the California Street Wharf, the Market Street Wharf, the Main Street Wharf, the Stuart Street Wharf, as well as in the five locations determined to have increased sensitivity to contain archaeological deposits.

AMM-CUL-2: Unanticipated Archaeological Discoveries Procedures

In the event of an unanticipated archaeological discovery all ground disturbance and equipment will cease within a 60-foot radius of the discovery, and if possible, be redirected to another portion of the project corridor. The area surrounding the discovery will be secured and the resource will be protected while appropriate assessment occurs. In the event of a potential discovery, the resident engineer and the Caltrans Archaeologist will be notified immediately. As appropriate, the Caltrans Archaeologist will notify the Caltrans Cultural Studies Office (CSO), who in turn will notify SHPO. Evaluation and treatment options will be determined in direct communication with stakeholders, as applicable.

If human remains are encountered, then the procedures outlined by the Native American Heritage Commission (NAHC), in accordance with Section 7050.5 of the California Health and Safety Code (HSC) and Section 5097.98 of the Public Resources Code, will be followed. If the discovery is determined to include human remains:

1. All ground-disturbing work within the immediate vicinity (60 feet) of the find will halt.
2. The San Francisco County Coroner will be notified:
   San Francisco County Medical Examiner
   1 Newhall Street
   San Francisco, CA 94124
   Phone: (415) 641-3600
   Web: https://sf.gov/departments/city-administrator/office-chief-medical-examiner
3. NAHC will be notified:
   Native American Heritage Commission
   915 Capitol Mall, Room 364
   Sacramento, California 95814
   Phone: (916) 653-4082
   Email: nahc@nahc.ca.gov
4. The coroner will have 2 working days to examine the remains after being notified in accordance with HSC Section 7050.5. If the coroner determines that the remains are Native American and are not subject to the coroner's authority, the coroner has 24 hours to notify NAHC of the discovery.
5. NAHC will immediately designate and notify the Native American Most Likely Descendant (MLD), who will have 48 hours after being granted access to the location of the remains to inspect them and make recommendations for treatment of them.

   All Native American coordination will be done in direct communication with the Caltrans Archaeologist assigned to the project.

AMM-CUL-3: Prepare and Submit a Historic Preservation Treatment Plan

Public Works shall retain a professional who meets the Secretary of the Interior's Professional Qualifications Standards to prepare a Historic Preservation Treatment Plan (HPTP) for the following contributing elements of the Market Street Cultural Landscape District: Embarcadero Plaza, Hallidie Plaza, and United Nations Plaza. Public Works shall coordinate with the San Francisco Department of Recreation and Parks on the timeline, cost share, and overall implementation of this measure.

The HPTP shall incorporate rehabilitation recommendations for maintaining and protecting the paving materials at the three plazas and shall include the following elements: • The HPTP shall be prepared and implemented to aid in protecting the physical elements of the plazas that contribute to the character of the Market Street Cultural Landscape District, as identified and described in the State of California Department of Parks and Recreation (DPR) district record appended to the Historic Resource Evaluation Report that was completed as part of the Section 106 review and technical documentation for this project. The HPTP shall focus on the district's association with the Market Street Redevelopment Plan design led by architects John Carl Warnecke and Mario Ciampi and landscape architect Lawrence Halprin with specific guidance on the treatment of historic materials, including the red brick herringbone paving present in all three locations. • The HPTP shall provide a baseline conditions assessment of the contributing elements in each of three plazas, including documentation of areas that illustrate typical conditions and degradation that will be addressed through rehabilitation recommendations. • The HPTP will also include best practices guidelines and rehabilitation recommendations to guide future projects associated with ongoing maintenance and repair of the red brick and other contributing elements of the plazas to ensure that replacement materials are compatible with the character of historic materials. • If deemed necessary upon assessment of the resources' condition, the plan shall include guidance for preliminary stabilization measures to be carried out before construction to prevent damage to the three plazas as a result of construction activities. Specifically, the protection measures shall incorporate construction specifications to be implemented by the construction contractor(s) to ensure all feasible means of avoiding damage to the resources. Public Works will not authorize the execution of any Undertaking that may affect historic properties until the HPTP has been completed and approved by Caltrans.
AMM-CUL-4: Develop and Implement Community-led Programs Public Works will administer the selection of a minimum of three community-led public programs to celebrate and commemorate the history of Market Street. Proposals will be solicited through an RFP submission process and will be proposed, managed and implemented by California-based non-profit organizations with an interest in the history and/or cultural properties of the Market Street Cultural Landscape District. The selection process may be coordinated with the San Francisco Planning Department to fulfill the interpretive and commemorative mitigation measures that were developed to meet the requirements of the California Environmental Quality Act (see the *Better Market Street Environmental Impact Report*, which was certified by the San Francisco Planning Commission on October 10, 2019), or they can be completed as independent programming. With funding support from Public Works, a minimum of three community-led programs will be awarded. Interpretive or commemorative programs may include temporary events such as dances, lectures, or walking tours, or they may take the form of permanent installations such as interpretive signage or an on-site exhibition. Organizations with a demonstrated interested in the history of Market Street may apply through the RFP process. Preference will be given to organizations located within the project APE. Program selection will be made by a committee that will include a minimum of five persons, and include at least three members with professional experience in arts and cultural programming. The committee may include professionals from the following fields and organizations: a representative of Public Works; a representative of Caltrans; professionals from the fields of history, historic preservation, performing arts, visual arts, or design. Organizations with representation on the committee will not be eligible to apply for award consideration. Where responses to the RFP include proposals for temporary programming, a plan for documentation or recordation of the program will be included. The documentation or recordation materials will be appended to the annual reporting detailed in Stipulation G of the MOA and will also be hosted by the organizations so that the information included in the programs are made available to the public as part

of the permanent historical record on the history of Market Street. Additionally, the programs, both temporary and permanent, must be accessible to the public through in-person or digital participation. Public Works will not authorize the execution of any Undertaking activity that may affect historic properties in the APE until awards are made for three community-led programs, and draft work plans have been submitted by the awardees and approved by the selection committee.
Water Quality and Storm Water Runoff
AMM-WQ-1: The project will implement the temporary BMPs included in Table 2.2.1-1 (see Table 2.2.1-1 in Section 2.2.1, *Water Quality and Stormwater Runoff*).
AMM-WQ-2: The project will implement the operational source control BMPs included in Table 2.2.1-2 (see Table 2.2.1-2 in Section 2.2.1, *Water Quality and Stormwater Runoff*).
Hazardous Waste/Materials
AMM-HAZ-1: If excavation or earth-disturbing activity is planned along the project corridor as well as within areas near the PRECs and HRECs, additional soil and groundwater investigation will be conducted (based on depths of proposed excavation after the completion of the project's engineering conceptual design) to evaluate the following: • Potential human and environmental risks from PRECs and HRECs. • Potential waste classification for soil that will be excavated for disposal during the construction of the project. Waste disposal characterization analyses should include CAM17 metals, pesticides, polychlorinated biphenyls (PCBs), volatile organic compounds (VOCs), and semivolatile organic compounds (SVOCs). • Potential for aerially deposited lead (ADL) and lead striping paint. Shallow soils anticipated to be excavated during the project will be sampled and analyzed for lead. Caltrans standard special provisions for removal of yellow paint will also be followed. • If excavation is anticipated to extend below the groundwater table at any part of the project corridor, groundwater will be sampled in the vicinity prior to obtaining dewatering and discharge permits to San Francisco Public Utilities Commission's combined storm and sewer system.
AMM-HAZ-2: Public Works will develop and implement the necessary plans and measures required federal and state regulations, including a health and safety plan, best management practices, and/or an injury and illness prevention plan. The plans will be prepared and implemented to address worker safety when working with potentially hazardous materials, including potential asbestos-containing materials, lead-containing paint lead or chromium in traffic stripes, ADL, and other construction-related materials within the right-of-way during any soil-disturbing activity.
AMM-HAZ-3: Soils in the project limits identified as having hazardous levels of ADL will be disposed of or reused according to federal and state regulations. Soils within the right-of-way that contain hazardous waste concentrations of ADL may be reused under the authority of variances issued by California Department of Toxic Substances Control. These variances include stockpiling, transporting, and reusing soils with concentrations of lead below maximum allowable levels in the project right-of-way. Stockpiling, transporting, and reusing of soil will also be conducted following Caltrans' standard special provisions.
AMM-HAZ-4: As required by Caltrans' standard special provisions, the construction contractor will sample and test yellow and white traffic striping scheduled for removal to determine whether lead or chromium is present. All aspects of the project associated with removal, storage, transportation, and disposal will be in strict accordance with appropriate regulations of the California Health and Safety Code. The stripes will be disposed of at a Class 1 disposal facility. The responsibility of implementing this measure will be outlined in the contract between the project proponent and the construction contractor. Implementing this measure will minimize potential effects from these hazardous materials.

Air Quality
AMM-AQ-1: Implement Caltrans Standard Specification Section 14. Caltrans' Standard Specification Section 14, Environmental Stewardship, addresses the construction contractor's responsibility for many items of concern, such as air pollution; the protection of lakes, streams, reservoirs, and other water bodies; the use of pesticides; safety; sanitation; public convenience; and property damage or personal injury as a result of any construction operation. Section 14-9.02 includes specifications related to air pollution control for work performed under contract, including compliance with air pollution control rules, regulations, ordinances, and statutes provided in Government Code Section 11017 (Public Contract Code Section 10231). Section 14-9.03 is directed at controlling dust.
AMM-AQ-2: Implement Additional Control Measures for Construction Emissions of Fugitive Dust. Additional measures to control dust will be borrowed from BAAQMD's recommended list of dust control measures and implemented to the extent practicable when measures have not already been incorporated and do not conflict with the requirements of a National Pollutant Discharge Elimination System permit, a Clean Water Act Section 404 permit, Clean Water Act Section 401 certification, or other permits issued for the proposed project. The following measures are taken from BAAQMD's 2017 California Environmental Quality Act Air Quality Guidelines: • Reduce the amount of disturbed area where possible. • Use water trucks or sprinkler systems to apply sufficient quantities of water and prevent airborne dust from leaving the site. An adequate water source must be identified. Increased watering frequency will be required whenever wind speeds exceed 15 mph. Reclaimed (non-potable) water should be used whenever possible. • All dirt stockpile areas should be sprayed daily, as needed, then covered, or a district-approved alternative method should be used. • Permanent dust control measures identified in the approved project revegetation and landscape plans should be implemented as soon as possible following completion of any soil-disturbing activities. • Exposed ground areas that will be reworked more than 1 month after initial grading should be sown with a fast-germinating non-invasive grass seed and watered until vegetation is established. • All disturbed soil areas not subject to revegetation should be stabilized using approved chemical soil binders, jute netting, or other methods approved in advance by the district. • All roadways, driveways, sidewalks, etc., to be paved should be completed as soon as possible. In addition, building pads should be laid as soon as possible after grading, unless seeding or soil binders are used. • Speeds for all construction vehicles shall not exceed 15 mph on any unpaved surface at the construction site. • All trucks hauling dirt, sand, soil, or other loose materials should be covered or should maintain at least 2 feet of freeboard (minimum vertical distance between top of load and top of trailer), in accordance with San Francisco County regulations. • Wheel washers should be installed where vehicles exit from unpaved roads onto streets or trucks and equipment leaving the site should be washed. • Streets should be swept at the end of each day if visible soil material is carried onto adjacent paved roads. Water sweepers with reclaimed water should be used where feasible. • A sign should be posted in a prominent location that is visible to the public and include the telephone numbers of the contractor and San Francisco Public Works for questions or concerns about dust from the project.

Noise and Vibration
AMM-NOI-1: Caltrans Standard Specifications Section 14-8.02. Standard Caltrans procedures include implementation of the following measures to minimize temporary noise effects from construction (California Department of Transportation 2018): • Control and monitor noise resulting from work activities. • Do not exceed 86 dBA at 50 feet from job site activities between 9:00 p.m. and 6:00 a.m.
AMM-NOI-2: Nighttime Construction Vibration Control Measures. Prior to issuance of a construction permit, a detailed pre-construction vibration assessment and monitoring plan shall be prepared for all construction activities conducted between the hours of 8 p.m. and 7 a.m. This plan shall evaluate and select the smallest equipment feasible that can be used during this construction period and recommend a specific location for equipment within the construction area to maximize the distance between the vibration-generating sources and vibration-sensitive receptors. This plan shall also require vibration levels at vibration-sensitive receptors along the project corridor not to exceed the strongly perceptible level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. The project contractor shall: • Retain the services of a qualified professional to prepare a pre-construction assessment and vibration monitoring plan. This assessment and vibration monitoring plan shall identify all vibration-sensitive receptors adjacent to the project corridor that could be exposed to vibration from nighttime construction activities exceeding a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources. The qualified professional shall submit the plan to Public Works for review and approval prior to issuance of a construction permit. • Inform vibration-sensitive receptors of upcoming construction activities that may generate high levels of vibration a minimum of one week in advance of such construction activities. Methods of notification shall include mailed notices as well as notifications hand-posted on doorways. The notification shall include the name and contact information for a person that can be reached during nighttime construction hours. • Perform real-time vibration monitoring during all construction activities conducted between the hours of 8 p.m. and 7 a.m. at a location representative of the nearest vibration-sensitive receptor. If vibration levels exceed a vibration level of 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources, the vibration monitor shall immediately alert the construction manager, who shall immediately cease construction activity. Construction activity shall resume only after the vibration-generating equipment is adjusted or relocated such that the vibration level no longer exceeds 0.10 PPV in/sec for continuous sources and 0.90 PPV in/sec for transient sources or such activity is otherwise conducted between the hours of 7 a.m. and 8 p.m.
Biological Environment
AMM-BIO-1: To avoid effects from tree removal on migratory nesting birds, stump removal will be conducted after August 31 and before February 1, outside the nesting season. To avoid effects of all other construction activities on active bird nests, including special-status bird species, a qualified biologist will conduct a preconstruction survey for nesting birds prior to any construction activities scheduled during the nesting season (February 1 to August 31). The survey will occur no more than 7 days prior to the initiation of ground-disturbing activities, including clearing, grubbing, and staging. The survey area will include the disturbance footprint and a 50-foot area around the footprint (buffer) for songbirds protected by the Migratory Bird Treaty Act.

AMM-BIO-2: If active nests are found during the survey, the biologist will establish exclusion zones around each nest. No work will be allowed in exclusion zones until the biologist has determined that the young have fledged or the nest is no longer active. The size of the exclusion zones will be based on the species' sensitivity to disturbance and planned work activities in the vicinity. The buffer size may be reduced if the biologist, after monitoring the nest and nearby construction activities, determines that no disturbance that would result in nest abandonment or premature fledging (e.g., young being startled by construction noise or visual disturbance and jumping out of the nest before they are able to fly) is likely to occur.
AMM-BIO-3: If a lapse in project-related activities of 10 days or more occurs, another preconstruction survey will be conducted.
AMM-BIO-4: One survey will be required prior to the initiation of construction in each segment of the project if construction within the segment is initiated during the nesting bird season (February 1 to August 31). In addition, one nesting bird survey will be required between April and May (at the discretion of the qualified biologist, depending on construction activities) of each year.

Appendix G

List of Technical Studies

List of Technical Studies

Many technical studies were used to analyze the impacts of the proposed project (including the design option) and the No-Build Alternative. These studies include:

- Air Quality Report, December 2019
- Air Quality Conformity Analysis, December 2019
- Archaeological Survey Report, March 2020
- Biological Resources Technical Memorandum, November 2019
- Community Impact Assessment Technical Memorandum, March 2020
- Finding of Adverse Effect, May 2020
- Hazardous Material Initial Site Assessment, October 2019
- Historic Property Survey Report, March 2020
- Historical Resources Evaluation Report, February 2020
- Location Hydraulic Study and Floodplain Report Summary Forms, September 2019
- Moderate Visual Impact Assessment, December 2019
- Noise Technical Memorandum, February 2020
- Draft Section 4(f) Evaluation, May 2020
- Draft Section 4(f) De Minimis Determinations and Resources Evaluated Relative to the Requirements of Section 4(f): No-Use Determinations, May 2020
- Staging Technical Memorandum, November 2019
- Transportation Report, March 2020
- Water Quality Technical Memorandum, October 2019

Appendix H

List of Acronyms

Acronyms and Abbreviations

µg/m3	micrograms per cubic meter
ACHP	Advisory Council on Historic Preservation
ADA	Americans with Disabilities Act
ADL	aerially deposited lead
APE	Area of Potential Effects
ARB	California Air Resources Board
ARDTP	Archaeological Research Design and Treatment Plan
ARPA	Archaeological Resources Protection Act
ASA	Archaeological Sensitivity Study
ASR	Archaeological Survey Report
ASTs	aboveground storage tanks
AWSS	Auxiliary Water Supply System
BART	Bay Area Rapid Transit
Bay	San Francisco Bay
Caltrans	California Department of Transportation
CASQA's	California Stormwater Quality Association's
CCAA	California Clean Air Act
CEQA	California Environmental Quality Act
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CERFA	Community Environmental Response Facilitation Act
CFR	Code of Federal Regulations
CHRIS	California Historical Resources Information System
City	City and County of San Francisco
CNDDB	California Natural Diversity Database
CNEL	Community Noise Equivalent Level
CO,	carbon monoxide
CTs	Census tracts
CWA	Clean Water Act
dB	decibels
DPFs	diesel particular filters
DPR	Department of Parks and Recreation
DRP	Data Recovery Plan
EA	Environmental Assessment
EDR	Environmental Data Resources, Inc.
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EO	Executive Order
EPA	U.S. Environmental Protection Agency

FAE	Finding of Adverse Effect
FCAA	Federal Clean Air Act
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FIRMs	Flood Insurance Rate Maps
FOE	Finding of Effect
FONSI	Finding of No Significant Impact
FTIPs	ederal Transportation Improvement Programs
H_2S	hydrogen sulfide
HABS	Historic American Building Survey
HALS	Historic American Landscape Survey
HPSR	Historic Property Survey Report
HRE	Historic Resource Evaluation
HRECs	historical recognized environmental conditions
Hz	Hertz
I-280	Interstate 280
ISA	Initial Site Assessment
kHz	kilohertz
L_{dn}	Day-Night Level
LED	light-emitting-diode
LEDPA	least environmentally damaging practicable alternative
L_{eq}	Equivalent Sound Level
LID	low-impact development
L_{max}	Maximum Sound Level
L_{xx}	Percentile-Exceeded Sound Level
MOU	Memorandum of Understanding
mPa	micro-Pascals
MPO	Metropolitan Planning Organization
MS4s	Municipal Separate Storm Sewer Systems
Muni	San Francisco Municipal Railway
NAAQS	National Ambient Air Quality Standards
NAC	noise abatement criteria
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NEPA Assignment MOU	Memorandum of Understanding pursuant to 23 USC 327
NHPA	National Historic Preservation Act
NO_2	nitrogen dioxide
NRHP	National Register of Historic Places

NWIC	Northwest Information Center
O_3	ozone
OCS	overhead contact system
OSHA	Occupational Safety and Health Act
OWSs	oil/water separators
PA	Programmatic Agreement
PAC	Preliminary Archaeological Checklist
PCBs	polychlorinated biphenyls
POAQC	project of air quality concern
POP	Proof of Payment
PPV	peak particle velocity
PQS	Professionally Qualified Staff
PRECs	potential recognized environmental conditions
Public Works	San Francisco Public Works
RCRA	Resource Conservation and Recovery Act
RECs	recognized environmental conditions
ROGs	reactive organic gases
RSA	Resource Study Area
RTPs	Regional Transportation Plans
RWQCBs	Regional Water Quality Control Boards
SFFD	San Francisco Fire Department
SFMTA	San Francisco Municipal Transportation Agency
SFPD	San Francisco Police Department
SFPUC	San Francisco Public Utilities Commission
SHPO	State Historic Preservation Officer
SHS	State Highway System
SLF	Sacred Land File
SO_2	sulfur dioxide
SOX	sulfur oxides
SPL	sound pressure level
SVOCs	semivolatile organic compounds
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TMDLs	Total Maximum Daily Loads
TSCA	Toxic Substances Control Act
U.S. EPA	U.S. Environmental Protection Agency
US 101	U.S. Highway 101
USACE	U.S. Army Corps of Engineers
USC	United States Code

USDOT	United States Department of Transportation
VAUs	visual assessment units
VIA	Visual Impact Assessment
VMT	vehicle miles traveled
VOCs	volatile organic compounds
WDRs	Waste Discharge Requirements
WPCP	Water Pollution Control Program